

PERSPECTIVE PLAN for INDIAN FORENSICS

Final Report

presented to the

Ministry of Home Affairs
Government of India
New Delhi

by the
Consultants

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List of abbreviations

BARC	:	Bhabha Atomic Research Centre
CBI	:	Central Bureau of Investigation
CCSR	:	Collective Corporate Social Responsibility
CDFD	:	Centre for DNA Fingerprinting and Diagnostics
CE	:	Continuing Education
CEL	:	Chemical Examiner's Laboratory
CENOFO	:	Centre for Novel Forensics
CFPB	:	Central Finger Print Bureau
CFPDP	:	Continuing Forensic Professional Development Programme
CFSL	:	Central Forensic Science Laboratory
CPDP	:	Continuing Professional Development Programme
CRAIG	:	Crazy Ideas Grant
DDFT	:	Disaster Death Forensic Team
DEFOSER	:	Department of Forensic Service
DFS	:	Directorate of Forensic Science
DIFOSER	:	Directorate of Forensic Service
DNA	:	Deoxyribonucleic acid
DRDO	:	Defence Research & Development Organization

DST	: Department of Science and Technology, Ministry of Science and Technology
EMR	: Extramural Research
FBI	: Federal Bureau of Investigation, USA
FCS	: Flexible Complementing Scheme (<u>in situ</u> promotion)
FM	: Forensic Medicine
FOCI	: Forensic Council of India
FOSHCOM	: Forensic Stake Holders Consultative Committee
FOSIDOC	: Forensic Service Information and Documentation Centre
FPB	: Finger Print Bureau
FS	: Forensic Science
FSL	: Forensic Science Laboratory
GEQD	: (Laboratory of) Government Examiner of Questioned Documents
GLP	: Good Laboratory Practice
GoI	: Government of India
HQ	: Headquarters
HRRP	: Human Resource Recruitment and Progression
IB	: Intelligence Bureau

IBIS	: Integrated Ballistic Information System
IFOSIB	: Indian Forensic Service Improvement Board
IFOSIG	: Indian Forensic Service Improvement Grant
IMR	: Intramural Research
IMS	: Information Management System
ISO	: International Organization for Standardization
JRF	: Junior Research Fellow(ship)
LIMS	: Laboratory Information Management System
MAC	: Multi Agency Centre (under IB)
MFSL	: Mobile Forensic Science Laboratory (or) District Mobile Forensic Unit
MHA	: Ministry of Home Affairs
MoHFW	: Ministry of Health and Family Welfare
NAA Unit	: Neutron Activation Analysis Unit of CFSL, Hyderabad at BARC, Mumbai
NABL	: National Accreditation Board for Testing and Calibration Laboratories
NatGrid	: National Intelligence Grid
NCRB	: National Crime Records Bureau
NCTC	: National Counter – Terrorism Council
NFSO	: National Forensic (Science /) Service Organization

NIA	:	National Investigation Agency
NICFS / LNJN NICFS	:	(Lok Nayak Jayaprakash Narayan) National Institute of Criminology and Forensic Science
NIST	:	National Institute of Standards and Technology, USA
NPA / SVP NPA	:	(Sardar Vallabhbhai Patel) National Police Academy
NSG	:	National Security Guard
PAC	:	Programme Advisory Committee
PDP	:	Professional Development Programme
POP	:	Policy Panel
PPP	:	Public Private Partnership
PT	:	Proficiency Testing
R & D	:	Research and Development
RAREFA	:	Rapid Response Forensic Authority
RELIF	:	Reserve List of Forensic professionals
RFSL	:	Regional Forensic Science Laboratory
SACC	:	Scientific Advisory Committee to the Cabinet
SAC-PM	:	Scientific Advisory Council to the Prime Minister
SOC	:	Scene of crime / occurrence
SPV	:	Special Purpose Vehicle

STF : Scientific Task Force

TBRL : Terminal Ballistics Research Laboratory

EXECUTIVE SUMMARY

Initiative

A landmark shined in Indian forensics when the Hon'ble Minister for Home Affairs, Government of India declared the year 2010 as the Year of Forensic Science. In close pursuit, the Secretary to Government, Ministry of Home Affairs (MHA), Government of India (GoI) spoke over phone [Ref 1] and the Special Secretary sent inviting letter in mid – January 2010 so as to engage us both (Dr. Gopal Ji Misra and Dr. C. Damodaran) as Consultants to carve out Perspective Plan for Indian Forensics in a six months – time – bound mission – mode [Ref 2]. Salient features for the study were indicated as :-

- Organizational structure
- Strategy for development
- Plan for the future of forensics
- Personnel policy
- Human resource development
- Technology & manpower gaps
- PG Diploma and M.Sc. Courses in forensic science

- Emerging key areas
- Accreditation of forensic laboratories
- Other related issues.

Subsequently an e-mail letter from MHA in Feb 2010 gave a detailed version of the Terms of Reference for the exercise highlighting tasks pertaining to :

- (A) Infrastructure
- (B) Procedures and processes
- (C) NICFS and forensic academia
- (D) Organization
- (E) Miscellaneous.

There was also mention of the anticipated output, providing strategy and action plan, in the form of an interim report (within April 30, 2010) followed by the Final Report (within July 31, 2010) [Ref 3]. Besides, on Feb 8, 2010 the Consultants had the privilege of listening for quite long to the Hon'ble Home Minister, GoI who was explicit in his serious concern towards Indian forensics and his pragmatic commitment to refurbishment. He also elaborated on the needs of homeland security, and pointed out issues relating to forensic organization, technology, human resource, training, recruitment & promotion, and mis – match between M.Sc. (Forensic Science) pass outs and placement. The Minister's mandate was that a Perspective Plan for Indian Forensics incorporating action plan bullet points for implementation, primarily at the Central level, should be ready by July 2010 [Ref 4].

Indulgence

Adhering to the concepts of the circumscription, the Consultants (one at Chandigarh and the other at Chennai) embarked on swift action first by creating an e-mail id < pplanfs2010@gmail.com >. This was followed by letter (through postal certificate / fax / e-mail) to the major forensic players of the country including Central, State and Union Territory (UT) forensic establishments, priming them to the upcoming Perspective Plan – preparation [Ref 5]. Simultaneously efforts got underway to review published materials and to design survey – questionnaires which were finalized after the logistics – conscious clustering of both the Consultants (at Chandigarh) effected by the relocation of Dr. Damodaran's establishment from Chennai to Chandigarh.

Assimilation of contemporary data was then set in motion by focussing on 499 addressees representing direct and indirect forensic promoters and beneficiaries, with requests that varied relevantly in script (and the enclosed Questions, Tables etc.) but tallied uniformly in anticipating specific inputs. Letters in hard / soft copy for the purpose were sent to :

- Director – cum – Chief Forensic Scientist, Directorate of Forensic Science (DFS), MHA, GoI, New Delhi
- Directors of Central Forensic Science Laboratories (CFSLs) under DFS / CBI
- Government Examiners of Questioned Documents (GEQDs) under DFS

- Directors of State / UT Forensic Science Laboratories (FSLs)
- Director, National Institute of Criminology and Forensic Science (NICFS), MHA, GoI, New Delhi
- Head of Neutron Activation Analysis (NAA) Unit (of the CFSL, Hyderabad), Bhabha Atomic Research Centre (BARC), Mumbai
- Head of Forensic Science Wing, SVP National Police Academy, Hyderabad
- Director, Central Finger Print Bureau (CFPB), NCRB, MHA, New Delhi
- Director Generals of Police (States)
- Director General, Bureau of Police Research and Development (BPR & D), MHA, New Delhi
- Director General, National Crime Records Bureau (NCRB), MHA, New Delhi
- Director, SVP National Police Academy, Hyderabad
- Registrar General (Supreme Court) and Registrars of High Courts.
- Directors of Police Academies / Principals of Police Training Colleges
- Directors of Judicial Academies
- Directors of Prosecution
- Presidents / Secretaries of Bar Councils

- Presidents / Secretaries of Advocates' Associations
- Retired / senior forensic scientists
- Serologist to Government
- Chiefs of Chemical Examiner's Laboratories
- Forensic Medicine Experts & Police Surgeons
- Chiefs of State Fingerprint Bureaux
- Officers of CBI, NSG, NCB, CISF and ITBP
- Deputy Controllers of Explosives
- Principals of Central Detective Training Schools
- Officers of Defence Services
- Officers of Customs & Excise Service
- Heads of academia [Universities / Colleges / Institutes] offering forensic science courses
- Head of Wildlife Institute
- General Managers of Banks

Copies of the communications concerned with enclosures as applicable [Ref 6 – 16] are provided in ***Attachments A- K***.

Decades – long experience of the Consultants and response from the above exercise formed the core material for analysis. Other relevant repositories for tapping included: archival and contemporary scientific literature, reports, reviews, internet, interviews, visits and tele interactions [Ref 17 – 138]. Information

and data were then subjected to incisive comprehension, wherever possible with an eye for quantification.

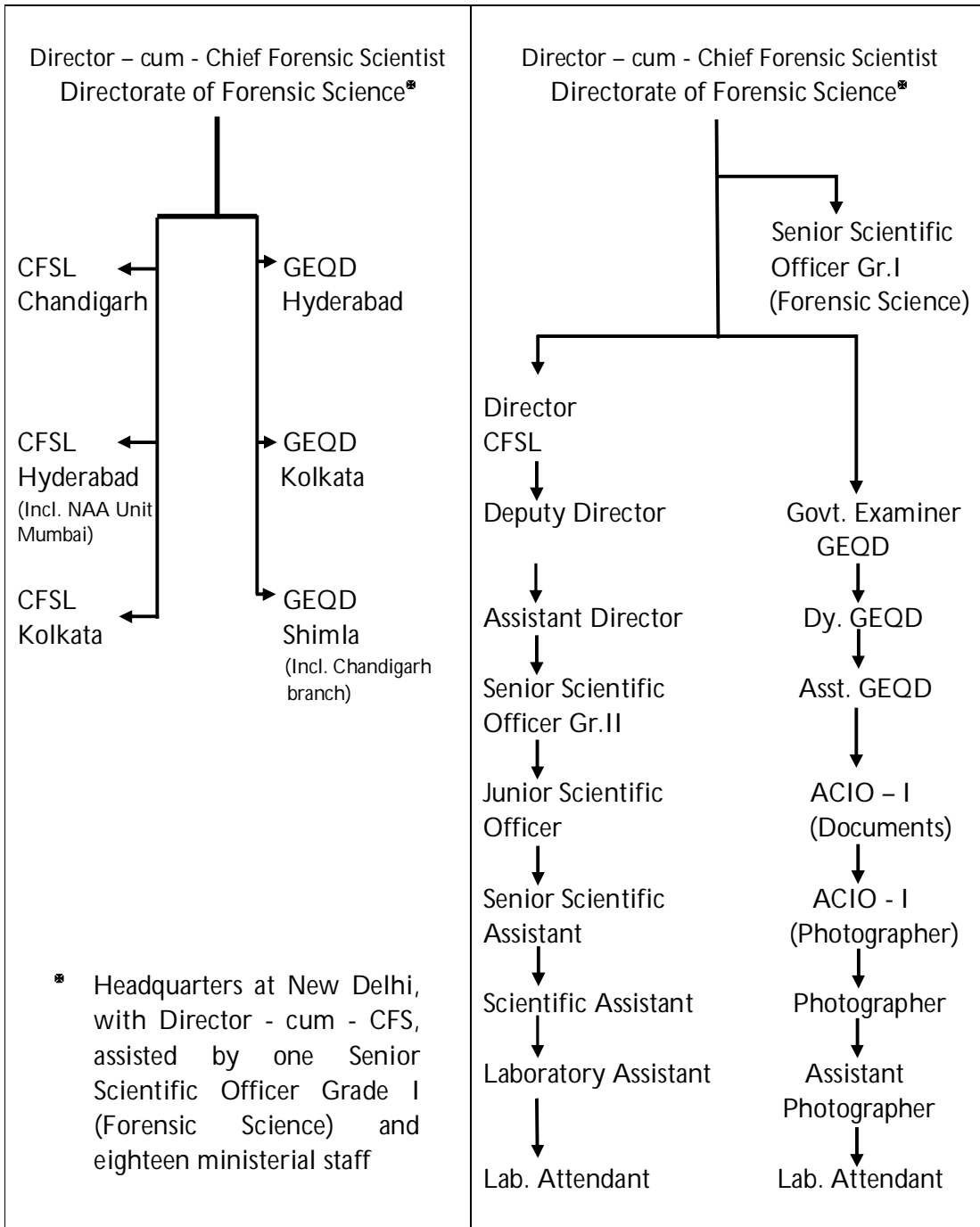
Impressions

Forensic Science, an amalgamation of almost all faculties of knowledge is an essential and efficient enabler in the dispensation of justice in criminal, civil, regulatory and social contexts. Historically our forefathers in India have practised forensic application in variety of forms. Present day Indian forensics, as chronicled, owes its genesis to several British – initiated ventures such as Chemical Examiner’s Laboratory (Madras, 1849), Anthropometric Bureau (1892), Finger Print Bureau (1897), Inspectorate of Explosives (1898), Office of Government Handwriting Expert (1904), Serology Department (1910), Foot Print Section (1915), Note Forgery Section (1917), Ballistics Laboratory (1930) and Scientific Section (1936) [Ref 57]. Having subsequently undergone clubbing / regrouping / spreading, as of now, there are 28 State / Union Territory Forensic Science Laboratories (State / UT FSLs) along with their Regional FSLs (32 RFSLs) and Mobile FSLs (144 MFSLs); they are mostly with the respective Home Department either directly or through police establishment.

During 1957, the first Central Forensic Science Laboratory (CFSL) was established at Calcutta, followed by the ones at Chandigarh (1961; traceable to Lahore – origin of 1933) and Hyderabad (1965). In 1971, Neutron Activation Analysis (NAA) Unit came into operation at Bhabha Atomic Research Centre (BARC), Mumbai. Thus the Bureau of Police Research &

Development (BPR & D) administered three CFSLs, including NAA, and three laboratories of Government Examiners of Questioned Documents (GEQD). Presently (since 2002 / 03) they are all under the Directorate of Forensic Science (DFS; MHA, GoI); CFSL, Hyderabad has in its fold the NAA Unit and GEQD, Shimla has a branch at Chandigarh [Ref 42] (Figure 1).

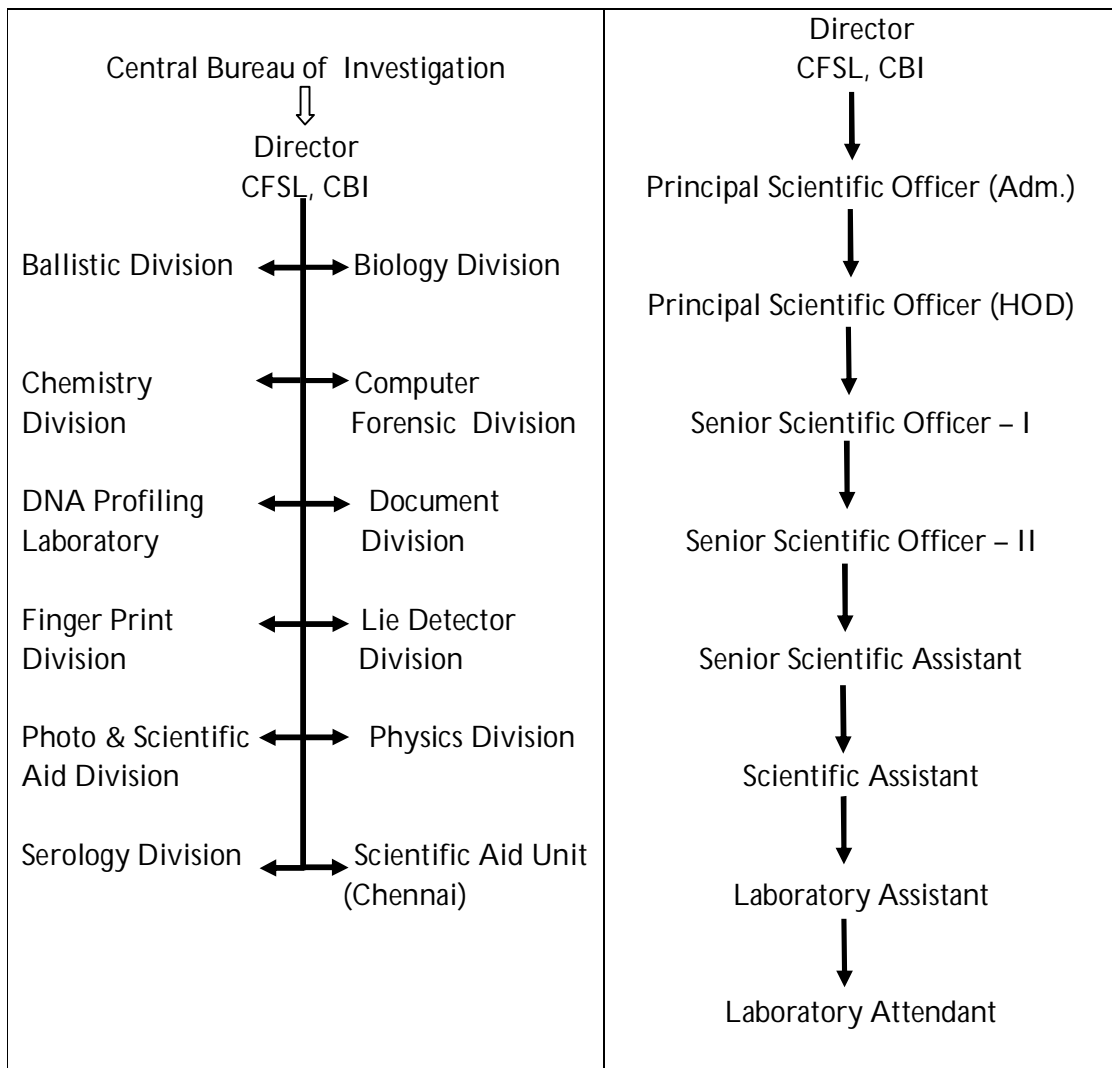
Figure 1 : Organizational (scientific) chart of Directorate of Forensic Science (MHA,GoI)



MHA : Ministry of Home Affairs GoI : Government of India
 CFSL : Central Forensic Science Laboratory
 NAA : Neutron Activation Analysis Unit, Bhabha Atomic Research Centre
 GEQD : Government Examiner of Questioned Documents
 ACIO : Assistant Central Intelligence Officer

Another CFSL functions under the Central Bureau of Investigation (CBI) at Delhi with a small branch at Chennai primarily serving the CBI (Figure 2). Besides, National Crime Records Bureau (NCRB) hosts the Central Finger Print Bureau, for maintaining crime related finger print database.

Figure 2 : Organizational (scientific) chart of CFSL, CBI



In addition to these practitioner – premises, Institute of Criminology and Forensic Science (now, Lok Nayak Jayaprakash Narayan National Institute of Criminology and Forensic Science, LNJNI NICFS; MHA, GoI), with the prime aim of imparting

training to in – service forensic related personnel, was founded in 1972 and is functioning at Rohini, Delhi. Besides, there is a Forensic Science Wing at Sardar Vallabhbhai Patel National Police Academy (SVP NPA; MHA, GoI), Hyderabad.

Further, under the Ministry of Health and Family Welfare (MoHFW, GoI), an Institute of Serology steered by Serologist & Chemical Examiner to the Government of India functions at Kolkata and undertakes some forensic serological work over and above its major activity of producing antigens, antibodies etc. Across the country there are also several State / UT Finger Print Bureaux (mostly under the police department's State Crime Records Bureaux), and couple of Chemical Examiner's Laboratories. Few State police detachments appear to have with them trained police personnel to examine disputed documents as urgency demands.

These apart, a particularly indispensable knowledge – pillar enabling justice delivery is the medico – legal (also known as medical jurisprudence / forensic medicine) set up in the ambit of Central / State / UT Health Ministries' institutes, colleges and hospitals to practise clinical forensic medicine, ascertain age / sex etc of subjects, perform autopsy and opine on the cause and nature of injury / death; Madhya Pradesh Government (Home – Police – Department's) Medico Legal Institute (Bhopal) and, to certain extent, some non-governmental universities and corporates are also in this web.

Then come the freelance (often self – proclaimed) "Experts" who are available for a fee. The more recent development

is that limited or comprehensive forensic service facilities have sprung up in the non – governmental private sector with or without accredited capability; and, public private partnership (PPP) is on the anvil. Furthermore there are now several academic campuses, public funded or otherwise, offering numerous courses in forensic and allied disciplines; the latest in the field is the exclusive Forensic Science University in Gujarat.

The field reality is that while the same Code of Criminal Procedure, (Indian) Evidence Act and (Indian) Penal Code apply to all the citizens of India, forensic services accorded to the different population segments by the various delivery units of the Union, State and UT welfare governments, however, differ owing to gradients of professional (training) development, procedures & processes, external exposure, equipment etc resources, enabling logistics and service conditions. The scene also represents inter – regional variations with respect to the population size, and the volume and nature of crimes.

When viewed through the eyes of the current mandate with emphasis on Central forensic establishments, the obvious impression is one of satisfaction notwithstanding the existing ailments and expected medicaments. Quality of forensics is in good esteem as revealed in this study by the absence of negative feedback from forensic service end – users including courts and investigation agencies. Timeliness in forensic delivery (Tables 1 and 2), as the second contributor to credibility, has been maintained well in comfortable comparison with the United States of America (USA) [Ref 61] .Performance indicators namely cases handled in the past

five years by the seven Central forensic establishments [CFSLs (DFS): Chandigarh, Hyderabad (including NAA) and Kolkata; CFSL (CBI): New Delhi; and GEQDs (DFS): Hyderabad, Kolkata and Shimla (including Chandigarh branch)] are illustrated in Tables 3 and 4 and in Figures 3 – 9. A ready – reckoner on the physical profiles of the different Central forensic units is provided in Table 5.

Table 1 : Turnaround times* effected in the year 2009 by Central Forensic Science Laboratories

S.No.	Lab Division	CFSL, Chandigarh			CFSL, Hyderabad			CFSL, Kolkata			CFSL, CBI, New Delhi		
		Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)- involved analysis	Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)- involved analysis	Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)- involved analysis	Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)- involved analysis
1	Anthropology (Skull superimposition)	15-20	30-60	30-60	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	Ballistics	02-03	05-07	15-20	04	15	>60	02	NR	NR	21	42	56
3	Biology	05-07	07-14	7-14	03	10	>30	02	NR	NR	60	90	180
4	Chemistry	04-10	5-15	30-45	04	30	>90	02	NR	NR	90	180	180
5	Computer forensics/ digital forensics	05-07	10-15	NR	07	60	NA	06	NR	NR	90	NR	NR
6	Counterfeit currency	NA	NA	NA	07	30	>60	NA	NA	NA	NA	NA	NA
7	Documents	NA	NA	NA	NA	NA	NA	NA	NA	NA	90	365	NR
8	Explosives	04-05	07-09	20-25	04	20	>60	03	NR	NR	NA	NA	NA
9	Fingerprint	NA	NA	NA	NA	NA	NA	NA	NA	NA	30	180	365
10	Narcotics	04-05	08-15	30-45	05	30	>180	02	NR	NR	NA	NA	NA
11	Photography	NA	NA	NA	NA	NA	NA	NA	NA	NA	30	90	150
12	Physics	05-06	07-08	20-25	05	20	>90	02	NR	NR	60	120	180
13	Polygraph	NA	NA	NA	NA	NA	NA	NA	NA	NA	30	NR	45
14	Serology/DNA	15-30	30-60	30-60	05	30	>60	02	NR	NR	20	90	120
15	Toxicology	06-07	12-15	30-45	07	20	>90	05	NR	NR	NA	NA	NA
16	Voice identification	08-10	18-20	40-45	NA	NA	NA	NA	NA	NA	NA	NA	NA

* Time (in days) from the receipt of the evidence item by the lab to the readiness of the lab report for despatch

NA : Not available / applicable NR : Not reported

Table 2 : Turnaround times* effected in the year 2009 by the Government Examiners of Questioned Documents

S.No.	Lab Division	GEQD, Hyderabad			GEQD, Kolkata			GEQD, Shimla		
		Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)-involved analysis	Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)-involved analysis	Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)-involved analysis
1	Computer forensics/ digital forensics	15-20	30-35	>45	15-20	30-35	>45	180	180-240	180-240
2	Documents	15-45	30-35	>45	15-45	30-35	>45	90	90-150	90-180

* Time (in days) from the receipt of the evidence item by the lab to the readiness of the lab report for despatch

Table 3 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at Central Forensic Science Laboratories

S.No.	Lab Division	CFSL Chandigarh		CFSL Hyderabad		CFSL Kolkata		CFSL, CBI, New Delhi	
		CE	CP	CE	CP	CE	CP	CE	CP
1	Anthropology	NI	NI	NA	NA	NA	NA	NA	NA
2	Ballistics	883	16	340	Nil	135	03	100	02
3	Biology	482	35	948	153	1298	25	350	07
4	Chemistry	269	22	566	70	325	59	900	40
5	Computer forensics / digital forensics	230	34	132	42	43	22	150	05
6	Counterfeit currency	NA	NA	14 (Since 2006)	04	NA	NA	NA	NA
7	Documents	NA	NA	NA	NA	NA	NA	120	84
8	Explosives	144	21	252	25	659	176	NA	NA
9	Fingerprint	NA	NA	NA	NA	NA	NA	309	05
10	Narcotics	1001	40	Under Chemistry	Under Chemistry	111	201	NA	NA
11	Photography	NA	NA	NA	NA	NA	NA	1250	35
12	Physics	303	12	202	05	297	153	1800	80
13	Polygraph	NA	NA	NA	NA	NA	NA	972	27
14	Serology / DNA	293	02	166 (DNA)	35	843/501	Nil/26	150	05
15	Toxicology	1210	102	3191	398	776	662	NA	NA
16	Voice identification	338	51	NA	NA	NA	NA	NA	NA
TOTAL		5153	335	5811	732	4988	1327	6101	290

Grand total of cases examined : 22053

Grand total of cases pending : 2684

CE : Cases examined ; CP : Cases pending ; NI : Not indicated;

NA : Not available / applicable

Table 4 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at Government Examiners of Questioned Documents

S.No.	Lab Division	GEQD Hyderabad		GEQD Kolkata		GEQD Shimla	
		CE	CP	CE	CP	CE	CP
1	Computer forensics / digital forensics	1221	75	62	15	104	40
2	Documents	4385	124	3267	134	2391	123
TOTAL		5606	199	3329	149	2495	163

Grand total of cases examined : 11430

Grand total of cases pending : 511

CE : Cases examined ; CP : Cases pending

Figure 3 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at CFSL, Chandigarh

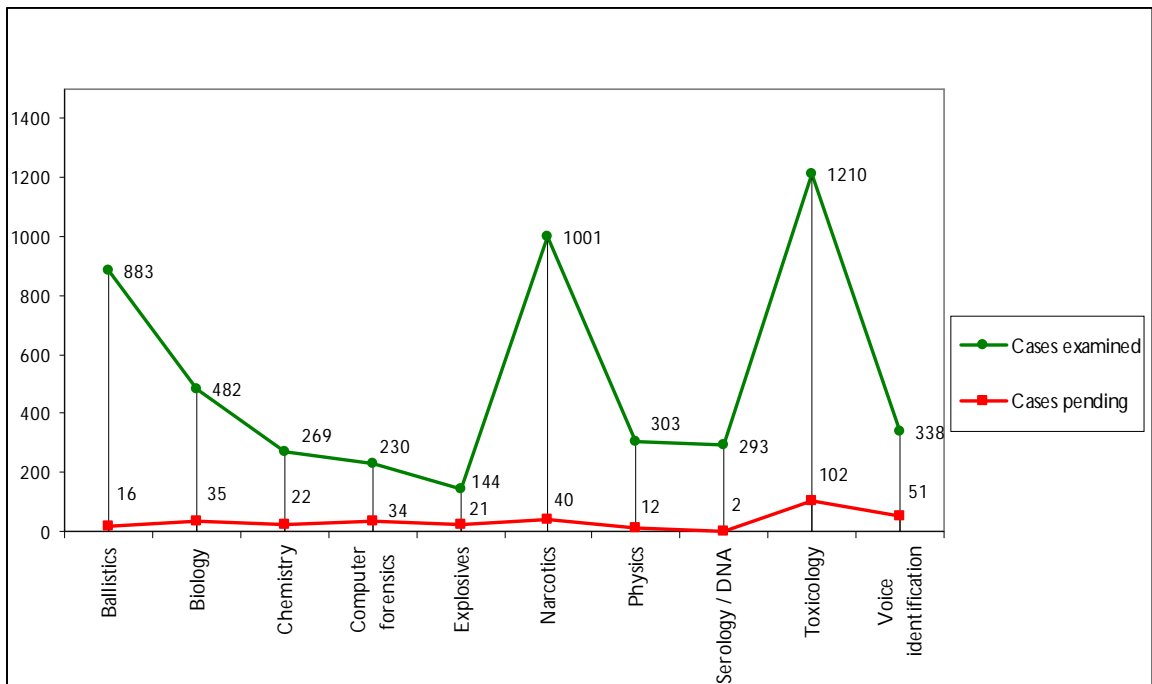


Figure 4 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at CFSL, Hyderabad

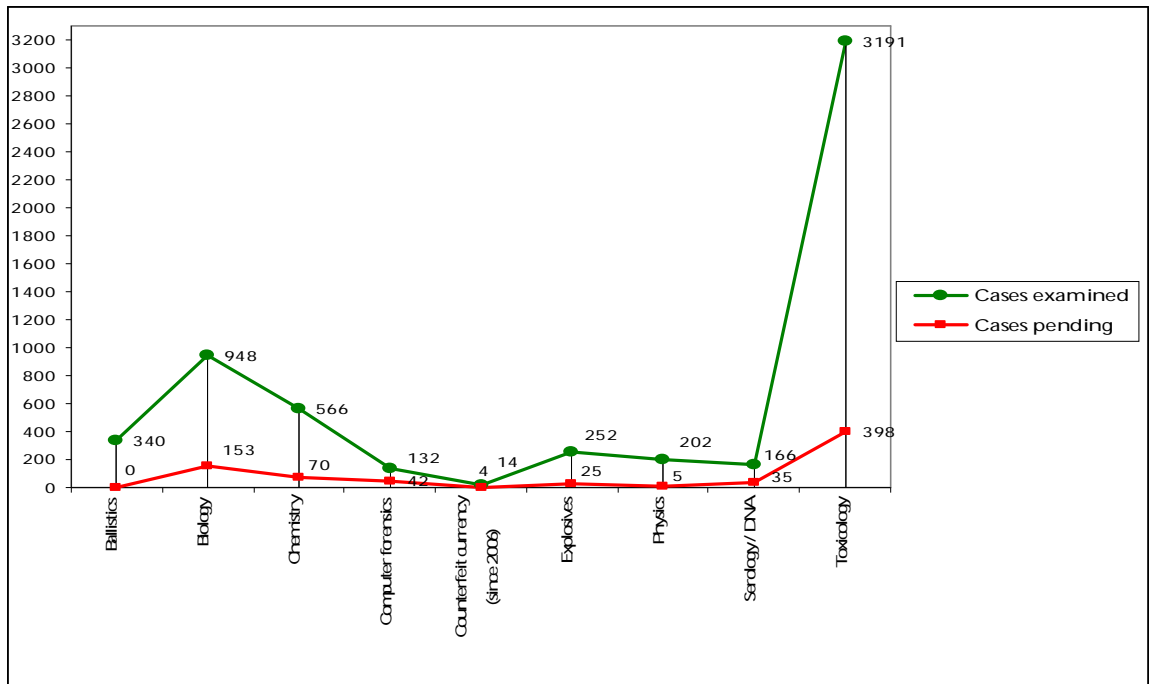


Figure 5 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at CFSL, Kolkata

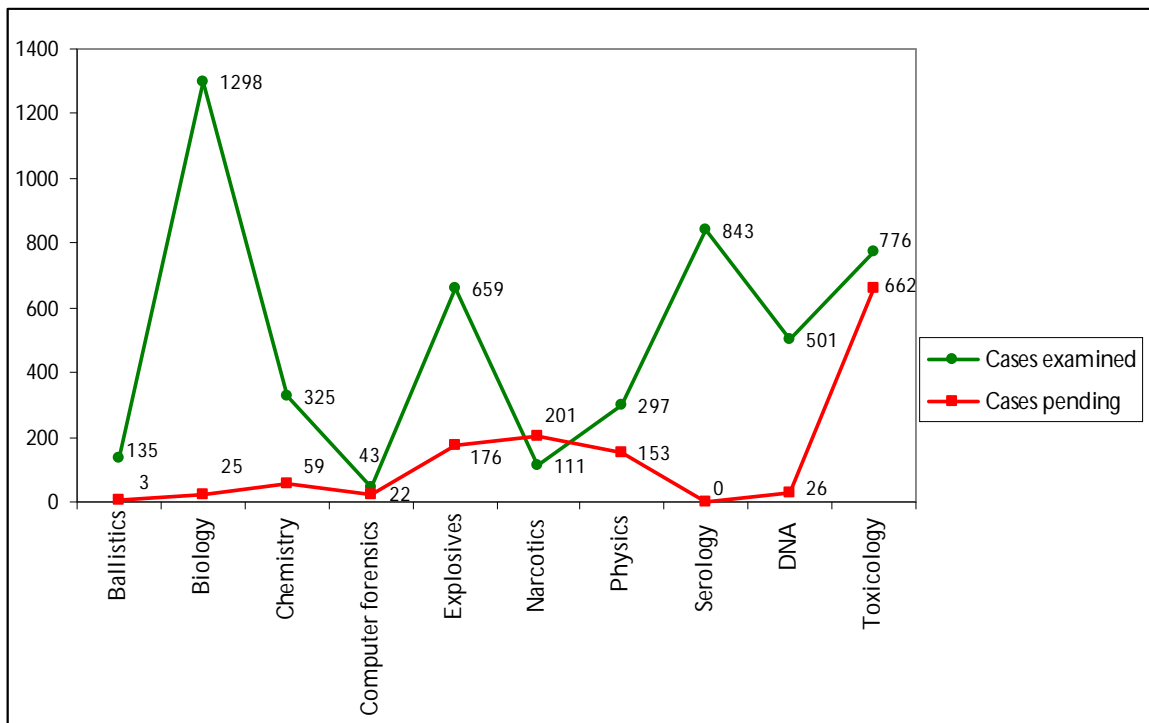


Figure 6 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at CFSL, CBI, New Delhi

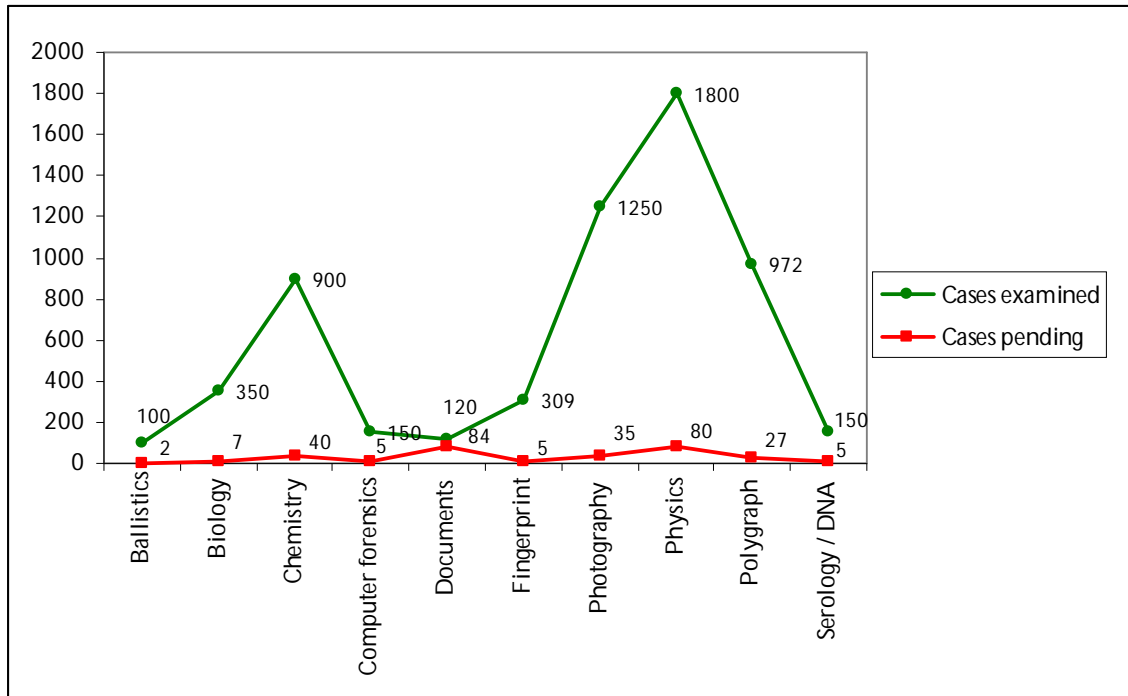


Figure 7 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at GEQD, Hyderabad

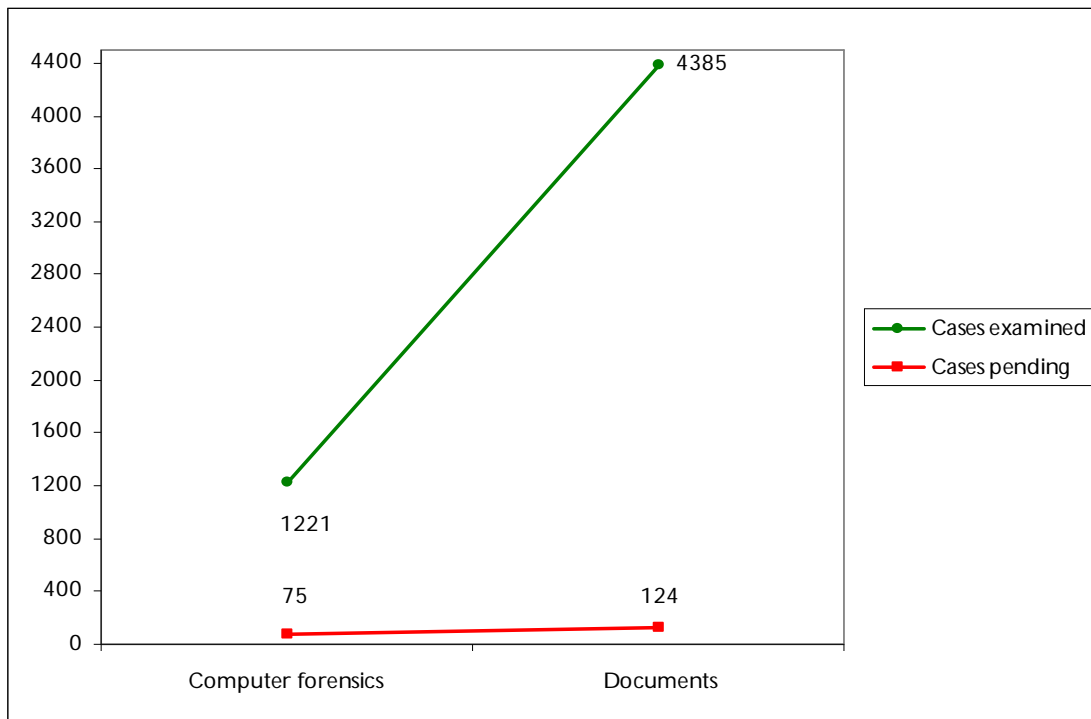


Figure 8 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at GEQD, Kolkata

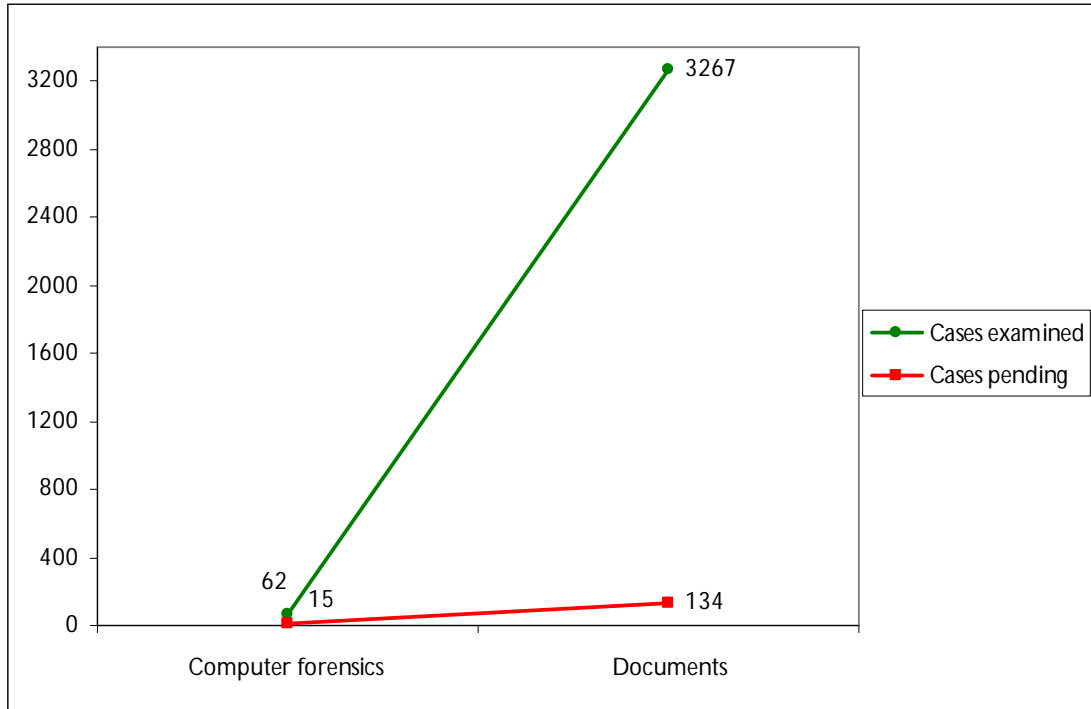


Figure 9 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at GEQD, Shimla

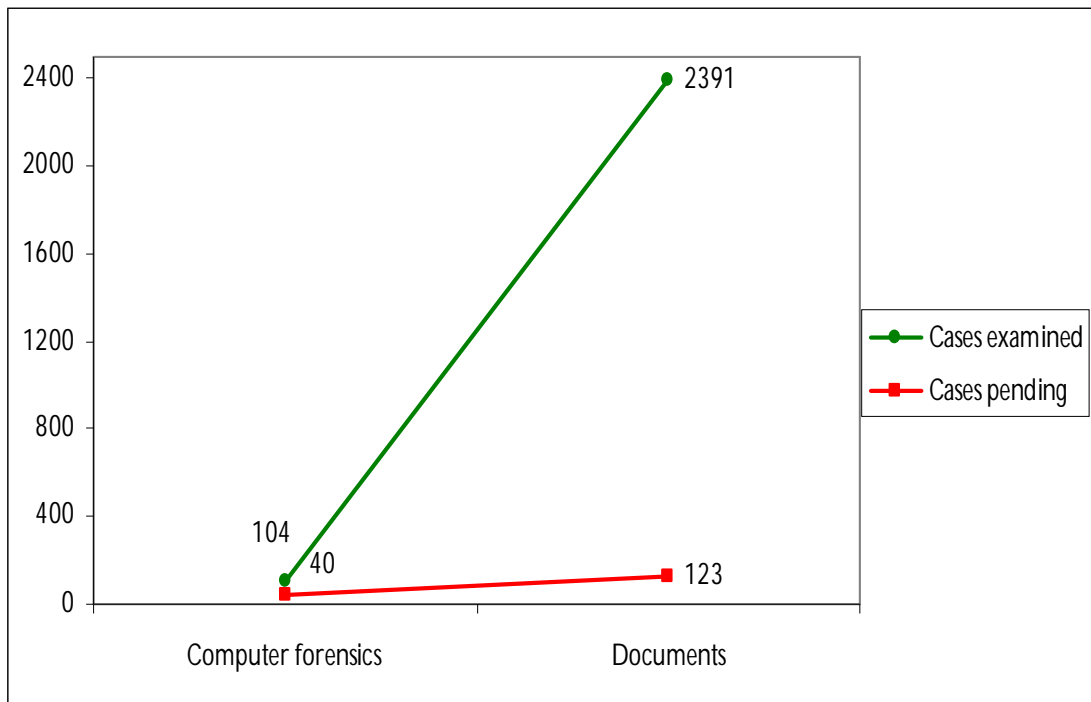


Table 5 : Infrastructure – ready reckoner on Central forensic establishments

S.No.	Central forensic organization	Building / space	Security/ functional and aesthetic fixtures	Equipments	Human resource	Library	Vehicles	Special facilities
1	Directorate of Forensic Science (Headquarters) New Delhi	Government Building, Shared / Acute Shortage	Moderate	SOE, SME	Acute Shortage	Nil	Shortage	Nil
2	CFSL Chandigarh	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Moderate	Shortage	Good
3	CFSL Hyderabad	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Moderate	Shortage	Moderate
4	CFSL Kolkata	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Moderate	Shortage	Moderate
5	CFSL, CBI New Delhi	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Moderate	Shortage	Moderate
6	GEOD Hyderabad	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Moderate	Shortage	Moderate
7	GEOD Kolkata	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Moderate	No Shortage	Moderate
8	GEOD Shimla	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Shortage	Moderate	Shortage	Moderate
9	NAA unit Mumbai	Government Building, Shared / No Shortage	Good	No Shortage	Shortage	Good	No Shortage	Good
10	NICFS New Delhi	Government Building, Shared / No Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Good	No Shortage	Good
11	FS unit SVPNPA Hyderabad	Government Building, Not Shared / No Shortage	Good	SME, SSW, SHW	Acute Shortage	Good	No Shortage	Good
12	CFPB New Delhi	Government Building, Shared / Shortage	Moderate	SOE, SME,SSW, SHW	Shortage	Nil	Shortage	Nil

CFSL : Central Forensic Science Laboratory CBI : Central Bureau of Investigation NAA : Neutron Activation Analysis
 GEOD : Government Examiner of Questioned Documents NICFS : National Institute of Criminology and Forensic Science
 SVPNPA : Sardar Vallabhbhai Patel National Police Academy CFPB : Central Finger Print Bureau
 SOE : Shortage of office equipments SME : Shortage of modern scientific equipments
 SHW : Shortage of hardware SSW : Shortage of software

Forward looking steps have been taken by the DFS in the recent past by way of forensic modernization schemes, XI Finance Commission schemes and five-year plan schemes (including the 28 ongoing schemes under XI Plan to usher in three new CFSLs incorporating GEQDs, six CRFSLs, fifty two CMFSLs, databases for ballistics, DNA and counterfeit currency, modernization & strengthening of existing forensic units, networking and intramural & extramural research) [Ref 27] . Of more interest is the April 2010 visit of the Chief Forensic Scientist to FBI (USA) which has back at home triggered discernible governmental action for tools, training and tie-up [Ref 51]. Correspondingly personnel in the Central forensic establishments display commitment of high competence; in spite of being a frustrated lot due to long-standing manpower deficiency (Table 6) and promotion bleakness, they volunteer to take on extra case load and look for fresh forensics especially for homeland security. But for different designations and promotional avenues, the CBI's CFSL (New Delhi) is also similarly placed [Ref 55; Table 6.]

Table 6 : Staff position at Central forensic establishments

S.No.	Institution	Place	Sanctioned strength	Filled	Vacant	Additionally required	Total required
1	CFSL*	Chandigarh	107	54	53	66	119
		Hyderabad	126	63	63	52	115
		Kolkata	97	58	39	48	87
2	GEQD*	Hyderabad	57	41	16	298	314
		Kolkata	58	37	21	08	29
		Shimla	63	43	20	68	88
Grand Total			508	296	212	540	752

* Under the administrative control of Directorate of Forensic Science, MHA, GoI

3	CFSL** CBI	New Delhi	167	75	92	03	95
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** Under the administrative control of Central Bureau of Investigation, GoI

CFSL : Central Forensic Science Laboratory
 GEQD : Government Examiner of Questioned Documents

Nevertheless, in slight contrast, ".....the structure in these forensic institutions is very hierarchical, compartmentalized, insensitive, bureaucratic, and rigid (administratively as well as

operationally). Such organizational structure and culture is not conducive to the growth of science.....," as noted by the Scientific Advisory Council to the Prime Minister [Ref 49]. Faults appear to lie in:- (a) the vision and mission; (b) road-map for direction and growth (resulting in ad hoc overtures like having "polygraph" machine & facility with no sanctioned manpower for long); (c) constraints right from the mentoring leadership at the administrative headquarters down to the scientific enrichment at the operational laboratories [resulting in discordant pick up like "computer forensics" – practice by both the now – stand – alone units (CFSLs and GEQDs) under the single and very same DFS]; (d) organizational structure – flaw [like the laboratories of GEQD, headed by personnel equivalent to the Deputy Director (number two) cadre of CFSL, instead of being natural part of CFSL, remaining aloof]; (e) policy impoverishment (such as for recruitment & promotion, motivation, training and purchase); (f) human resource planning, management and development (resulting in burnout, attrition and a near break – down of the service's "back – bone"); and, (g) conduct aberrations [like short circuiting the proper channel for application / efforts to avail government – paid government – quota for MBA (understandably at GEQD, Hyderabad), and, using in publications etc the label "National DNA Analysis Centre" without any government notification to that effect (CFSL, Kolkata)].

Many other forensic facilities namely:- Central Finger Print Bureau (functioning under NCRB to maintain database and respond to match requests from States through hard copy prints),

State Finger Print Bureaux (serving the local police), and, Chemical Examiner's Laboratories (conducting forensic lab work) seem to have as of now inclination to upgrade, merge and unify with mainstream forensics. Yet another very important level playing field is forensic medicine (directly contributing to justice delivery) under constant distress of many shades irrespective of its classical preaching – cum – practising patronage by Health Ministries of the Centre/States (Ref 68 – 70]. Funding, strengthening and enlarging of this discipline are warranted in the genuine interest of criminal justice management and in the specific context of crime investigation. This gives an impression that Indian forensics would have to evolve as an integrated entity encompassing scientific, technological and medical services.

From the training perspective in order to enable forensic service personnel get properly inducted and keep abreast with the dynamics of science and its application, and also to sensitize various forensic end-users, the (GoI – MHA) National Institute of Criminology and Forensic Science (NICFS; New Delhi) has been conducting since 1972 variety of PG Diploma, Diploma, Certificate, Induction, Orientation, Refresher etc. Courses for target participants from all over India and from abroad. However, it is seen that beginning 2004- 05, NICFS has drifted from its core concerns by (misad)venturing to conduct full time M.Sc. (Forensic Science) Course at the expense of otherwise – ongoing forensic professional development / continuing education programmes (Table 7), that too with the already grossly depleted faculty strength (Figure 10). Worse is that thereby the Institute has generated a good number of

youngsters to join the hundreds of forensic science postgraduates already in the market remaining frustrated because of unemployment / contractual underemployment for a fixed wage of Rs. 5,000/- to Rs. 10,000/- per month. The navigation of NICFS therefore for more than one reason, calls for immediate damage control measures. Revitalization and transformation also need to be effected, as indicated by the Consultants, through their Interim Report to the Hon'ble Home Minister and deliberations thereupon [Ref 139 -141].

Forensic science education in India beginning with Sagar University in 1959 has attempted taking a near – exponential growth, with the result that there is mismatch between the pass outs and placement. Public funding as well as private financing afford umbrella to a multitude of forensic courses of different nomenclatures; there is also choice for modes: full time / part time / distance learning / on – line (Table 8). Attracted by the application novelty of forensics, some “knowledge pursuers” and many “job seekers” subject themselves to a spectrum of non-uniform regulations, curricula and syllabi which as a matter of fact appear to be of global standard. However the hitch is obvious in that much is desired in the imparting of education, say, the availability of teachers (number and competence), infrastructure (space, class rooms, laboratories, equipments, library, hostel), forensic exposure, and mission & objectives. Thus, it is time that forensic education is regulated in order to groom potential case work – ready analysts.

Table 8 : Bird's – eye view of capricious forensic education in India

S. No.	University / Institution	Certificate, diploma or degree offered (<i>FT / PT / DM / OL</i>)	Number of seats
1	Amity University Noida	(a) B.Sc.(H) (FS) - <i>FT</i> (b) M.Sc. (FS) - <i>FT</i> (c) Ph.D. (FS) - <i>FT</i>	NI NI NI
2	Asian School of Cyber Law Pune	Certificate (CC) - <i>OL</i>	NI
3	Bundelkhand University Jhansi	(a) PG Diploma (FS) - <i>FT</i> (b) B.Sc.(H) (FS) - <i>FT</i> (c) M.Sc. (FS) - <i>FT</i>	40 60 40
4	Department of Anthropology University of Delhi Delhi	Certificate (FS) - <i>FT</i>	NI
5	Dr. B. R. Ambedkar University Agra	M.Sc. (FS) - <i>FT</i>	15
6	Dr. H.S. Gour Vishwavidhyalaya Sagar	(a) B.Sc. (FS) - <i>FT</i> (b) M.Sc. (FS) - <i>FT</i>	10 18
7	IFO Forensic Standards and Research Delhi	Seven certificate courses (FS) - <i>DM</i>	NI
8	Intense Forensic Services India Pune	Eleven courses - <i>OL</i>	NI
9	Kurukshetra University Kurukshetra	M.Sc. (FS) - <i>FT</i>	20+ 5(additional)

Contd.

Table 8 : Bird's – eye view of capricious forensic education in India (*Contd.*)

10	Maharashtra Govt. Institute of Forensic Science Aurangabad	(a) PG Diploma (FS) - <i>FT</i> (b) B.Sc. (FS) - <i>FT</i>	40 50
11	NICFS (affiliated to Guru Gobind Singh Indra Prastha University, Delhi) Delhi	(a) Induction, refresher and awareness courses - <i>FT</i> (b) Certificate - <i>FT</i> (c) Diploma - <i>FT</i> (d) PG Diploma - <i>FT</i> (e) M.Sc. (FS) - <i>FT</i>	NI NI NI NI 26
12	Osmania University Hyderabad	M.Sc. (FS) - <i>FT</i>	NI
13	Panjab University Chandigarh	(a) M. Sc. (FS) - <i>FT</i> (b) Ph. D. (FS) - <i>FT</i>	NI NI
14	Punjabi University Patiala	(a) PG Diploma (FS) - <i>DM</i> (b) M.Sc. (FS) - <i>FT</i>	100 (in-service personnel) 16
15	Sam Higginbottom Institute of Agriculture, Technology & Science Allahabad	(a) Diploma (DOC / FP) - <i>FT</i> (b) B.Sc. (FS) - <i>FT</i> (c) M. Sc. (FS) - <i>FT</i> (d) Ph.D. (FS) - <i>FT/PT</i>	NI NI NI NI

FT : Full time *PT* : Part time *DM* : Distance mode *OL* : On – line
H : Honours Degree *FS* : Forensic Science *NI* : Not indicated *CC* : Cyber crime
DOC : Documents *FP* : Finger print

Another facet of Indian forensics is that private practitioners (some of whom may turn out to be *amicus curiae*), non – governmental enterprises and PPP ventures are already in the

arena; as a consequence prompt steps are required for regulating the profession as well.

Imperative

In the light of the foregoing observations on the contemporary forensic edifice, action is necessitated for redefining the vision , relisting the mission, relaying the road-map, renaming the organization, reengineering the structure, reviewing the policies, revisiting the strategy, regrouping the functions, revamping the infrastructure, refurbishing the procedures, reinforcing the academics, regulating the profession, repurposing the practice, and researching the futuristics especially to reach out to homeland security. Anticipated output should be quality driven forensic service delivered on time infusing accelerated credibility into the minds of clients namely triers of fact and the public / Society. Comprehensively consolidated single window service packages made available at locations across the country by Central forensic establishments would be role model for States / UTs to emulate; handholding gesture by the former would be an additional enabler for the present symbiosis and for the future co-evolution. With this backdrop, striking a balance between linear / stable bureaucratic path and nonlinear / dynamic scientific path, and, embarking upon policy imperatives for transformational changes, recommendations constituting Perspective Plan are given hereunder to enhance the knowledge service function of Indian forensics with specific attribution to Central forensic establishments.

Recommendations

A complete listing of the Consultants' recommendations follows. The full report includes background information and discussion. Implementation of the recommendations involves cost which is yes worth the cause.

Recommendation 1

The existing Directorate of Forensic Science (DFS) (MHA, GoI) should be renamed as Directorate of Forensic Service (DIFOSER) in order to widen its scope.

Recommendation 2

A separate Division / Section / Desk for forensic service ("FS") should be created within the administrative set up of MHA in order to enable fast coordination in decision making.

Recommendation 3

(i) Vision for DIFOSER should be:

Deliver forensic service with quality, timeliness and credibility to provide, protect and promote justice, peace and tranquillity.

(ii) Mission for DIFOSER should be:

- Standardization of robust and dynamic systems for scientific management and optimal operations of forensic service delivery

- Recruiting talent, minting professionals, and, motivating & retaining committed experts with continuing education
- Need based and proactive upgradation of infrastructure of all sorts for different arms of forensics
- Building, grooming and fostering strong forensic service base
- Ceaseless empanelment and deployment of problem – solving as well as futuristic forensics through research and development
- Encouragement and endorsement to regulation of forensic education, extension, enterprise and ethics

(iii) Evolutionary road – map for DIFOSER should be:

- Overhauling Indian forensic science, renovating as forensic service and strengthening - beginning August 2010; completion by Dec. 2010
- Creating practices and recombining operations [e.g., creating “Prints and Patterns” Division in every CFSL; incorporating “Document Examination” namely GEQD, in CFSL; phased transferring “Toxicology” to forensic medicine set up; inviting the CFSL (CBI) and CFPB (NCRB) to the fold of DIFOSER] - beginning August 2010; completion by March 2012
- Enlisting of and enriching with frontier forensics - ongoing; completion by August 2011

- Continuing the crusade for futuristic forensics - timeless
- Enacting the Forensic Act and implementing Forensic Council of India regulations - completion by Aug 2011
- Funding and fondling State / UT entities of forensic science, forensic medicine, finger print and chemical examination (approximate expenditure of Rupees two thousand eight hundred crores spread over seven years @ Rs. 400 crores per annum) - beginning April 2011; completion by March 2018
- Inviting and inducting the willing State / UT entities into the Central main stream forensics - beginning April 2018; continues
- Birth of Department of Forensic Service (DEFOSER), MHA, GoI - conceptualization April 2018; delivery by April 1, 2020
- Enlarging the scope by adding forensic technological and forensic medical services - April 2020 onwards
- Engaging new challenges including those from outer space (pertaining to physics, electronics, communication, exobiology, genomics, toxicogenetics, dirty nuclear bombs, etc) - timeless
- Entering a fresh horizon thro' transformation into an autonomous body (National Forensic Service Organization, NFSO) - by April, 2035

Recommendation 4

This is the foundational recommendation towards top down as well as bottom up reengineering of the **organizational structure** of DIFOSER, flow chart of which is given in ***Annexure –I***

with a blow up in ***Annexure – II***. For a practical ease, the elements are enumerated hereunder.

- (i)** Definition of portfolios, distribution of duties and satisfaction of clients should be in place supported and sustained by policy directions, programme advisories, manpower strengthening, infrastructure augmentation, knowledge acceleration and customer consultation.
- (ii)** The headquarters of the Directorate (DIFOSER) should continue to function from New Delhi but with immediate strengthening and upgradation in terms of space, science managerial strength, infrastructure, management network and other logistics.
- (iii)** The practice of retaining Director – cum - Chief Forensic Scientist as the Head should continue (with the additional prefix of “Scientist G” for meeting the ongoing Flexible Complementing Scheme (FCS) – requirement thereby allowing the flow for lower cadres as well).
- (iv)** One post of Scientist E- cum – Deputy Director and three posts of Scientist D – cum – Assistant Director should be created and filled immediately for posting at the headquarters. [The existing post of Senior Scientific Officer Grade I (Forensic Science) at the headquarters should be, without any financial commitment, converted into Assistant Director since these two posts carry the same pay band and grade pay; and then this lone cadre/post of SSO Gr. I (FS) in the entire forensic set up should be abolished.

Subsequently, the existing cadre of Senior Scientific Officer Grade II (CFSLs) should be redesignated as Senior Scientific Officer.]

- (v) At the headquarters, there should be three portfolio – clusters, namely (a) *Administration & Resources*; (b) *Service & Quality*; and, (c) *Training & Research*; each cluster (having two wings each) should be coordinated by one Assistant Director under the guidance of the Chief through the Deputy Director.
- (vi) Under the cluster "*Administration & Resources*," there should be two wings, namely (a) *Administration*; and (b) *Infrastructure & Human Resource Recruitment and Progression (HRRP)*. The "*Administration*" wing should be led by an Under Secretary (Finance) to Government, preferably a person retired in this cadre, on reemployment for five years and so on.
- (vii) For these wings and for the other wings under the remaining two clusters, there should be action:- (a) for assessing groups/subgroups, number & cadre of ministerial & allied staff and other logistics; and, (b) for making available the requirements thereof.
- (viii) "*Administration*" wing should deal with subjects covering: (a) Establishment; (b) Budget; (c) Purchase; (d) Five – year Plans and special Schemes; and, (e) Miscellaneous. "*Infrastructure & HRRP*" wing should deal with: (a) Building,

equipments, vehicles and other infrastructure (from headquarters to the field Mobile Labs); (b) HR recruitment and assessment; (c) HR motivation and welfare; (d) HR career progression; (e) HR grievance redressal; and, (f) Reserve List of Forensic professionals (RELIF).

(ix) “*Service & Quality*” cluster should have two wings, namely (a) *Services & Rapid Response Forensic Authority (RAREFA)*, and (b) *Standards & Quality*. In turn each of them should have two sub – wings: *Services* and, *RAREFA* should be two such sub-wings; “*Services*” should coordinate: all forensic services (SOC, analysis, court testimony etc including document examination and to – be – created “prints & patterns” examination), in- house R & D, in – house training, client feedback on every lab report and Forensic Stakeholders’ Consultative Committee (*FOSHCOM*). Each CFSL should have *FOSHCOM* comprising five members (representing local judiciary, prosecution, police, social welfare and laboratory) with three-year term, holding consultation / meeting every January and July. “*RAREFA*” should be a 24 x 7 networked rapid entity responding to emergency, evidence, hazardous materials and disaster, through the mobile and other seats of “*Services*” and by formation of ad hoc special groups; reconstruction of scene of crime / occurrence should also be under its purview. Both these sub-wings can in addition invite and utilize the services of those enrolled in RELIF, on mutually win-win terms.

"Standards & Quality" wing should have two sub-wings, namely (a) *Standards*; and (b) *Quality*; the former should procure and distribute authentic samples & reference controls, arrange validation of methods, bring out Standard Operating Procedures (SOPs) & Manuals, and coordinate outputs as discipline based guidelines through the formation of Scientific Task Forces (STFs). The *"Quality"* sub-wing should ensure proficiency testing (PT), good laboratory practice (GLP), quality audit and liaisoning of accreditation of Central / State / UT laboratories by NABL.

- (x) The two wings of the third portfolio – cluster *"Training & Research"* should be *"Training & Academics"* and *"R & D, e-Library & Intelligence."* Under the sub-wing *"Training"*, all non in-house training / induction / continuing education / continuing professional development courses and programmes in India and abroad should be dealt with, for forensic personnel of the Centre, States and UTs; there should also be sensitization / awareness sessions in forensic science for users like judiciary, prosecution and police. For this exclusive purpose, a National Forensic Academy (NFA) should be in place by renaming the existing National Institute of Criminology & Forensic Science (NICFS) after shedding its Criminology component which in turn may be appropriately taken care of by MHA. NFA should be under the administrative control of DIFOSER. Forensic Science Unit of SVP National Police Academy (Hyderabad) should also become

part / extension of the NFA. The second sub-wing "*Academics*" should focus on encouraging and endorsing regulation of forensic education and academia (by the herein proposed Forensic Council of India (FOCI), *Vide Annexure –III*), and coordinating the said Council's efforts to certify and re-certify forensic professionals.

"*R & D, e- Library & Intelligence*" wing should have three sub-wings. The first one "*R & D*" should act in matters pertaining to problem – solving & proactive research, product development, intramural & extramural research (IMR & EMR), project funding, crazy ideas grant (CRAIG), attracting external research funds, PhD – research fellowship, and grooming of the upcoming (India's heartland) CFSL at Bhopal into a national Centre for Novel Forensics (CENOFO). The "*e-Library*" sub-wing should be the nodal National Forensic Library at DIFOSER headquarters with state of the art facilities, wealth of hardcopies / softcopies of books, monographs, reviews, reports, proceedings and international & Indian journals, and high capacity congestion proof server for internet access to e-journals etc. by any genuine Indian forensic establishment. The third sub-wing "*Intelligence*" at headquarters should design, develop, maintain and update Forensic Information and Documentation Centre (FOSIDOC) by generating and obtaining relevant databases from forensic as well as from non – forensic sources, to share lead giving and prophylactic details with national intelligence agencies especially for homeland security.

(xi) In order to effectively steer DIFOSER for efficient service delivery within the framework of work vs time vs budget, guiding beacons should be available. At the helm, therefore, a five-member Policy Panel (POP) headed by a (retired) Supreme Court Judge should be formed for three-year term; others in POP should be (i) Vice President of the proposed Forensic Council of India – Member; (ii) Joint Secretary (MHA) (GoI) – Member; (iii) Joint Secretary (Fin) (GoI) – Member; and (iv) Director-cum-Chief Forensic Scientist – Member Secretary. POP should meet every January and July. Also there should be three Programme Advisory Committees (PACs) to advise the three portfolio – clusters. Each PAC (AR-PAC, SQ – PAC and TR – PAC) should have three members with three-year term and meet every April and October.

Recommendation 5

Since it has become important to **regulate forensic profession and the concomitant education and practice** in the country, an overarching statutory body, namely Forensic Council of India (FOCI) should be constituted for stipulation and oversight. Under this regulation, maintenance of Indian Forensic Registry and Certification & Re-Certification of forensic practitioners should also be taken care of. For the purpose an Act, the Forensic Act, should be passed by the Parliament which is enabled by the Constitution of India (*Vide* Entry 65 (c) of List I – Union List in the Seventh Schedule under Article 246).

Profile of the functions of the Council is sketched in ***Annexure – III***, which includes among others constituting a fund named “Indian Forensic Service Improvement Grant (IFOSIG) Fund” through the formation of a Special Purpose Vehicle (SPV) named “Indian Forensic Service Improvement Board (IFOSIB)”. As a supplement to the government’s efforts this Fund should be feasible by invoking Collective Corporate Social Responsibility (CCSR) of chambers of commerce and public sector and joint sector units.

The Council should also be able to fill the void of professional scientific Society and Journal.

Recommendation 6

The 1998 – ordered conceptually laudable reorganization of CFSLs as Centres of Excellence has in practice not done much good; hence such nomenclature as Centres of Excellence should be dropped paving way for re-positioning & strengthening of all forensic discipline services and associated cadres / numbers of staff, and for enthusing in-house / intramural R & D in every CFSL under DIFOSER.

Recommendation 7

There is no rhyme or reason for the stand – alone existence of the GEQDs (of DFS) especially considering among others the inherent forensics of document examination and administrative cost to the exchequer; therefore the establishments of the three GEQDs (Hyderabad, Kolkata and Shimla & its Chandigarh branch)

should be incorporated into the CFSLs of DIFOSER. [A good precedence in this context is CFSL (CBI), Delhi which has Document Division as well as Finger Print Division along with other Divisions.]

Recommendation 8

Road – map guided evolution of the Central forensic service looks for inviting to its environs the CBI's CFSL and the NCRB's CFPB. Meanwhile in order to have a benefit driven priming, new Division named "Prints and Patterns" should be created (with the requisite infrastructure, staff etc) in all CFSLs, that would enable case work examination as well as database establishment in variety of biometric features (finger print, foot print, lip print, iris pattern, etc) and inanimate indices (foot wear print, tyre impression, tool mark, counterfeit, etc).

Recommendation 9

Forensic Medicine (Medico Legal) expertise in Health Ministries' field arms such as medical universities / institutes / colleges and hospitals (as also exclusive facility like Medico Legal Institute (Bhopal) of Madhya Pradesh Government's Home – Police Department) significantly and uniquely serves the cause of criminal justice essentially by ascertaining age, sex etc of subjects and cause & nature of injury / death and the like. But this important branch of knowledge service (indispensably sought after in the context of complicity of contemporary crimes, gender abuse and human rights) has been for long in doldrums, and should be rejuvenated by

enlarging, encouraging, emboldening and empowering (with fund). Addition of toxicology, forensic pathology, forensic odontology, clinical forensic medicine, polygraph, brainmapping and narcoanalysis should enlarge and embolden the forensic medical functioning. Encouragement and empowerment should be by liberal funding for refreshing, expanding and modernizing the infrastructure (mortuary, autopsy theatre, cold storage, CT scan, digital X-ray, other equipments and hardwares & softwares for the ongoing as well as for the add ons), special facilities, training, certification and accreditation. Disaster Death Forensic Team (DDFT) should also be formed at these expertise-nodes for swift action / coordination with DIFOSER's Rapid Response Forensic Authority (RAREFA) and National Disaster Management Authority (NDMA). RAREFA and DDFT should undergo training in Interpol Guidelines for Disaster victim Identification.

- (i)** Without any monetary expectation from (Union / State / UT) Ministry of Health and Family Welfare (MoHFW), MHA should administer grants for the next seven to ten years to improve forensic medical practice in India.

- (ii)** Units of toxicology, polygraph (lie detection), brainmapping [brain fingerprinting; brain electrical oscillation signature (BEOS); brain electrical activation profile (BEAP)] and narcoanalysis existing with CFLs / FSLs should be relocated at FM set up in a phased manner within the next two to three years.

Recommendation 10

Indian Forensic Service Improvement Grants (IFOSIG) Fund enabled by the proposed Forensic Council of India should be annually handed over to the MHA for pooling with its own exclusive funds to administer grants (through the DIFOSER) to enable capacity building and improve quality, timeliness and credibility of forensic service delivery by the 28 States' / 7 UTs' outlets of forensic science, forensic medicine, and finger print; the apportionment of grants in each State / UT should be as 40 % (FS), 50 % (FM) and 10% (FP) respectively. USA's "Paul Coverdell National Forensic Science Improvement Grant" programme administered by National Institute of Justice, made possible through an Act of 2000 (Public Law 106-561), by amending their Omnibus Crime Control and Safe Streets Act of 1968 is a good model for tailored adoption to IFOSIG particularly in terms of conditions for grant-applicant States, and external entities for fiscal / professional audit [Ref 134-138].

Recommendation 11

For a meaningful metamorphosis DIFOSER should in due course convince, invite and include in its precincts the forensic science laboratories, forensic medicine departments, finger print bureaux and chemical examiner's laboratories of all the States / UTs.

Recommendation 12

- (i)** DIFOSER's policies relating to human resource (recruitment, assessment, motivation, and Flexible Complementing Scheme – in situ promotion etc), purchase, autonomy and financial power delegation should be framed immediately in the lines available with Defence Research & Development Organization (DRDO) [Ref 90] and implemented.
- (ii)** Regarding DIFOSER's personnel categorization there should be as of now, three namely:-
 - (a) Central Forensic (Scientific) Service
 - (b) Central Forensic (Support) Service, and
 - (c) Central Forensic (Administrative and Allied) Service

[There should also be provision for the future Central Forensic (Technological) Service and Central Forensic (Medical) Service]
- (iii)** Wherever necessary, rules should be framed dovetailing the cadres concerned in accordance with the GoI – DoPT's guidelines.
- (iv)** Since fast track action is necessary for recruiting / promoting HR in the essential service set up of DIFOSER, the processes concerned should be as in the DRDO, and out of the purview of Service Commissions (like UPSC, SSC etc.)
- (v)** GoI is understandably considering relook and revision of policies and procedures for all S & T service providing agencies in India (like

DST, DBT, DRDO, ISRO etc); as and when new initiative becomes operational, DIFOSER should switch over immediately in the larger interest of its service, science managers and staff.

(vi) In the meantime there should be urgent action to delegate increased financial power to the leaders of DIFOSER as below.

- | | | |
|-----|---|-------------------------------------|
| (a) | Director – cum – Chief Forensic Scientist : | Up to Rs. 15 lakhs per transaction* |
| (b) | Director of CFSL : | Up to Rs. 10 lakhs per transaction* |
| (c) | Deputy Director (at the DIFOSER headquarters) : | Up to Rs. 5 lakhs per transaction* |

* under budget Heads relating to each of purchase, maintenance and repair

Recommendation 13

Scientific Advisory Council to the Prime Minister has noted: "... Even though the strength of police / paramilitary manpower in states has increased to meet the ever growing crime in country, the manpower position in the (forensic) laboratories has gone down both qualitatively and quantitatively. If this present state of affairs continues, the laboratories would be left with only skeleton staff, which would not be able to meet the given mandate..."[Ref 49];

this signals the imminent danger. It is therefore recommended that there should be by default continuing synchrony between the requirements (budget, space, scientists, staff, infrastructure, equipments, vehicles etc.) of forensic service and population growth / volume & pattern of crimes. Also agendas for Commissions dealing with judicial reforms, police reforms and human rights should include points on forensics.

Recommendation 14

Workforce, the backbone of forensic service is not in proper shape at present owing to manpower deficiency triggered overload and long stifled promotional chances; the latter is aggravated by the deputation mode filling of posts.

- (i)** It is therefore recommended that fast track special drive should be taken to (a) effect all promotions due and (b) fill all the 212 vacancies (Table 6) as per the existing rules and by reviving 107 posts abolished in 2008 [Ref 56]; and, alongside implement alignment with FCS (in situ promotion). Also such urgent steps are needed for the 92 vacancies with the CFSL (CBI), Delhi (Table 6).
- (ii)** Incidentally action should be initiated to drop the deputation mode filling of posts in DIFOSER.
- (iii)** There also need to be steps for assessing and creating additional posts required by the Central forensic establishments (540 for those under DFS; 03 for CFSL under CBI) (Table 6).

The Consultants are happy to record here that, based on their Interim Report, aggressive action has been kindly initiated by the MHA, GoI in the above regard (Ref 139-142].

(iv) Staff position at the forensic training – centric National Institute of Criminology and Forensic Science (NICFS; MHA, GoI), Delhi is very shaky. Thirty three (out of the sanctioned 51) posts, mostly in the higher rungs, are vacant for long (Figure 10); and, with a genuine concern for professional development, these posts should be filled forthwith as per the existing rules. However, deputation mode filling should not be resorted to.

(v) Forensic Science (FS) wing at SVP National Police Academy (NPA; MHA, GoI), Hyderabad is an important part of the Academy's training programmes frequently meant for senior level police brass. The FS wing since decades is having one sanctioned post each of Assistant Director, Junior Scientific Officer, Senior Laboratory Assistant, Junior Laboratory Assistant and Lab Attendant; of the five, three are vacant. This vacancy should be filled fast. In addition, for inculcating varied physical, chemical and biological forensics that too upon police leadership, there should be more cocurricular activities and commensurately more seasoned cadre posts.

(a) Therefore there should be creation and filling of the following (additional) posts for FS wing of NPA:-

Deputy Director	-	One
Assistant Director	-	Two

Junior Scientific officer	-	Two
Senior Laboratory Assistant	-	Two
Junior laboratory Assistant	-	Two
Laboratory Attendant	-	Two

(b) As spontaneously endorsed by the Director: NPA [Ref 32], for emulating and improving the Punjab model of FS – Police combine against terrorism (*Vide **Appendix 14***), there should be a new activity named “Forensic Product(s) Development” Cell within the ambit of FS wing.

(c) Also there should be a contemplation to amalgamate the FS wing of NPA with the proposed National Forensic Academy (NFA) for administrative control while continuing the NPA’s operational control.

(vi) In a related context it is noted that the Central Finger Print Bureau (CFPB, under NCRB) is now busy with institutionalizing a new networking exercise called “Crime & Criminal Tracking Network and Systems” (CCTNS) as E-governance mission mode project [Ref 141 – 142]. One of the basic requirements felt during this venture is additional manpower [Ref 23] and, therefore, it is recommended that at the CFPB the following additional posts be created.

Dy. SP	-	Four
Inspector	-	Ten
Sub Inspector	-	Ten

Head Constable	-	Six
PA / Steno	-	Four
Data Entry Operator	-	Six
Laboratory Attendant	-	Five

For infusing more science into the upcoming facility, for initiating & encouraging R & D especially to serve homeland security and for better intercommunication & interoperability of Automated Finger Print Identification / Information System (AFIS), (forensic) science graduates and post graduates may be preferred / recruited to fill the posts.

Recommendation 15

Work norms for case work unit and the composition of cadres in every such unit [Ref 44] should continue till Work norms per Expert is evolved. However, health hazards of different kinds like pathogenic viruses, bacteria, fungi, poisons, chemicals, solvents, vapours, sonic vibrations, uv radiation, nuclear radiation, etc are inherent in forensic work. "Health & safety" aspect of laboratory accreditation addresses this issue only minimally. Therefore there should be two pronged health care policy.

- (i) As recommended by the Sixth Central Pay commission and as accepted by the Government, the concept of Risk Insurance should be implemented as applicable to each and every employee of forensic establishments [Ref 91].

- (ii) Regular health checkup, prophylactic immunization, exposure monitoring, health conscious work ambience / procedures / gadgets and use of ecofriendly disposables should be adopted in order to nullify / minimize occupational afflictions.

Recommendation 16

Policy for human resource motivation should be reinvigorated to thwart attrition, retain expertise and achieve excellence; the resulting committed scientists & teams with sense of ownership and pride of productivity would be an asset. Therefore there should be action to initiate measures as below.

- (i) Recently upgraded / approved Award Scheme [Ref 43] listing one Life Time Achievement Award, three R & D Awards, four Meritorious Awards, and one Young Scientist Award should be enlarged to include two more Meritorious Awards (one for Forensic Engineering & Technological discipline and the other for Forensic Medical discipline).
- (ii) Other incentives offered presently [Ref 43] are Best Paper Award (for each discipline at All India FS Conference), Cash Award for Central forensic scientists publishing in international journals, and Best Crime Scene Management Awards for State FSLs. It is recommended that Best Paper Award should be extended to the disciplines of Forensic Engineering & Technology and Forensic Medicine.

(iii) There should also be new facets of motivation as given hereunder.

- (a) A lump sum one time payment of Rs. 25,000/- (Rupees twenty five thousand only) for relevant postgraduate and higher qualification acquired while in service
- (b) Share in reward money (prevailing in Customs, Excise etc services) in cases as appropriate
- (c) Spot Cash reward (with entry of Good Service in Records) ranging from Rs. 200/- to Rs. 1000/- for any good work (from janitorial to scientific leadership), to be given by Director of CFSL and / or by Chief Forensic Scientist
- (d) Reimbursement of payment towards annual subscription for one relevant scientific society and one relevant scientific journal
- (e) Reimbursement of fee towards Certification; permission on-duty to take up Certification – specific tests and lab sessions; and, consideration of Certification as enabler for promotion
- (f) Deputation to relevant training / professional development programmes in India and abroad

Recommendation 17

Restoration of scientific atmosphere in the Central forensic campuses may be in part possible by bridging the manpower gap as recommended thereinbefore; however lot more needs to be brought in for vibrancy, (vertical / horizontal / diagonal) interaction and internal communication.

Therefore in every CFSL, the following activities should be put back on track, or set in motion at once.

- (a) Sharing with colleagues the experience on return from SOC visit / court testimony / Conference etc / training
- (b) Weekly Group Discussion, among scientists in every Division on fixed / specified time (say every Friday, 4 pm) for review and strategy
- (c) Monthly Journal Club Meeting, with all scientists of CFSL (say, at 4 pm every first Wednesday of the month) to listen to and deliberate upon presentation – cum – analysis of two recent international publications [one presentation by a cadre from Senior Scientific Officer (SSO) to Director, and the other by a cadre from Scientific Assistant (SA) to Junior Scientific Officer (JSO)]
- (d) In – house “Forensic Newsletter”, as a four –page Quarterly, with brief / crisp scripts from within the

laboratory and through invited ones from judiciary, prosecution , police, forensic technology, forensic medicine and social welfare.

- (e) In – house training (periodical and / or ad hoc basis) in, for example,
- The Art and Science of Crime Scene Forensics (ASCRIS) :- for SA to SSO; twenty / batch / five days
 - The Art of Loving, Utilizing and Maintaining Scientific Instruments (ALUMSI):- for SA to SSO; four / batch / five days
 - Mock Court:- for SA to SSO; twenty / batch / one day
 - Brainstorming on “Why & How to Breath, Eat and Drink Forensics” (BREAD–F):- for all employees in the establishment’s pay roll, to instil / reinstil forensics into them; once a year, preferably during Forensic Day / Week celebration (December – January)

Recommendation 18

Landscape, building and **infrastructure** for scientific laboratory especially for forensics should have certain specifics, as well described by the National Institute of Standards and Technology (NIST) and the National Institute of Justice, USA [Ref 67]. However, forensic sharing / cramping / compromising that too in non – lab –

designed government office building is the order of the day in the Indian context. Except for NAA Unit (Mumbai), NICFS (Delhi) and FS wing of NPA (Hyderabad), the Central forensic establishments (including CFPB under NCRB) (Table 5) and majority of the States' / UTs' FSLs have this problem. However, of late, CFSL (Chandigarh) and CFSL (Kolkata) have achieved land acquisition for new construction.

- (i)** It is therefore recommended that each forensic establishment (starting from the DIFOSER headquarters at New Delhi) should have its own lab – designed premises (by taking clues from good global models such as the USA's [Ref 67]) incorporating among others the following.
- (a) Zones of perimeter security (including parking bays)
 - (b) Indoor access security
 - (c) Surveillance installations
 - (d) Case reception area
 - (e) Visitors' lounge
 - (f) Uninterrupted supply of power and water with auto stand – by
 - (g) 24 x 7 maintenance of electronic, electrical, mechanical and civil units, machines and gadgets

- (h) Ambience control (temperature / humidity / acoustics / suspended particulate matter)
- (i) Drainage / waste handling – disposal systems for solids, liquids and vapours of chemical / biological origin
- (j) Bomb hut
- (k) Ballistics test fire range (indoor, closed and stand-alone)
- (l) Ramp for vehicle (under chassis) examination
- (m) First – Aid kits
- (n) Fire fighting devices
- (o) Museum
- (p) Canteen / lunch – hall (operable in specific time)
- (q) Indoor game hall (operable in specific time)
- (r) Local area network (LAN) and wide area network (WAN)
- (s) Organizational information management system (indigenously developed)
- (t) Laboratory information management system (indigenously developed)
- (u) Touchless sensor based hand sanitizer dispensing devices
- (v) Transit apartments

- (w) Staff quarters
 - (x) Kids' play zone
- (ii) There should also be in the campus an equipped ever ready Rapid Response (Mobile) Forensic Laboratory vehicle.
- (iii) Knowledge service of the forensic kind should be actively supported / sustained by state of the art as well as e- enabled Library, and this should be integral part of the infrastructure. Each CFSL should have such modern library; they in turn should be linked to each other, to that of National Forensic Academy (NFA) and to the National Forensic Library at the headquarters of DIFOSER. In fact the library of NFA should have more of training related audio, video etc. updates.

Recommendation 19

Scientific **equipments** constitute the flagship that processes and mediates knowledge application for forensic interpretation. Laboratory infrastructure calls for discipline wise equipments, central instrument facility and continuing augmentation to meet case work increase as well as to introduce emerging areas. Operation and maintenance of instruments / equipments are of utmost importance that should go hand in hand with capacity building by appropriate training to working scientists, supplementable by manpower package in Annual Maintenance Contract (AMC). One can also contemplate withdrawal and

replacement cycles to ensure modernity and functionality of equipments.

- (i)** It is therefore recommended that (through non-Plan as well as Plan funds) there should be a continuing system within DIFOSER to align expertise and purchase (and operation & maintenance) of money worthy useful equipments / instruments.
- (ii)** It is also recommended that beginning April 1,2011 DIFOSER should prepare (budget – encompassed) inventory of scientific equipments completing seven years on or before March 31, 2012; action should be simultaneously initiated to organize logistics to purchase inventory enlisted items. Withdrawal and replacement measures would then be completed by March 31,2013. Once initiated such seven – year cycles would become an annual affair deservingly done. A precedence in this regard is available with (USA –California’s) Sacramento County District Attorney’s Forensic Service Laboratory where five year replacement schedule is practised [Ref 61].
- (iii)** In case of underutilized equipments there should be regional consolidation for optimal usage.
- (iv)** AMC for equipments should be entered into, immediately after the supplier’s warranty (? three years) period, for such duration so as to be fully functional for seven years/till withdrawal.

Recommendation 20

Procedures and processes in forensic practice need to be a blend of expertise, experience, excellence and advancement, to render quality service and garner global credibility. Therefore the following are recommended.

- (i)** DIFOSER should form discipline wise Scientific Task Forces (STFs) (*Vide **Annexure – II***) in the lines of Technical Working Groups (TWG) / Scientific Working Groups (SWG) of USA, to deliberate and bring out Standard Operating Procedures (SOP) / Manuals. Such exercise should naturally take care of application of recent S & T developments in evidence search / location/ collection / analysis and court testimony; for example: kits, robots, high – throughputs, automation, video teleconferencing. STFs should also review and revise such documents (already in use as well as those forthcoming for new and emerging areas) every three years, so that Good Laboratory Practice (GLP) prevails.
- (ii)** There should be mandatory Certification (and quadrennial Re-Certification) of forensic professionals by the proposed Forensic Council of India (FOCI; *Vide **Annexures I and III***).
- (iii)** Every forensic laboratory should be accredited by National Accreditation Board for Testing and Calibration Laboratories (NABL) accompanied by the stipulated upkeep and surveillance.

(iv) Forensic Sciences Department of Government of Tamil Nadu is unique in the country in that it receives by default a copy of judgement in every case wherein the laboratory report has been taken on the court file. There is otherwise no system in the Indian forensic context to receive regular feed back from the service users. Therefore it is recommended that :-

(a) Every laboratory report / opinion should be accompanied by two copies of standardized Feedback Format (model, *Vide Attachment – C*) requesting the prosecutor / counsel and the investigation officer / police to fill and return.

(b) Appropriate request / direction / order of the Government should be sent to the Registrars of High Courts for their follow up instruction in turn to the Sessions and lower courts, to routinely mark / send to the laboratory a copy of judgements as and when pronounced in lab report-filed cases.

(v) Pendency is an international scourge in many spheres including courts; so is the case with Indian forensics more explicit in State / UT FSLs than in Central units. To avert “denied justice” caused by “delayed justice”, and to uphold credibility, timeliness should be adhered to in laboratory functions. Therefore, for elimination and avoidance of case backlog, the following are recommended for the CFSLs of DIFOSER.

- (a) There should be periodical internal assessment of capabilities and self regulation assisted strategic amends.
- (b) Flexi – work weeks, additional shifts and overtime duty may be tried with projected targets for employee – scientists.
- (c) On convenient terms, senior retired scientists in the Reserve List of Forensic professionals (RELIF; *Vide Annexure – II*) may be invited to help in clearing pendency all by himself / herself and / or as a blend – group with younger forensic scientists led by the retiree.
- (d) Forthcoming debut of Public Private Partnership (PPP) in Indian forensics (Goa Government, DFS of MHA / GoI and Truth Labs) should be a model worth evaluating and emulating.
- (e) In order to avoid input of every item in every case into the laboratory, there should be awareness campaign (on the benefits of “optimal forensics” in contrast to “ritual forensics”) in all possible forums targeting investigation officers, medical officers, prosecutors, lawyers, judiciary, insurance firms and media.
- (f) Time management for more availability of analysts in the laboratory should be accomplished by requesting officials in the crucial chain of justice administration to routinely take on file the laboratory report under the amended Section 293

Cr. P.C. and summon personal appearance of experts only in situations of absolute need.

(vi) Fragmented picture of forensic landscapes in the country warrants functional integration and synergy. Some ongoing efforts have been given reinforcement by XI Plan schemes [Ref 27]; however it appears that more thrust is needed to curtail sympatric isolation. Basically attitudinal change among the Central forensic scientists and enlightened involvement by States' / UTs' FSLs are to be induced. The following recommendations form the platform of national matrix for application in conventional forensics and for utility as forensic intelligence to serve homeland security.

- a. Integrated ballistic information system (IBIS) database has been in place for few years at CFSL, Chandigarh with correlation e-server and data acquisition station; the interacting ones are two CFSLs (Hyderabad and Kolkata) and one State FSL (Mumbai) that have data acquisition station. Gujarat State FSL has its own full fledged IBIS set up but without any obvious co-participant. Ways and means should therefore be devised by DIFOSER to invite all the State / UT FSLs and introduce them to the joy of active participation in pooling & sharing of ballistic data with the nodal base at CFSL (Chandigarh); this lab in turn should have strengthened relationship with the DRDO's Terminal Ballistics Research Laboratory (TBRL; Chandigarh).

- b. Thenceforth it should be easier that similar arrangements fall in place for the DNA database node at CFSL, Kolkata which on its part is expected to have extended relationship with the Centre for DNA Fingerprinting & Diagnostics (CDFD; Hyderabad).
- c. Likewise the not-much-grown Bomb database at CFSL, Hyderabad (interacting with National Security Guard, NSG) looks for grooming and participatory patronage.
- d. Another attempt at CFSL, Hyderabad on chromatographically resolvable geographical indicators database for opium requires attention; under XI Plan, its NAA Unit (at BARC, Mumbai) is pursuing this through isotope tracking [Ref 27]. Interaction with Narcotics Control Bureau (NCB), and involvement of all the Indian FSLs are however necessary
- e. Organized take off in the XI Plan of data repository for counterfeit (Indian/foreign) currency should further ensure discernible integration and synergy across the Indian forensic spectrum. Workable assistance from Reserve Bank of India should be a kindling enabler.

Recommendation 21

Research is founded on aptitude, focus, sacrifice and perseverance; then come motivation, incentives and awards. Researching should be a passion and a habit. R & D in Indian

forensics particularly in Central units has been rewarding with sustenance. Plan projects, “extramural” research projects and (PhD) research fellowship mode projects funded by Directorate of Forensic Science have been indulged in for solutions to case worthy problems, database constitution and sparse innovation. Regretfully all these appear to be tenable only at Central establishments thereby making everything intramural with no scope for out of the box fresh thinking; this can possibly lead to aggressive inbreeding of frogs in the well. Some relief however is visible in XI Plan schemes. Recommendations for reorienting forensic R & D are as follows.

- (i)** Encouragement should be given to every forensic scientist (and team) to pursue case work hyphenated R & D, intramural innovative R &D and Ph D – guiding R & D; such researchers should also bring in R & D project money from outside the bounds of DIFOSER through international and national funding agencies.
- (ii)** Current incentive of Cash Award of Rs. 2500/- on the eve of every publication in international journal should continue.
- (iii)** Extramural research projects should be funded relevantly and really out of DIFOSER environs at campuses having researchers of proven credentials.
- (iv)** The tenability of forensic directed Junior (/Senior) Research Fellowships (JRF) to young PhD aspiring talents, should be extended to other seats of knowledge beyond DIFOSER “homes”.

Research interests of the Fellows should be actively promoted by ensuring their fellowship terms on par with CSIR, e-library access and hostel accommodation. An efficiency bar, in the form of minimum of one publication in journal having impact factor not less than 1, may be introduced before elevating the JRF to SRF at the end of two years.

- (v) Forensic Science is amenable for off-the-beaten-track thoughts. In order to grab high risk generation next fancy concepts with possibility of far reaching benefits, a new venture called "Crazy Ideas Grant" (CRAIG) should be introduced by DIFOSER (with a budget allocation of Rupees 5 lakhs per annum); for this a Selection Committee of three members with three-year term should be constituted by inviting young science leaders from National Centre for Antarctic and Ocean Research, Indian Space Research Organization and Defence R & D Organization.
- (vi) Exclusive budget provision for foreign travel should be earmarked by DIFOSER to assist its employees and research fellows for chairing sessions, deliver talks and present research papers at scientific meetings.

Recommendation 22

DIFOSER should formulate a **Training** Policy for scientific, support and administrative & allied service personnel. While in-house brainbashing and selective external exposure would hone the latter two, more progressive approach should be adopted for

scientists –recruits and in service. A nodal academy of high competence should be available to translate this into action. The following recommendations are made towards this end.

- (i)** Indian forensic professionals (S&T, medical and finger print professionals serving Central, State and Union Territory governments) should undergo one foreign training every five years, and one course in India every three years. Stimulus package including funds etc for all, should come from the Central government.
- (ii)** Type of training should be as indicated below for different age groups.
 - (a) 25 to 40 years : Hands - on and Refresher training / Professional Development
 - (b) 41 to 50 years : Hands – on and Mid career Professional Development / Leadership / Vertical interaction
 - (c) 51 to 55 years : Vertical interaction / Leadership with modified doctrines / Institution building
 - (d) 56 years and above : Institution building
- (iii)** Fresh recruits should undergo induction training for not less than six months in Academy followed by six months on-the-job training in lab.

- (iv)** Completion of and performance in training courses and continuing education/professional development programmes should be advantages for assessment, promotion and certification.
- (v)** Criminology component of NICFS should be taken care of separately by MHA, and NICFS should become a full fledged National Forensic Academy (NFA) headed by forensic scientist under the administrative control of DIFOSER.
- (vi)** DIFOSER headquarters should move to this Sector -3, Rohini (Delhi) campus of about five acres with about 35% vacant land; besides, in Sector 5, there is understandably a three acre residential quarters campus with about two acres vacant area. Functional integration and expansion are therefore easy.
- (vii)** Scientist of operational CFSLs would be directly concerned with in-house training only; all other training courses in forensics, continuing education / professional development programmes for in service forensic personnel, capacity building measures and awareness courses for forensic clients like judiciary, prosecution and police should be the role-impregnated functions of NFA. As required, CFSL scientists would be invited as resource persons for (induction, refresher, orientation, mid career, Diploma, PG Diploma and awareness) courses conducted by NFA anywhere in India on its own and / or in collaboration with any forensic and non-forensic organization.

- (viii)** DIFOSER enabled foreign training should also be handled by NFA covering themes such as databases, emerging forensic areas, quality, standards, soft skills and leadership. This should be programmed by tie – up with agencies like FBI (USA), NIST (USA), RCMP (Canada), FSS (UK), NPIA (UK) and NRIPS (Japan).
- (ix)** For discharging its training mandate NFA should have MoU, for real time forensic adjunct lab facility, with CFSL (CBI), Delhi and CFSL, Chandigarh. This should be in addition to NAF's in-house SOC/laboratory/mock court etc infrastructure.
- (x)** Research at NFA and by NFA faculty would be in any forensic discipline as well as in professional development / training /continuing education technology.
- (xi)** Trainers – faculty of NFA should themselves undergo foreign training once in every three years.
- (xii)** NFA should also explore the possibility of getting accreditation under the Quality Council of India umbrella.
- (xiii)** A related recommendation is that NICFS should keep its MSc (Forensic Science) Course in abeyance as this out-of- the-main-aim exercise at the expense of prime objectives has already caused significant damage to forensic professional development programmes of NICFS.

Recommendation 23

Forensic **education** dawned in 1959 at Sagar University (Madhya Pradesh) and is in zenith with the most recent (2009) first of its kind Forensic University in Gujarat. The foregone half a century has yielded an interplay of courses from Certificate to Master's offered by variously funded Universities and private entrepreneurs. Considering the complexity of several contemporary issues in forensic education, the Consultants recommend its regulation by constituting a statutory autonomous body Forensic Council of India (FOCI) through a Forensic Act by the Indian Parliament (*Vide **Annexure – III***).

Recommendation 24

Employment of conventional, emerging and futuristic forensics for **homeland security** is of urgent concern in the face of global, external and internal threats. The following seventeen areas highlighted in **Appendices 1 – 17** are therefore strongly recommended for aggressive pursuit / induction.

- | | |
|-------------------------|---|
| 1. Nuclear Forensics | 10. High – throughput DNA Sequencing & Genotyping |
| 2. Image Processing | 11. Microbial Forensics |
| 3. Cell Phone Forensics | 12. Forensics against Narco – terrorism |
| 4. Digital Forensics | 13. Forensic Intelligence |

- | | | | |
|----|---|-----|---|
| 5. | Network Forensics | 14. | Coordination between Forensic Intelligence & Police for Innovation (Punjab model) |
| 6. | Speaker Recognition | 15. | Terror through Firearms / Ammunitions : Lessons from Punjab |
| 7. | Photo –fit Portrait | 16. | Terror through Explosives : Lessons from Punjab |
| 8. | Biometrics | 17. | Terrorist Funding ; A Probe from Punjab |
| 9. | Automated Fingerprint Identification System | | |

The Consultants are happy to record here that based on their Interim Report, positive steps have been kindly initiated by the Government [Ref 139-142].

Recommendation 25

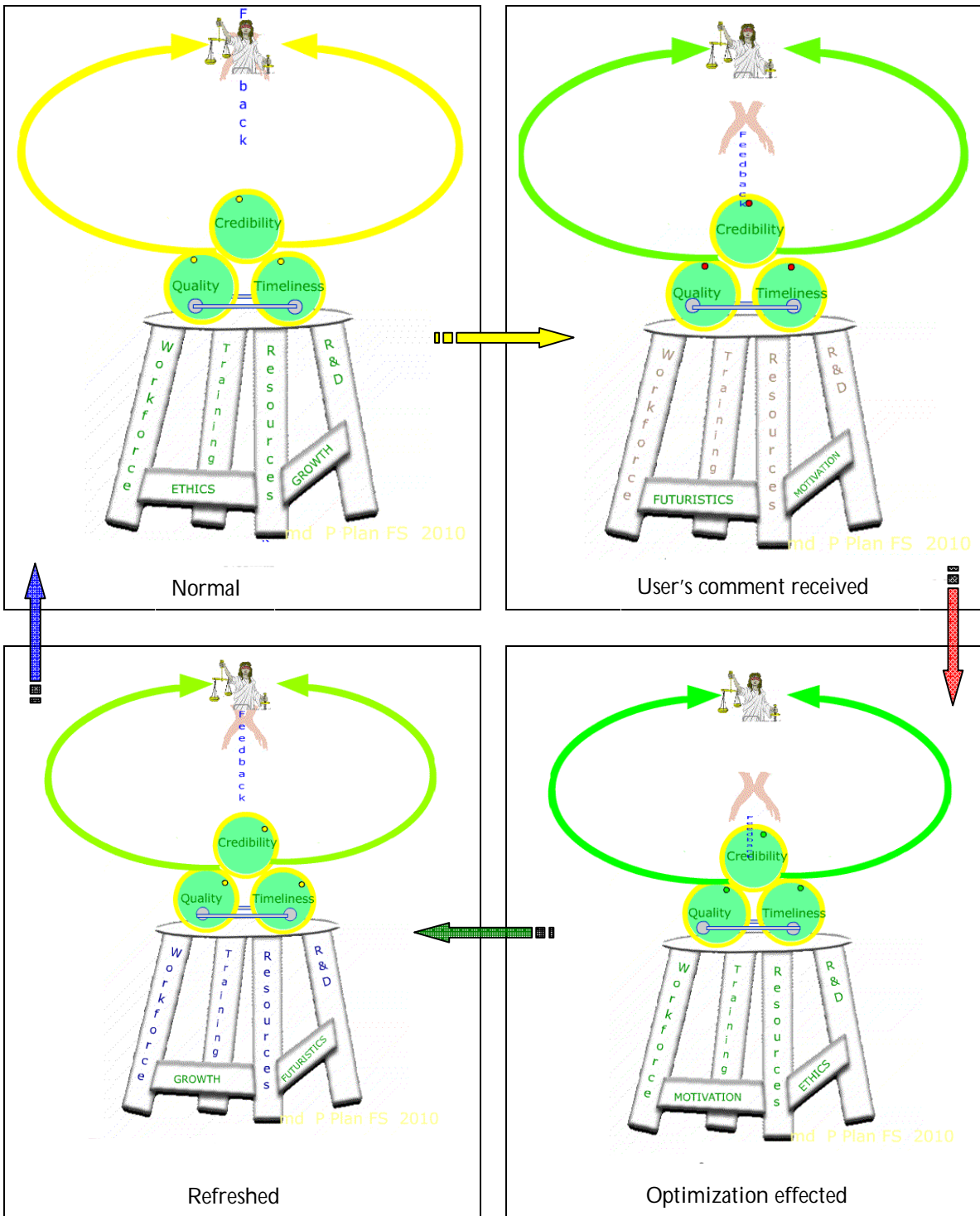
Hitherto uncovered **miscellaneous** aspects of forensic sector relate to pertinent Acts / Code, forensic awareness among judiciary and police and accreditation status of laboratories. The following recommendations are made in these respects.

- (i) Steps should be taken to amend Section 45 of Indian Evidence Act, Section 293 of Criminal Procedure Code and Section 79A of Information Technology Act, as detailed in **Annexure – IV**.

- (ii)** There should be measures to increase the level of awareness among forensic users (judiciary, police...), such as :-
- (a) Awareness courses at NFA, CFSLs, judicial academies, police academies, directorates of prosecution and bar council
 - (b) Forensic participation in Zonal, State and National Police Duty Meets
 - (c) Regular mailing of (CFSLs' in-house) Newsletters to the forensic customers
 - (d) Inviting their scripts for inclusion in such Newsletters
 - (e) Inviting their informal participation in CFSLs' Monthly Journal Club Meetings, and
 - (f) Vibrant deliberations at meetings of the CFSLs' Forensic Stakeholders' Consultative Committees (FOSHCOM).
- (iii)** All the Central forensic establishments have been accredited by NABL; State / UT forensic establishments should also fall in line immediately.

Having made the recommendations, the Consultants are happy to present here a figurative representation of indigenously designed / animation enabled elements of forensic service ([Figure O](#)).

Figure O : Elements of forensic service



1. INTRODUCTION

1.1. The status

Forensic Science, an all in one tool made of different faculties of knowledge, is an essential and efficient enabler in the dispensation of justice in criminal, civil, regulatory and social contexts. Historically our forefathers in India have practised forensic application in variety of forms. Present day Indian forensics, as chronicled, owes its genesis to several British – initiated ventures such as Chemical Examiner’s Laboratory (Madras, 1849), Anthropometric Bureau (1892), Finger Print Bureau (1897), Inspectorate of Explosives (1898), Office of Government Handwriting Expert (1904), Serology Department (1910), Foot Print Section (1915), Note Forgery Section (1917), Ballistics Laboratory (1930) and Scientific Section (1936) [Ref 57]. Having subsequently undergone clubbing / regrouping / spreading, as of now, there are 28 State / Union Territory Forensic Science Laboratories (State / UT FSLs) along with their Regional FSLs (32 RFSLs) and Mobile FSLs (144 MFSLs); they are mostly with the respective Home Department either directly or through police establishment.

During 1957, the first Central Forensic Science Laboratory (CFSL) was established at Calcutta, followed by the ones at

Chandigarh (1961; traceable to Lahore – origin of 1933) and Hyderabad (1965). In 1971, Neutron Activation Analysis (NAA) Unit came into operation at Bhabha Atomic Research Centre (BARC), Mumbai. Thus the Bureau of Police Research & Development (BPR & D) administered three CFSLs, including NAA, and three laboratories of Government Examiners of Questioned Documents (GEQD). Presently (since 2002 / 03) they are all under the Directorate of Forensic Science (DFS; MHA, GoI); CFSL, Hyderabad has in its fold the NAA Unit and GEQD, Shimla has a branch at Chandigarh [Ref 42].

Another CFSL functions under the Central Bureau of Investigation (CBI) at Delhi with a small branch at Chennai primarily serving the CBI. Besides, National Crime Records Bureau (NCRB) hosts the Central Finger Print Bureau, for maintaining crime related finger print database.

In addition to these practitioner – premises, Institute of Criminology and Forensic Science (now, Lok Nayak Jayaprakash Narayan National Institute of Criminology and Forensic Science, LNJN NICFS; MHA, GoI), with the prime aim of imparting training to in – service forensic related personnel, was founded in 1972 and is functioning at Rohini, Delhi. Besides, there is a Forensic Science Wing at Sardar Vallabhbhai Patel National Police Academy (SVP NPA; MHA, GoI), Hyderabad.

Further, under the Ministry of Health and Family Welfare (MoHFW, GoI), an Institute of Serology steered by Serologist &

Chemical Examiner to the Government of India functions at Kolkata and undertakes some forensic serological work over and above its major activity of producing antigens, antibodies etc. Across the country there are also several State / UT Finger Print Bureaux (mostly under the police department's State Crime Records Bureaux), and couple of Chemical Examiner's Laboratories. Few State police detachments appear to have with them trained police personnel to examine disputed documents as urgency demands.

These apart, a particularly indispensable knowledge – pillar enabling justice delivery is the medico – legal (also known as medical jurisprudence / forensic medicine) set up in the ambit of Central / State / UT Health Ministries' institutes, colleges and hospitals to practise clinical forensic medicine, ascertain age / sex etc of subjects, perform autopsy and opine on the cause and nature of injury / death; Madhya Pradesh Government (Home – Police – Department's) Medico Legal Institute (Bhopal) and, to certain extent, some non-governmental universities and corporates are also in this web.

Then come the freelance (often self – proclaimed) "Experts" who are available for a fee. The more recent development is that limited or comprehensive forensic service facilities have sprung up in the non – governmental private sector with or without accredited capability; and, public private partnership (PPP) is on the anvil. Furthermore there are now several academic campuses, public funded or otherwise, offering numerous courses in forensic and allied

disciplines; the latest in the field is the exclusive Forensic University in Gujarat.

The field reality is that while the same Code of Criminal Procedure, (Indian) Evidence Act and (Indian) Penal Code apply to all the citizens of India, forensic services accorded to the different population segments by the various delivery units of the Union, State and UT welfare governments, however, differ owing to gradients of professional (training) development, procedures & processes, external exposure, equipment etc resources, enabling logistics and service conditions. The scene also represents inter – regional variations with respect to the population size, and the volume and nature of crimes.

1.2. The study

At this juncture, a landmark shined in Indian forensics when the Hon'ble Minister for Home Affairs, Government of India declared the year 2010 as the Year of Forensic Science. In close pursuit, the Secretary to Government, Ministry of Home Affairs (MHA), Government of India (GoI) spoke over phone [Ref 1] and the Special Secretary sent inviting letter in mid – January 2010 so as to engage us both (Dr. Gopal Ji Misra and Dr. C. Damodaran) as Consultants to carve out Perspective Plan for Indian Forensics in a six months – time – bound mission – mode [Ref 2]. Salient features for the study were indicated as :-

- Organizational structure
- Strategy for development
- Plan for the future of forensics
- Personnel policy
- Human resource development
- Technology & manpower gaps
- PG Diploma and M.Sc. Courses in forensic science
- Emerging key areas
- Accreditation of forensic laboratories
- Other related issues.

Subsequently an e-mail letter from MHA in Feb 2010 gave a detailed version of the Terms of Reference for the exercise highlighting tasks pertaining to :

- (F) Infrastructure
- (G) Procedures and processes
- (H) NICFS and forensic academia
- (I) Organization
- (J) Miscellaneous.

There was also mention of the anticipated output, providing strategy and action plan, in the form of an interim report (within April 30, 2010) followed by the Final Report (within July 31, 2010) [Ref 3]. Besides, on Feb 8, 2010 the Consultants had the privilege of listening for quite long to the Hon'ble Home Minister, GoI who was explicit in his serious concern towards Indian forensics and his pragmatic commitment to refurbishment. He also elaborated on the needs of homeland security, and pointed out issues relating to forensic organization, technology, human resource, training, recruitment & promotion, and mis – match between M.Sc. (Forensic Science) pass outs and placement. The Minister's mandate was that a Perspective Plan for Indian Forensics incorporating action plan bullet points for implementation, primarily at the Central level, should be ready by July 2010 [Ref 4].

Adhering to the concepts of the circumscription, the Consultants (one at Chandigarh and the other at Chennai) embarked on swift action first by creating an e-mail id < pplanfs2010@gmail.com >. This was followed by letter (through postal certificate / fax / e-mail) to the major forensic players of the country including Central, State and Union Territory (UT) forensic establishments, priming them to the upcoming Perspective Plan – preparation [Ref 5]. Simultaneously efforts got underway to review published materials and to design survey – questionnaires which were finalized after the logistics – conscious clustering of both the Consultants (at Chandigarh) effected by the relocation of Dr. Damodaran's establishment from Chennai to Chandigarh.

Assimilation of contemporary data was then set in motion by focussing on 499 addressees representing direct and indirect forensic promoters and beneficiaries, with requests that varied relevantly in script (and the enclosed Questions, Tables etc.) but tallied uniformly in anticipating specific inputs. Letters in hard / soft copy for the purpose were sent to :

- Director – cum – Chief Forensic Scientist, Directorate of Forensic Science (DFS), MHA, GoI, New Delhi
- Directors of Central Forensic Science Laboratories (CFSLs) under DFS / CBI
- Government Examiners of Questioned Documents (GEQDs) under DFS
- Directors of State / UT Forensic Science Laboratories (FSLs)
- Director, National Institute of Criminology and Forensic Science (NICFS), MHA, GoI, New Delhi
- Head of Neutron Activation Analysis (NAA) Unit (of the CFSL, Hyderabad), Bhabha Atomic Research Centre (BARC), Mumbai
- Head of Forensic Science Wing, SVP National Police Academy, Hyderabad
- Director, Central Finger Print Bureau (CFPB), NCRB, MHA, New Delhi

- Director Generals of Police (States)
- Director General, Bureau of Police Research and Development (BPR & D), MHA, New Delhi
- Director General, National Crime Records Bureau (NCRB), MHA, New Delhi
- Director, SVP National Police Academy, Hyderabad
- Registrar General (Supreme Court) and Registrars of High Courts.
- Directors of Police Academies / Principals of Police Training Colleges
- Directors of Judicial Academies
- Directors of Prosecution
- Presidents / Secretaries of Bar Councils
- Presidents / Secretaries of Advocates' Associations
- Retired / senior forensic scientists
- Serologist to Government
- Chiefs of Chemical Examiner's Laboratories
- Forensic Medicine Experts & Police Surgeons
- Chiefs of State Fingerprint Bureaux
- Officers of CBI, NSG, NCB, CISF and ITBP

- Deputy Controllers of Explosives
- Principals of Central Detective Training Schools
- Officers of Defence Services
- Officers of Customs & Excise Service
- Heads of academia [Universities / Colleges / Institutes] offering forensic science courses
- Head of Wildlife Institute
- General Managers of Banks

Copies of the communications concerned with enclosures as applicable [Ref 6 – 16] are provided in ***Attachments A- K***.

Decades – long experience of the Consultants and response from the above exercise formed the core material for analysis. Other relevant repositories for tapping included: archival and contemporary scientific literature, reports, reviews, internet, interviews, visits and tele interactions [Ref 17 – 138]. Information and data were then subjected to incisive comprehension, wherever possible with an eye for quantification.

1.3. The observation

Revelations from the present study amount to a near reflection of the views of the contemporary Central forensic units (Table 9) and of the seasoned / retired forensic scientists of the country (Table10). The elders have identified irritant maladies and

indicated balmy remedies; and, the
contemporaries have provided incisive logistic inputs.

Table 9 : Some forensic logistics, as viewed by Central forensic establishments

S.No.	Operation	CFSL Chandigarh	CFSL Hyderabad	CFSL Kolkata	CFSL, CBI New Delhi	GEOD Hyderabad	GEOD Kolkata	GEOD Shimla
1	All forensic scientists may be enthused for R & D work	Yes	Yes	Yes	Yes	Policy matter	No comment	Policy matter
2	"Centres of Excellence" concept for CFSLs needs to be dropped.	Yes	Yes	No	Yes	Policy matter	No comment	Policy matter
3	One CFSL to be identified as nodal centre for each activity given below :- a) Proficiency testing b) Standard Operating Procedures c) Standard Reference Materials d) Accreditation e) Certification and re-certification	Yes	Yes	Yes (Not applicable for accreditation, certification and re-certification)	Yes	Yes	No comment	Yes
4	Deputation – mode of filling of posts to be dispensed with	Yes	Yes	Yes	Yes	Policy matter	No comment	Policy matter
5	More and better awards and incentives needed to boost HR morale	Yes	Yes	Yes	Yes	Policy matter	No comment	Policy matter
6	Intra-unit Weekly Group and Journal Club Meetings etc. are required for development of optimal scientific ambience	Yes	Yes	Yes	Yes	Policy matter	No comment	Policy matter
7	Bench-marks for scientific auditing/ accountability/ performance appraisal of scientists and laboratories need to be identified and implemented	Yes	Yes	Yes	Yes	Policy matter	No comment	Policy matter

Table 10 : Indian Forensics - - - malady and remedy, as viewed by senior / retired forensic scientists

S.No.	Feature	Malady	Remedy
1	Infrastructure (building & space)	Inadequate space in most FSLs and RFSLs	FSLs and RFSLs should be given adequate space and infrastructure.
2	Infrastructure (vehicles)	Most labs don't have transport vehicles.	One car for the Head of the lab, one mobile forensic vehicle and one for the staff are required.
3	Infrastructure (equipments & technology gaps)	Advanced equipments and upgraded hardwares and softwares are not available.	<ul style="list-style-type: none"> • New and advanced equipments for better delivery of forensic service are needed. • Advanced techniques and softwares are needed to meet the challenges of emerging areas.
4	Infrastructure (library)	State FSLs have poor library facility.	<ul style="list-style-type: none"> • Central establishments need upgradation in library. • Adequate funds are needed for States for developing good library facility with regular upgradation. • e-library subscription is necessary for e-books / journals
5	Infrastructure (other aspects)	Special facilities like Bomb hut, vehicle raising, internal firing range etc are needed for most labs; security and aesthetic facilities are also required.	<ul style="list-style-type: none"> • All special and required facilities should be created and developed for regular case work examination. • 3-tier security and aesthetic facilities must be provided.
6	Human resource (scientists) (number)	<ul style="list-style-type: none"> • Inadequate manpower in all labs including Central forensic establishments and the State forensics. • Posts are lying vacant 	<ul style="list-style-type: none"> • Sanction of manpower as per work load should be done on fast track • Vacant posts should be filled under permanent basis.

Contd.

Table 10 : Indian Forensics - - - malady and remedy, as viewed by senior / retired forensic scientists (*Contd.*)

		<p>and not filled for long.</p> <ul style="list-style-type: none"> • Deputation mode of filling is a constraint for filling regular posts. 	<ul style="list-style-type: none"> • Deputation mode of recruitment should be dispensed with.
7	Human resource (scientists) (qualification)	<ul style="list-style-type: none"> • Qualification variation for posts from lab to lab due to inclusion of various scientific subjects for same post • Forensic science post graduates are not provided Degree with area specialized. 	<ul style="list-style-type: none"> • Need is for unified qualification criteria for same post throughout the country in forensics. • Forensic science post graduate courses should be unified in the country and the Degree should be given in specialized discipline / subject concerned e.g., M.Sc. (Forensic Chemistry)
8	Human resource (scientists) [training : SOC to court testimony]	<ul style="list-style-type: none"> • Training courses need to be revamped. • For training abroad, forensic experts in State labs should also be included 	<ul style="list-style-type: none"> • Training in India – induction, refresher, certificate, diploma courses need to be made more purposeful. • Training abroad – Specialized training for senior scientists and procedural techniques and instrumental courses for mid career scientists should be formulated. • Training opportunity abroad must be equally provided to State lab scientists along with central forensic establishment scientists.
9	Human resource (scientists) (pay, recruitment & promotion)	<ul style="list-style-type: none"> • There is no synchronization in pay / status / recruitment / promotion pattern among the Central and State forensic establishments. 	<ul style="list-style-type: none"> • There is a need for unified service rules, same pay structures and same status to same designation for scientists working in Central and State labs as State scientists are also

Contd.

Table 10: Indian Forensics - - - malady and remedy, as viewed by senior / retired forensic scientists (*Contd.*)

		<ul style="list-style-type: none"> In State FSLs the pay scales are poor and promotion chances are rare. 	performing equally for quality forensic service.
10	Human resource (administrative staff) (number)	<ul style="list-style-type: none"> Shortage of administrative staff in most of the labs. 	<ul style="list-style-type: none"> Adequate ministerial staff of different cadres should be provided.
11	Human resource (admin. staff)(training for FSL set-up)	<ul style="list-style-type: none"> Trained administrative staff is not available. Most of the State labs are under police, and administrative staff also come from police department. FSL work is different and hence difficulty arises. 	<ul style="list-style-type: none"> FSL's administrative staff must have well trained office superintendent, accountant, librarian and storekeeper.
12	R&D	<ul style="list-style-type: none"> R & D is mostly case work oriented 	<ul style="list-style-type: none"> Senior scientists should take up R & D and motivate the juniors for R & D work.
13	Proficiency testing	Nil in India	<ul style="list-style-type: none"> System may be standardized through some agency. Quality control at FSL should be achieved internally.
14	Accreditation	Central labs are accredited; State labs are not accredited.	MHA should provide funds for accreditation
15	Certification and re-certification	Does not exist in India	To be carried out by Forensic Science Council of India
16	Ethical conduct	Very few scientists adhere to.	Ethical code needs to be prepared by FS Council of India, and all practicing (Govt. / Non govt.) scientists be made to solemnly affirm and take oath.
17	Bench-marks for performance appraisal (for	Hardly or poorly, if any	<ul style="list-style-type: none"> Should be excellent in <ol style="list-style-type: none"> Quality Efficient disposal

Contd.

Table 10: Indian Forensics - - - malady and remedy, as viewed by senior / retired forensic scientists (Contd.)

	scientists / organizations)		<p>c) Updating knowledge</p> <p>d) Recording data and maintenance</p> <ul style="list-style-type: none"> • Accreditation takes care of appraisal.
18	Scientific audit and accountability	Doesn't exist in any laboratory	It is a must and a unit under forensic science department should take care.
19	National forensic net-working for synergy	Not existing except data transfer and storage for ballistics work between three Central laboratories	National net-working for forensic synergy is required. It may start with Central forensic establishments and State labs to follow.
20	24 x 7 forensic information service (help-line)	None at present	Must for all forensic institutions
21	Swift action emergency forensic team	Forensic emergency response team is not yet formed in India.	<p>At national level, forensic response team must be developed for dealing with</p> <p>a) firearm and explosive activity of terrorists</p> <p>b) natural disasters like earthquake, tsunami etc.</p>
22	Prophylactic/ proactive/ preventive forensics	No FSL is working except FSL, Punjab.	Forensic scientists should come out of their shell of laboratory analysis and report, and contribute to prophylactic / proactive / preventive forensics.
23	Structure and role(s) of DFS (GoI)	Bare minimal	Needs to be upgraded to national level
24	Forensic science education (UG/ PG/Ph.D)	It is haphazard; appears everybody's cup of tea, with teacher oriented teaching.	Needs a regulatory body to control in all spheres
25	Structure and role(s) of NICFS	Drifting from its main aim of imparting training to in-service personnel	<ul style="list-style-type: none"> • NICFS to be changed into NFS Academy; and, Criminology to be separated and attached with other institute where it will have better utility. • Conduct following courses

Contd.

Table 10 : Indian Forensics - - - malady and remedy, as viewed by senior / retired forensic scientists (*Contd.*)

			<ul style="list-style-type: none"> a) Induction courses of longer duration for new recruits(on the pattern of civil service training) b) Refresher courses of short duration for in-service forensic scientists c) Certificate, Diploma courses of longer duration for forensic scientists d) Awareness courses for end users like police, judiciary, prosecutors, correctional services, defense personnel, banks etc.
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Features covered include :- infrastructure (building, space, vehicle, equipment, technology gap, library), human resource (number, qualification, training, pay, awards & incentives, recruitment modes & promotion), R & D, proficiency testing, SOPs, accreditation, certification, ethics, performance benchmarks, scientific audit & accountability, national networking / synergy, 24 x 7 information service, swift action teams, prophylactic forensics, education, structures and roles of Directorate of Forensic Science (DFS) & National Institute of Criminology and Forensic Science (NICFS), concept of Centres of Excellence and overall scientific ambience. Each of them has been held as warranting some reform (Tables 9 and 10).

1.4. The need

In the light of such intricacies of the forensic edifice, action is necessitated for redefining the vision, relisting the mission, relaying the road-map, renaming the organization, reengineering the

structure, reviewing the policies, revisiting the strategy, regrouping the functions, revamping the infrastructure, refurbishing the procedures, reinforcing the academics, regulating the profession, repurposing the practice, and researching the futuristics especially to reach out to homeland security. Anticipated output should be quality driven forensic service delivered on time infusing accelerated credibility into the minds of clients namely triers of fact and the public / Society. Comprehensively consolidated single window service packages made available at locations across the country by Central forensic establishments would be role model for States / UTs to emulate; handholding gesture by the former would be an additional enabler for the present symbiosis and for the future co-evolution. With this backdrop, striking a balance between linear / stable bureaucratic path and nonlinear / dynamic scientific path, and, embarking upon policy imperatives for transformational changes, recommendations constituting Perspective Plan are given to enhance the knowledge service function of Indian forensics with specific attribution to Central forensic establishments.

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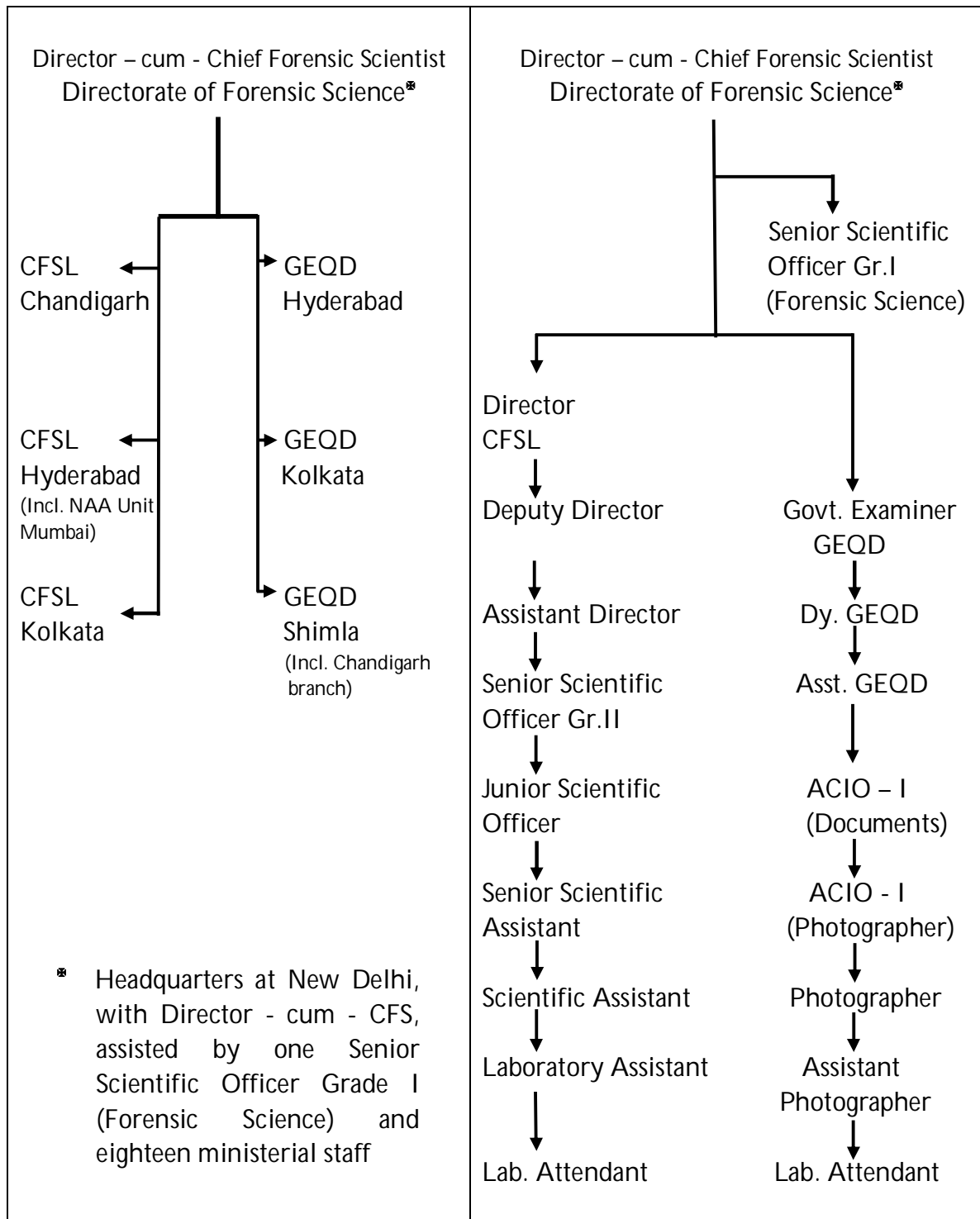
2. ORGANIZATION

2.1. Prelude

Forensic Science is an iceberg-mosaic of almost all dimensions of human wisdom and knowledge. Its informal use in market places and formal application in royal palaces have over the centuries grown into lawful necessity in the forums of enquiry. The relatively modern Indian forensic scenario had its first stroke at Madras (presently Chennai, Tamil Nadu) with the first (traceable) Chemical Examiner's report-communication dated October 30, 1849 (from Surgeon Thomas Ray to Captain I Maitland). Other British initiated efforts in Bengal and rest of India covered anthropometry, finger print, explosives, handwriting, serology, foot print, note forgery, ballistics and few other scientific disciplines. Presently, the States and Union territories administer 28 main forensic science laboratories, 32 regional laboratories and 144 mobile laboratories. Under the Central government, forensic science subject including document examination was handled for long by the Bureau of Police Research & Development. By a Resolution / Order of Ministry of Home Affairs (GoI) dated December 31, 2002 a separate Directorate of Forensic Science (DFS) was created with a Charter of Duties [Ref 42]. As shown in the organizational chart (Figure 1), DFS runs six operational forensic laboratories of which three are Central Forensic

Science Laboratories (CFSLs) (Chandigarh, Hyderabad and Kolkata) each headed by a Director; the other three are laboratories of Government Examiner of Questioned Documents (GEQDs) (Hyderabad, Kolkata and Shimla) each headed by a Deputy Director level GEQD. CFSL, Hyderabad has a Neutron Activation Analysis (NAA) Unit at BARC, Mumbai; and GEQD, Shimla has a branch at Chandigarh. The headquarters of DFS at New Delhi is headed by Director-cum-Chief Forensic Scientist assisted by one Senior Scientific Officer Grade I (Forensic Science) and eighteen administrative & allied staff.

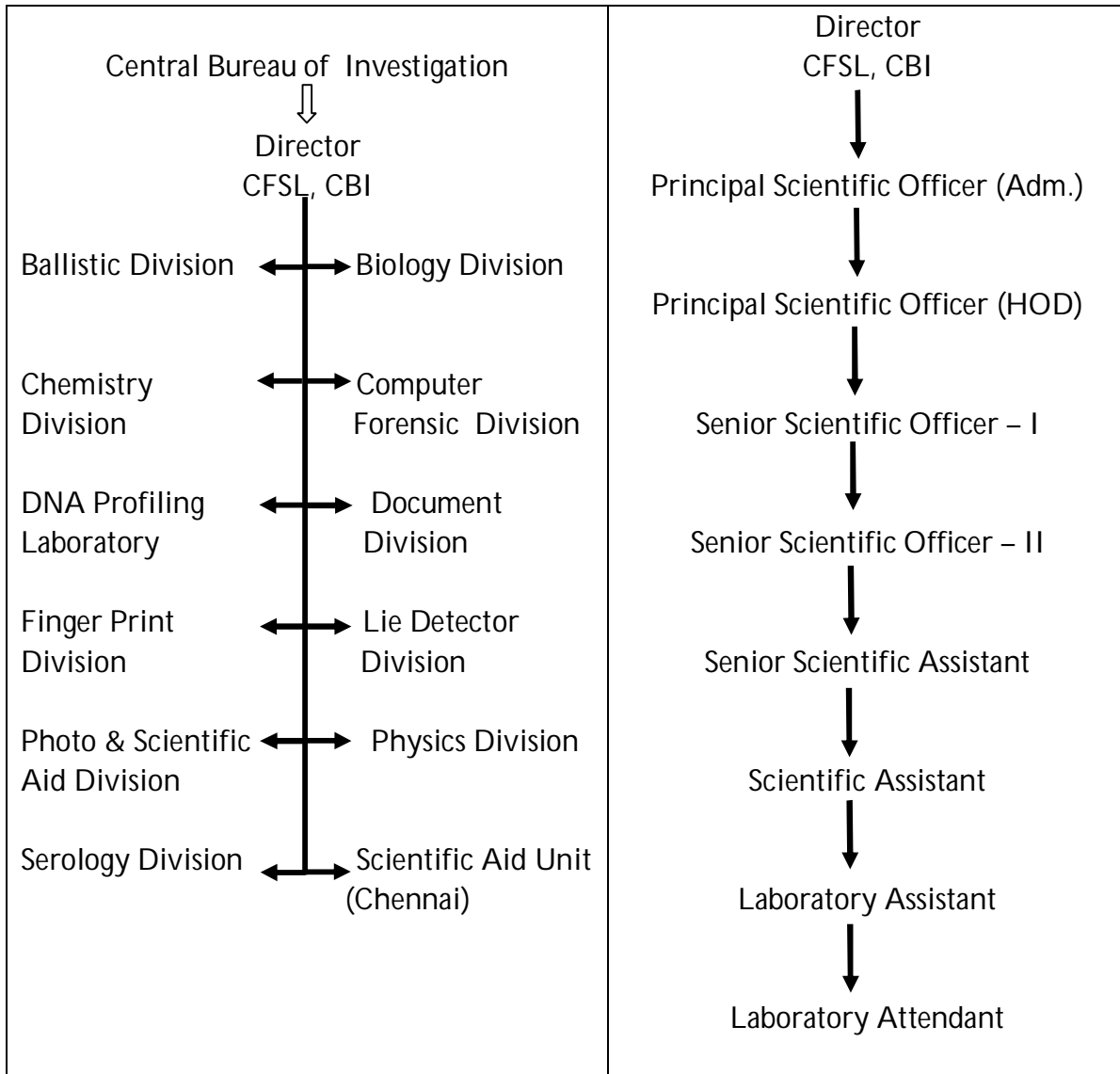
Figure 1 : Organizational (scientific) chart of Directorate of Forensic Science (MHA,GoI)



MHA : Ministry of Home Affairs GoI : Government of India
 CFSL : Central Forensic Science Laboratory
 NAA : Neutron Activation Analysis Unit, Bhabha Atomic Research Centre
 GEQD : Government Examiner of Questioned Documents
 ACIO : Assistant Central Intelligence Officer

Central Bureau of Investigation (CBI) has its own CFSL at New Delhi with a branch at Chennai (Figure 2). Central Finger Print Bureau under NCRB (New Delhi), forensic training affording National Institute of Criminology and Forensic Science (NICFS; New Delhi), Forensic Science Wing of National Police Academy (NPA; Hyderabad) are other allied organizations with the MHA. State Finger Print Experts, Chemical Examiners, Serologist, Forensic Medicine specialists, non-governmental private experts, forensic entrepreneurs are others available in the field. Forensic education has also caught up with times and is galloping. Therefore, striking a regulated uniformity in all facets of forensic practice in India, devising fresh strategy, and drawing a road-map for growth become necessary.

Figure 2 : Organizational (scientific) chart of CFSL, CBI



2.2. Focus

The present study is however essentially focused on the Central forensic organizations. When viewed through this lens, the obvious impression is one of satisfaction notwithstanding the existing ailments and expected medicaments. Quality of forensics is in good esteem as revealed in this study by the absence of negative feedback from forensic service end – users including courts and investigation

agencies. Timeliness in forensic delivery (Tables 1 and 2), as the second contributor to credibility, has been maintained well in comfortable comparison with the United States of America (USA) [Ref 67]. Performance indicators namely cases handled in the past five years by the seven Central forensic establishments [CFSLs (DFS): Chandigarh, Hyderabad (including NAA) and Kolkata; CFSL (CBI): New Delhi; and GEQDs (DFS): Hyderabad, Kolkata and Shimla (including Chandigarh branch)] are illustrated in Tables 3 and 4 and in Figures 3 – 9. A ready – reckoner on the physical profiles of the different Central forensic units is provided in Table 5.

Table 1 : Turnaround times* effected in the year 2009 by Central Forensic Science Laboratories

S.No.	Lab Division	CFSL, Chandigarh			CFSL, Hyderabad			CFSL, Kolkata			CFSL, CBI, New Delhi		
		Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)-involved analysis	Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)-involved analysis	Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)-involved analysis	Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)-involved analysis
1	Anthropology (Skull superimposition)	15-20	30-60	30-60	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	Ballistics	02-03	05-07	15-20	04	15	>60	02	NR	NR	21	42	56
3	Biology	05-07	07-14	7-14	03	10	>30	02	NR	NR	60	90	180
4	Chemistry	04-10	5-15	30-45	04	30	>90	02	NR	NR	90	180	180
5	Computer forensics/ digital forensics	05-07	10-15	NR	07	60	NA	06	NR	NR	90	NR	NR
6	Counterfeit currency	NA	NA	NA	07	30	>60	NA	NA	NA	NA	NA	NA
7	Documents	NA	NA	NA	NA	NA	NA	NA	NA	NA	90	365	NR
8	Explosives	04-05	07-09	20-25	04	20	>60	03	NR	NR	NA	NA	NA
9	Fingerprint	NA	NA	NA	NA	NA	NA	NA	NA	NA	30	180	365
10	Narcotics	04-05	08-15	30-45	05	30	>180	02	NR	NR	NA	NA	NA
11	Photography	NA	NA	NA	NA	NA	NA	NA	NA	NA	30	90	150
12	Physics	05-06	07-08	20-25	05	20	>90	02	NR	NR	60	120	180
13	Polygraph	NA	NA	NA	NA	NA	NA	NA	NA	NA	30	NR	45
14	Serology/DNA	15-30	30-60	30-60	05	30	>60	02	NR	NR	20	90	120
15	Toxicology	06-07	12-15	30-45	07	20	>90	05	NR	NR	NA	NA	NA
16	Voice identification	08-10	18-20	40-45	NA	NA	NA	NA	NA	NA	NA	NA	NA

* Time (in days) from the receipt of the evidence item by the lab to the readiness of the lab report for despatch

NA : Not available / applicable NR : Not reported

Table 2 : Turnaround times* effected in the year 2009 by the Government Examiners of Questioned Documents

S.No.	Lab Division	GEQD, Hyderabad			GEQD, Kolkata			GEQD, Shimla		
		Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)- involved analysis	Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)- involved analysis	Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)- involved analysis
1	Computer forensics/ digital forensics	15-20	30-35	>45	15-20	30-35	>45	180	180-240	180-240
2	Documents	15-45	30-35	>45	15-45	30-35	>45	90	90-150	90-180

* Time (in days) from the receipt of the evidence item by the lab to the readiness of the lab report for despatch

Table 3 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at Central Forensic Science Laboratories

S.No.	Lab Division	CFSL Chandigarh		CFSL Hyderabad		CFSL Kolkata		CFSL, CBI, New Delhi	
		CE	CP	CE	CP	CE	CP	CE	CP
1	Anthropology	NI	NI	NA	NA	NA	NA	NA	NA
2	Ballistics	883	16	340	Nil	135	03	100	02
3	Biology	482	35	948	153	1298	25	350	07
4	Chemistry	269	22	566	70	325	59	900	40
5	Computer forensics / digital forensics	230	34	132	42	43	22	150	05
6	Counterfeit currency	NA	NA	14 (Since 2006)	04	NA	NA	NA	NA
7	Documents	NA	NA	NA	NA	NA	NA	120	84
8	Explosives	144	21	252	25	659	176	NA	NA
9	Fingerprint	NA	NA	NA	NA	NA	NA	309	05
10	Narcotics	1001	40	Under Chemistry	Under Chemistry	111	201	NA	NA
11	Photography	NA	NA	NA	NA	NA	NA	1250	35
12	Physics	303	12	202	05	297	153	1800	80
13	Polygraph	NA	NA	NA	NA	NA	NA	972	27
14	Serology / DNA	293	02	166 (DNA)	35	843/501	Nil/26	150	05
15	Toxicology	1210	102	3191	398	776	662	NA	NA
16	Voice identification	338	51	NA	NA	NA	NA	NA	NA
TOTAL		5153	335	5811	732	4988	1327	6101	290

Grand total of cases examined : 22053

Grand total of cases pending : 2684

CE : Cases examined ; CP : Cases pending ; NI : Not indicated;
NA : Not available / applicable

Table 4 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at Government Examiners of Questioned Documents

S.No.	Lab Division	GEQD Hyderabad		GEQD Kolkata		GEQD Shimla	
		CE	CP	CE	CP	CE	CP
1	Computer forensics / digital forensics	1221	75	62	15	104	40
2	Documents	4385	124	3267	134	2391	123
TOTAL		5606	199	3329	149	2495	163

Grand total of cases examined : 11430

Grand total of cases pending : 511

CE : Cases examined ; CP : Cases pending

Figure 3 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at CFSL, Chandigarh

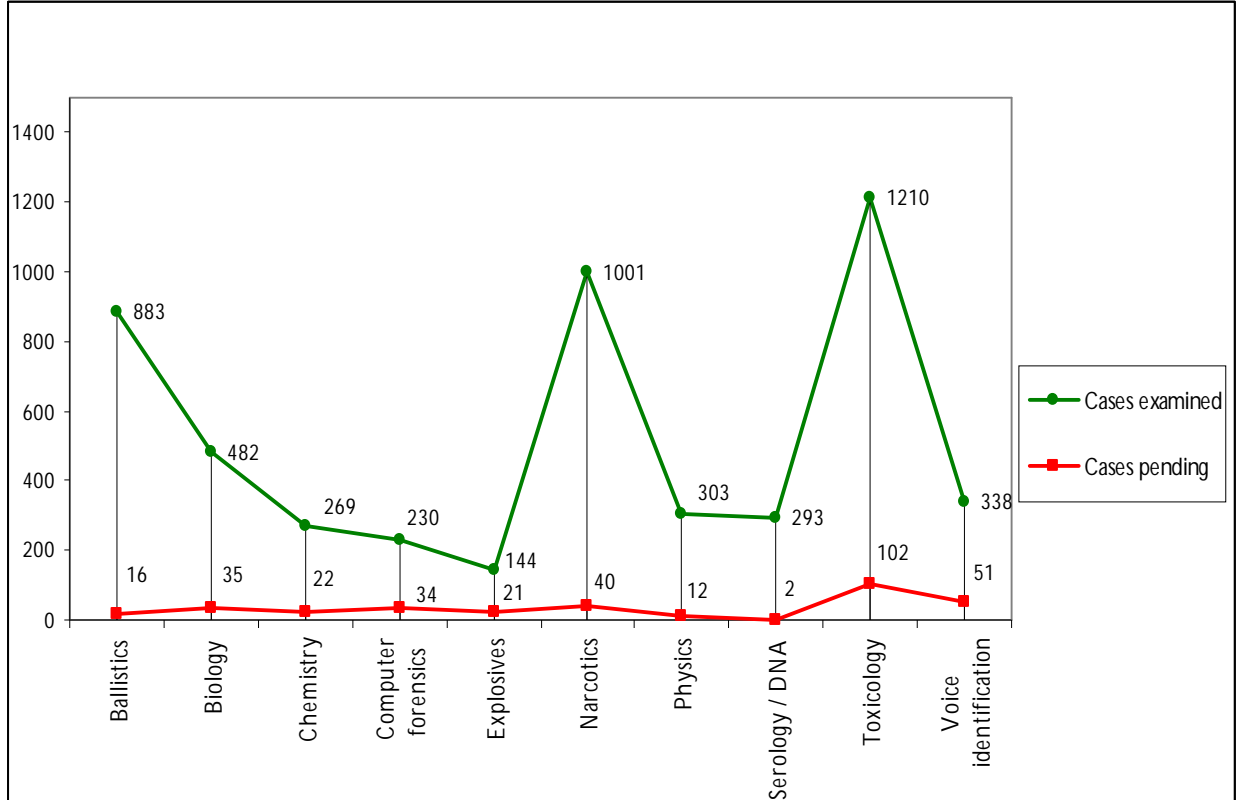


Figure 4 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at CFSL, Hyderabad

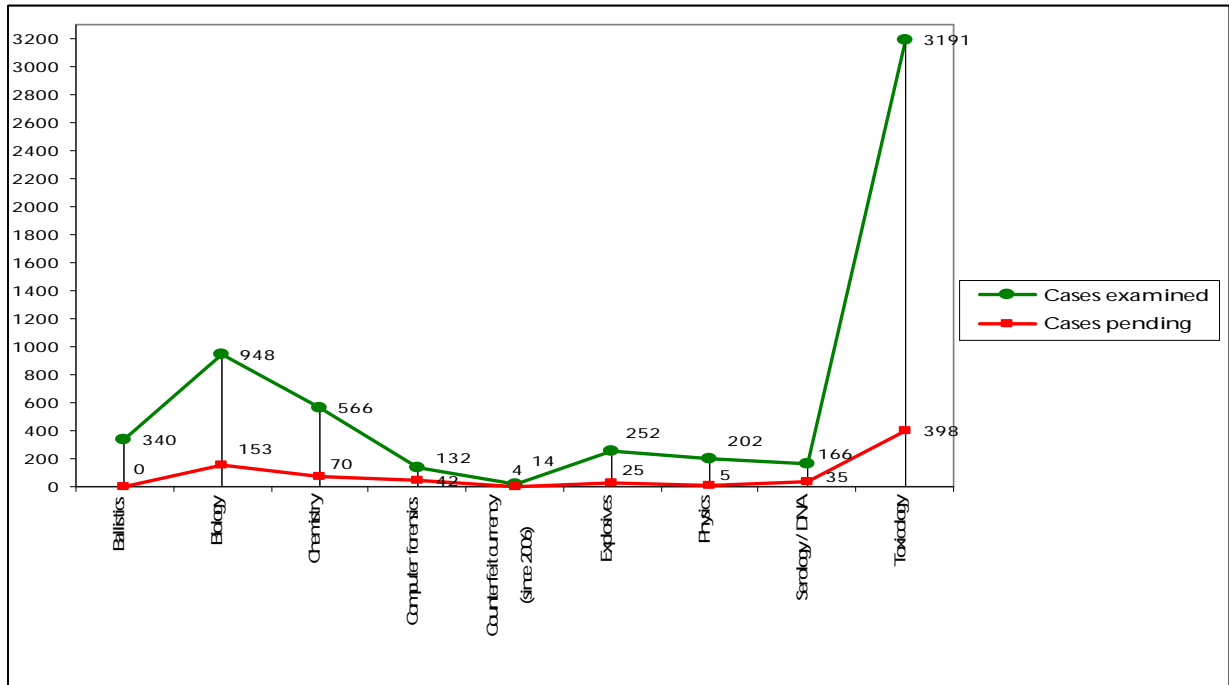


Figure 5 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at CFSL, Kolkata

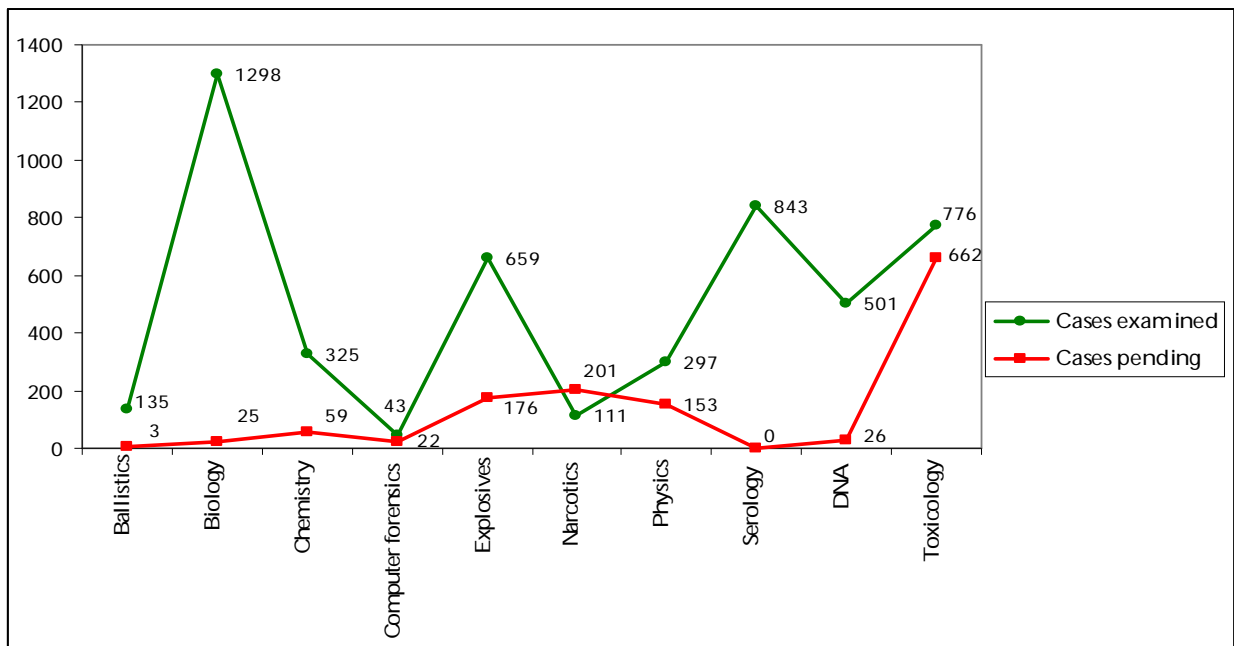


Figure 6 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at CFSL, CBI, New Delhi

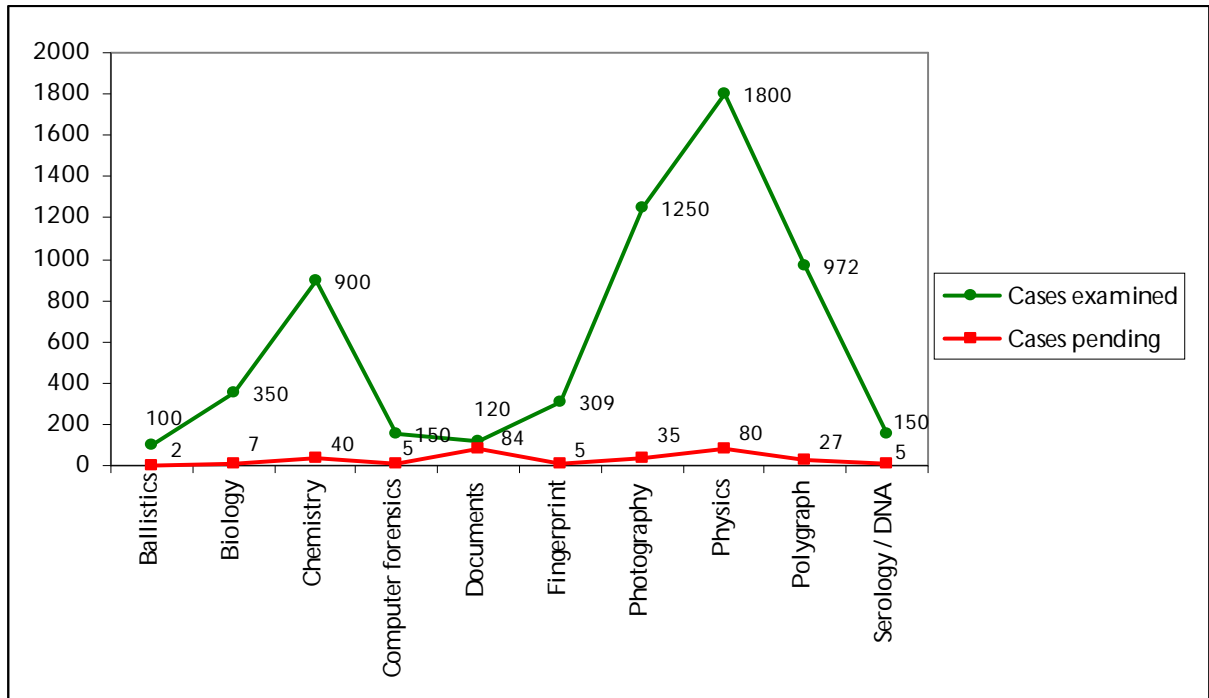


Figure 7 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at GEQD, Hyderabad

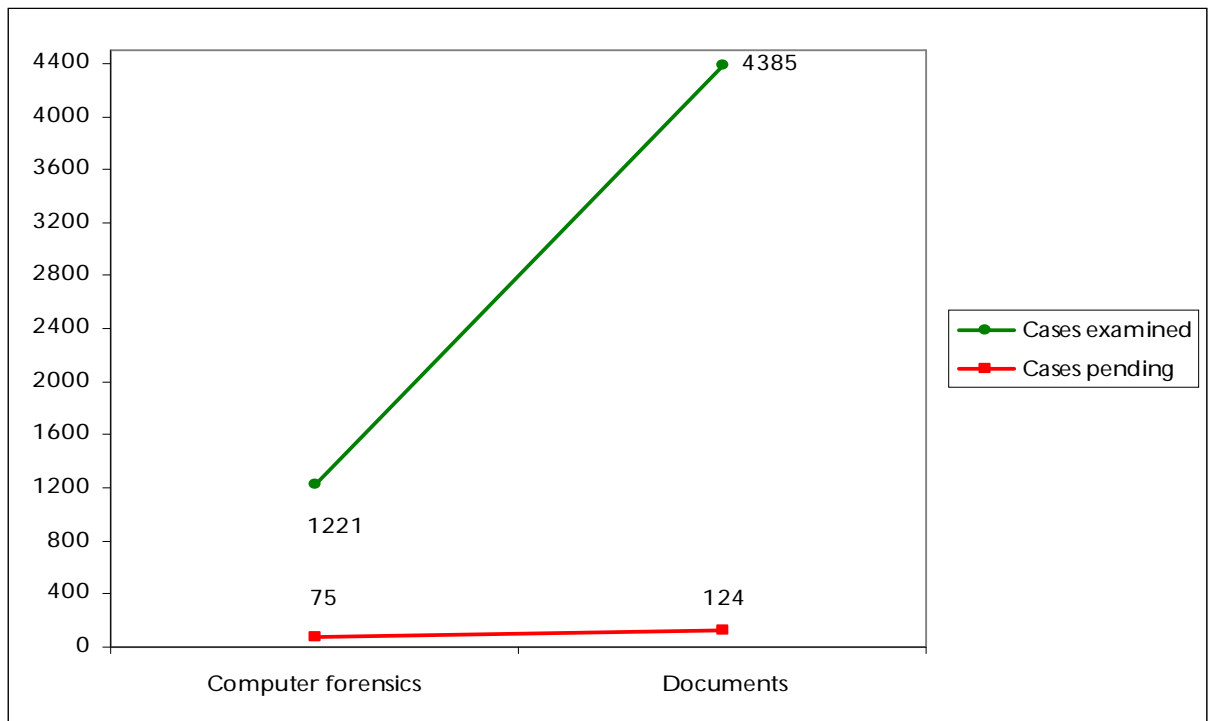


Figure 8 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at GEQD, Kolkata

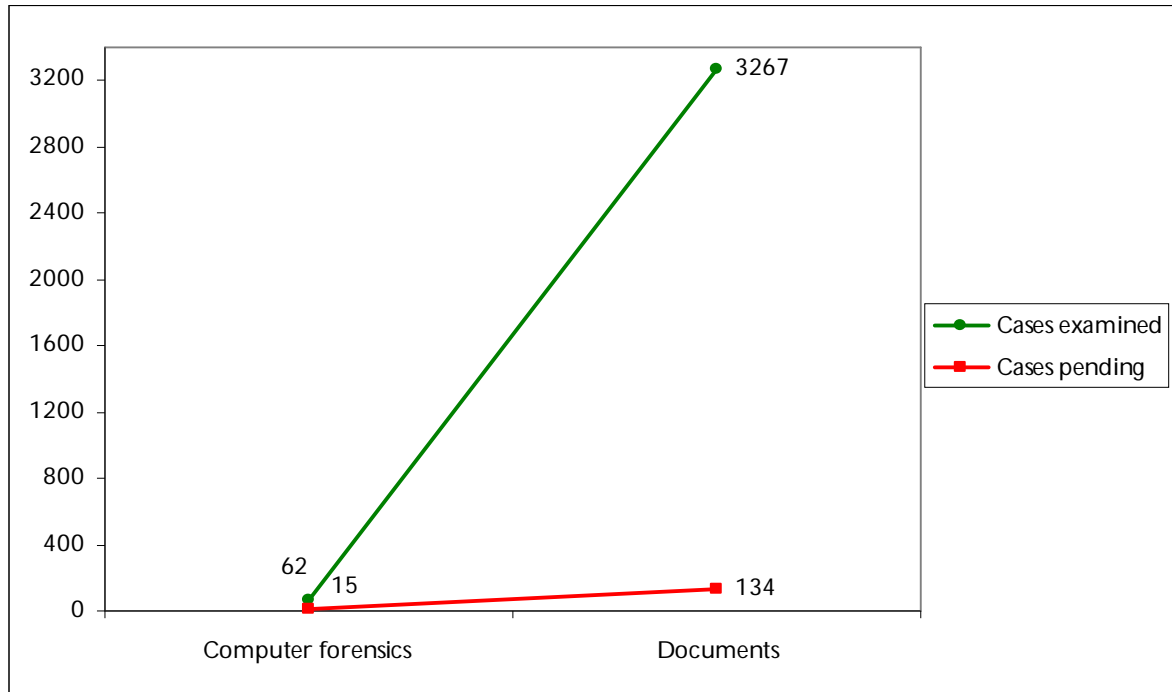


Figure 9 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at GEQD, Shimla

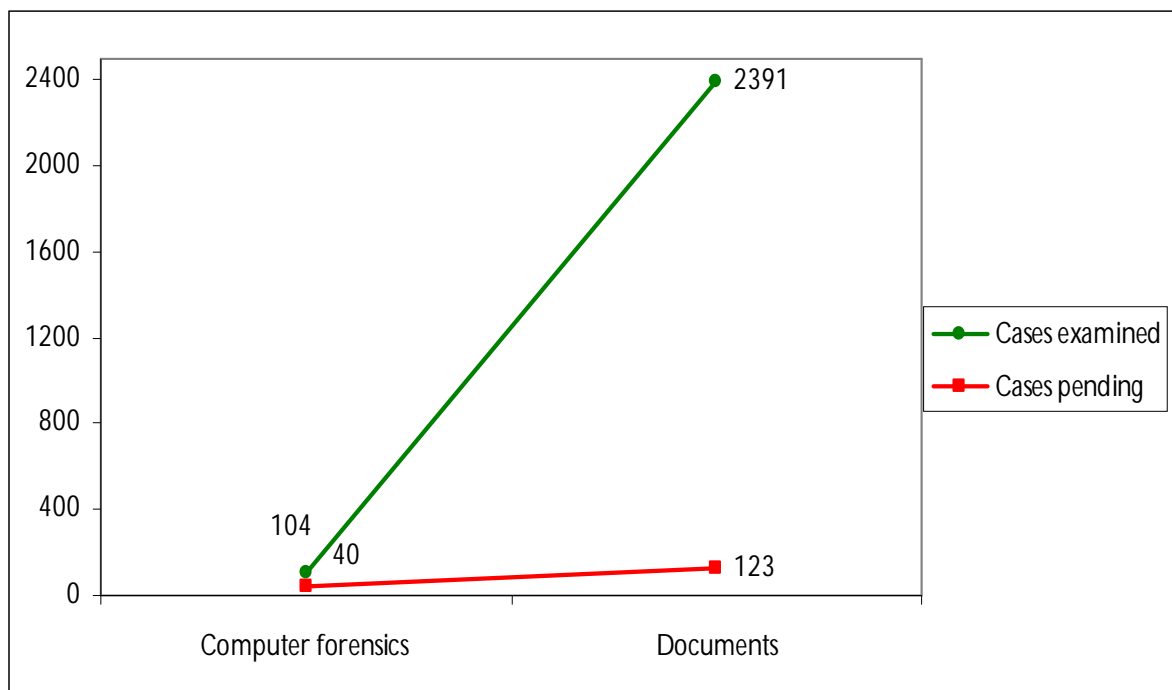


Table 5 : Infrastructure – ready reckoner on Central forensic establishments

S.No.	Central forensic organization	Building / space	Security/ functional and aesthetic fixtures	Equipments	Human resource	Library	Vehicles	Special facilities
1	Directorate of Forensic Science (Headquarters) New Delhi	Government Building, Shared / Acute Shortage	Moderate	SOE, SME	Acute Shortage	Nil	Shortage	Nil
2	CFSL Chandigarh	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Moderate	Shortage	Good
3	CFSL Hyderabad	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Moderate	Shortage	Moderate
4	CFSL Kolkata	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Moderate	Shortage	Moderate
5	CFSL, CBI New Delhi	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Moderate	Shortage	Moderate
6	GEQD Hyderabad	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Moderate	Shortage	Moderate
7	GEQD Kolkata	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Moderate	No Shortage	Moderate
8	GEQD Shimla	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Shortage	Moderate	Shortage	Moderate
9	NAA unit Mumbai	Government Building, Shared / No Shortage	Good	No Shortage	Shortage	Good	No Shortage	Good
10	NICFS New Delhi	Government Building, Shared / No Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Good	No Shortage	Good
11	FS unit SVPNPA Hyderabad	Government Building, Not Shared / No Shortage	Good	SME, SSW, SHW	Acute Shortage	Good	No Shortage	Good
12	CFPB New Delhi	Government Building, Shared / Shortage	Moderate	SOE, SME,SSW, SHW	Shortage	Nil	Shortage	Nil

CFSL : Central Forensic Science Laboratory CBI : Central Bureau of Investigation NAA : Neutron Activation Analysis
 GEQD : Government Examiner of Questioned Documents NICFS : National Institute of Criminology and Forensic Science
 SVPNPA : Sardar Vallabhbhai Patel National Police Academy CFPB : Central Finger Print Bureau
 SOE : Shortage of office equipments SME : Shortage of modern scientific equipments
 SHW : Shortage of hardware SSW : Shortage of software

Forward looking steps have been taken by the DFS in the recent past by way of forensic modernization schemes, XI Finance Commission schemes and five-year plan schemes (including the 28 on going schemes under XI Plan to usher in three new CFSLs incorporating GEQDs, six CRFSLs, fifty two CMFSLs, databases for ballistics, DNA and counterfeit currency, modernization & strengthening of existing forensic units, networking and intramural & extramural research) [Ref 27] . Of more interest is the April 2010 visit of the Chief Forensic Scientist to FBI (USA) which has back at home triggered discernible governmental action for tools, training and tie-up [Ref 51]. Correspondingly personnel in the Central forensic establishments display commitment of high competence; in spite of being a frustrated lot due to long-standing manpower deficiency (Table 6) and promotion bleakness, they volunteer to take on extra case load and look for fresh forensics especially for homeland security. But for different designations and promotional avenues, the CBI's CFSL (New Delhi) is also similarly placed [Ref 55; Table 6].

Table 6 : Staff position at Central forensic establishments

S.No.	Institution	Place	Sanctioned strength	Filled	Vacant	Additionally required	Total required
1	CFSL*	Chandigarh	107	54	53	66	119
		Hyderabad	126	63	63	52	115
		Kolkata	97	58	39	48	87
2	GEQD*	Hyderabad	57	41	16	298	314
		Kolkata	58	37	21	08	29
		Shimla	63	43	20	68	88
Grand Total			508	296	212	540	752

* Under the administrative control of Directorate of Forensic Science, MHA, GoI

3	CFSL** CBI	New Delhi	167	75	92	03	95
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** Under the administrative control of Central Bureau of Investigation, GoI

CFSL : Central Forensic Science Laboratory

GEQD : Government Examiner of Questioned Documents

Nevertheless, in slight contrast, “.....The structure in these forensic institutions is very hierarchical, compartmentalized, insensitive, bureaucratic, and rigid (administratively as well as operationally). Such organizational structure and culture is not conducive to the growth of science.....,” as noted by the Scientific Advisory Council to the Prime Minister [Ref 49]. Faults appear to lie in:- (a) the vision and mission; (b) road-map for direction and growth (resulting in ad hoc overtures like having “polygraph” machine & facility with no sanctioned manpower for long); (c) constraints right from the mentoring leadership at the administrative headquarters down to the scientific enrichment at the operational laboratories [resulting in discordant pick up like “computer forensics” – practice by both the now – stand – alone units (CFSLs and GEQDs) under the single and very same DFS]; (d) organizational structure – flaw [like the laboratories of GEQD, headed by personnel equivalent to the Deputy Director (number two) cadre of CFSL, instead of being natural part of CFSL, remaining aloof]; (e) policy impoverishment (such as for recruitment & promotion, motivation, training and purchase); (f) human resource planning, management and development (resulting in burnout, attrition and a near break – down of the service’s “back – bone”); and, (g) conduct aberrations [like short circuiting the proper channel for application / efforts to avail government – paid government – quota for MBA (understandably at GEQD, Hyderabad), and, using in publications etc the label “National DNA Analysis Centre” without any government notification to that effect (CFSL, Kolkata)].

Alongside MHA's NICFS (New Delhi), established mainly to conduct forensic training and awareness courses has been for decades discharging the duties; of late the activity grid however is found to have been damaged (Table 7) primarily because of its joining score of academia to run full time MSc (Forensic Science) Course (Table 8). As a matter of fact, many private players do offer variety of other forensic courses as well (Table 8). Thus reinvigorating NICFS and regulating forensic education & training become essential.

Table 7 : Activity grid of NICFS, *Vide* Calendars of courses for 2009 and 2010-2011

S.No.	Courses / workshops / seminars / certificate, Diploma, PG Diploma and M.A. / M.Sc.(Crim.), M.Sc. (FS)	Forensic Science (in working days)				Criminology (in working days)			
		2009		2010-2011		2009		2010-2011	
		No. of courses etc.	No. of days	No. of courses etc.	No. of days	No. of courses etc.	No. of days	No. of courses etc.	No. of days
1	Advance, latest techniques, refreshers, orientation courses	13	107	06	26	13	65	16	66
2	Certificate courses	07	Each of 60	-	-	-	-		
3	Foundation courses	01	60	-	-	-	-		
4	Diploma courses	01	365	-	-				
5	PG Diploma course	04	03 of 365 01 of 552	-	-				
6	Workshop	-	-	09	32				
7	Seminars	-	-	02	06			01	03
8	M.Sc. (FS)	01	365	01	365	-	-	-	-
9	M.A. / M.Sc. (Crim.)	-	-	-	-	01	365	01	365

Table 8 : Bird's – eye view of capricious forensic education in India

S. No.	University / Institution	Certificate, diploma or degree offered (<i>FT / PT / DM / OL</i>)	Number of seats
1	Amity University Noida	(a) B.Sc.(H) (FS) - <i>FT</i> (b) M.Sc. (FS) - <i>FT</i> (c) Ph.D. (FS) - <i>FT</i>	NI NI NI
2	Asian School of Cyber Law Pune	Certificate (CC) - <i>OL</i>	NI
3	Bundelkhand University Jhansi	(a) PG Diploma (FS) - <i>FT</i> (b) B.Sc.(H) (FS) - <i>FT</i> (c) M.Sc. (FS) - <i>FT</i>	40 60 40
4	Department of Anthropology University of Delhi Delhi	Certificate (FS) - <i>FT</i>	NI
5	Dr. B. R. Ambedkar University Agra	M.Sc. (FS) - <i>FT</i>	15
6	Dr. H.S. Gour Vishwavidhyalaya Sagar	(a) B.Sc. (FS) - <i>FT</i> (b) M.Sc. (FS) - <i>FT</i>	10 18
7	IFO Forensic Standards and Research Delhi	Seven certificate courses (FS) - <i>DM</i>	NI
8	Intense Forensic Services India Pune	Eleven courses - <i>OL</i>	NI
9	Kurukshetra University Kurukshetra	M.Sc. (FS) - <i>FT</i>	20+ 5(additional)

Contd.

Table 8 : Bird's – eye view of capricious forensic education in India (*Contd.*)

10	Maharashtra Govt. Institute of Forensic Science Aurangabad	(a) PG Diploma (FS) - <i>FT</i> (b) B.Sc. (FS) - <i>FT</i>	40 50
11	NICFS (affiliated to Guru Gobind Singh Indra Prastha University, Delhi) Delhi	(a) Induction, refresher and awareness courses - <i>FT</i> (b) Certificate - <i>FT</i> (c) Diploma - <i>FT</i> (d) PG Diploma - <i>FT</i> (e) M.Sc. (FS) - <i>FT</i>	NI NI NI NI 26
12	Osmania University Hyderabad	M.Sc. (FS) - <i>FT</i>	NI
13	Panjab University Chandigarh	(a) M. Sc. (FS) - <i>FT</i> (b) Ph. D. (FS) - <i>FT</i>	NI NI
14	Punjabi University Patiala	(a) PG Diploma (FS) - <i>DM</i> (b) M.Sc. (FS) - <i>FT</i>	100 (in-service personnel) 16
15	Sam Higginbottom Institute of Agriculture, Technology & Science Allahabad	(a) Diploma (DOC / FP) - <i>FT</i> (b) B.Sc. (FS) - <i>FT</i> (c) M. Sc. (FS) - <i>FT</i> (d) Ph.D. (FS) - <i>FT/PT</i>	NI NI NI NI

FT : Full time*PT* : Part time*DM* : Distance mode*OL* : On – line

H : Honours Degree

FS : Forensic Science

NI : Not indicated

CC : Cyber crime

DOC : Documents

FP : Finger print

From the small number of responses received, it appears that some forensic medical specialists (Table 11), finger print experts (Table 12) and chemical examiners (Table 13) have inclination for overlap with mainstream forensics, which needs to be taken into cognizance in the larger interest of wholesome service to the Society .

Table 11 : Views of forensic medicine professionals / departments / institutes

S. No.	Feature	Kasturba Medical College, Manipal (Karnataka)	Medical College, Kottayam (Kerala)	Medical College, Thiruvananthapuram (Kerala)	Government Medical College, Mumbai (Maharashtra)	Government Medical College, Amritsar (Punjab)	Madras Medical College, Chennai (Tamil Nadu)	J N Medical College, Aligarh (Uttar Pradesh)
1	Now, part of FSL	No	No	No	No	No	No	No
2	Functioning under medical set-up	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	Want to be with FSL	No	No	No	No	No	Yes, with FSL, under MHA, as a separate entity	No
4	Want to practice FSL activities jointly	SOC examination, presentation of evidence	SOC examination	-	-	-	Crime investigation	-
5	Want FSL practices to be taken over by forensic medicine	-	-	Biology, Toxicology	Serology, DNA, Toxicology, Brainmapping, Narcoanalysis	-	-	-
6	Now, interaction with FSL	Nil	Satisfactory	Rare	Occasional	-	Only during seminars	-

FSL : Forensic Science Laboratory

MHA : Ministry of Home Affairs

Table 12 : Views of Finger Print Bureaux (FPB)

S.No.	Feature	CFPB Delhi	FPB Andhra Pradesh	FPB Kerala	FPB Maharashtra	FPB Orissa	FPB Punjab	FPB Rajasthan	FPB Tamil Nadu
1	Now, part of FSL	No	No	No	No	No	No	No	No
2	Functions under police	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	Wants to come out of police control	Yes	No	Yes	No	No	No	Yes	Yes
4	Wants to be with FSL	Yes	No	No	No	-	No	Finger print science is part of forensic science although functions separately	Yes
5	Wants independence	-	-	Yes	Easy for administration	-	-	-	-
6	Now, interaction with FSL	Minimal	Satisfactory	Good	Nil	-	Nil	Nil	Good
7	R &D activity	Dedicated qualified experts required	-	Nil ; well qualified staff required	-	-	-	-	No environment
8	Qualification of staff	Not highly qualified	-	Not from well qualified strata	-	-	-	-	-
9	Staff used for other duty	-	-	-	-	-	Occasionally	Law & order and election duty	-

CFPB : Central Finger Print Bureau; FSL : Forensic Science Laboratory

Table 13 : Views of Chemical Examiner, Thiruvananthapuram (Kerala) and Serologist & Chemical Examiner, Kolkata

S. No.	Feature	Chemical Examiner Thiruvananthapuram	Serologist and Chemical Examiner Kolkata
1	Is your laboratory integral part of FSL?	No	No
2	Would you like to work with FSL under one umbrella?	No	No
3	Practices at FSL and your laboratory match	Yes	No
4	Common practices between your laboratory and FSL	Toxicology, narcotics, biology, serology, chemistry, excise cases (about 85% of FSL work)	Forensic serology only
5	Practices that do not match	Finger print, polygraph, computer forensics etc.	VDRL, antigen production, anti sera production, isolation of polio virus, measles, STD etc. For each practice separate labs are functioning

FSL : Forensic Science Laboratory

For any and every one of these things to happen, the prerequisite is workforce. The number as well as the knowledge, skill and ability of operational forensic scientists/trainers are pertinently significant. Forensic service is unequivocally an essential service and implies that enough people should be in place, to perform optimally with conventional disciplines / activities and also to catch up with emerging areas. However staff position in the Central forensic

practising and training establishments is far from satisfactory (Table 6; Figures 12 and 13; Tables 14 and 15; Figure 10). This is a serious issue which remains aggravated by abolishment of posts, inherent lacunae in deputation mode filling and protracted procedures of progression. As highlighted by the Central forensic and allied establishments (Table 16), pay scale pattern and human resource motivation also need relevant attention.

Table 6 : Staff position at Central forensic establishments

S.No.	Institution	Place	Sanctioned strength	Filled	Vacant	Additionally required	Total required
1	CFSL*	Chandigarh	107	54	53	66	119
		Hyderabad	126	63	63	52	115
		Kolkata	97	58	39	48	87
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		Kolkata	58	37	21	08	29
		Shimla	63	43	20	68	88
Grand Total			508	296	212	540	752

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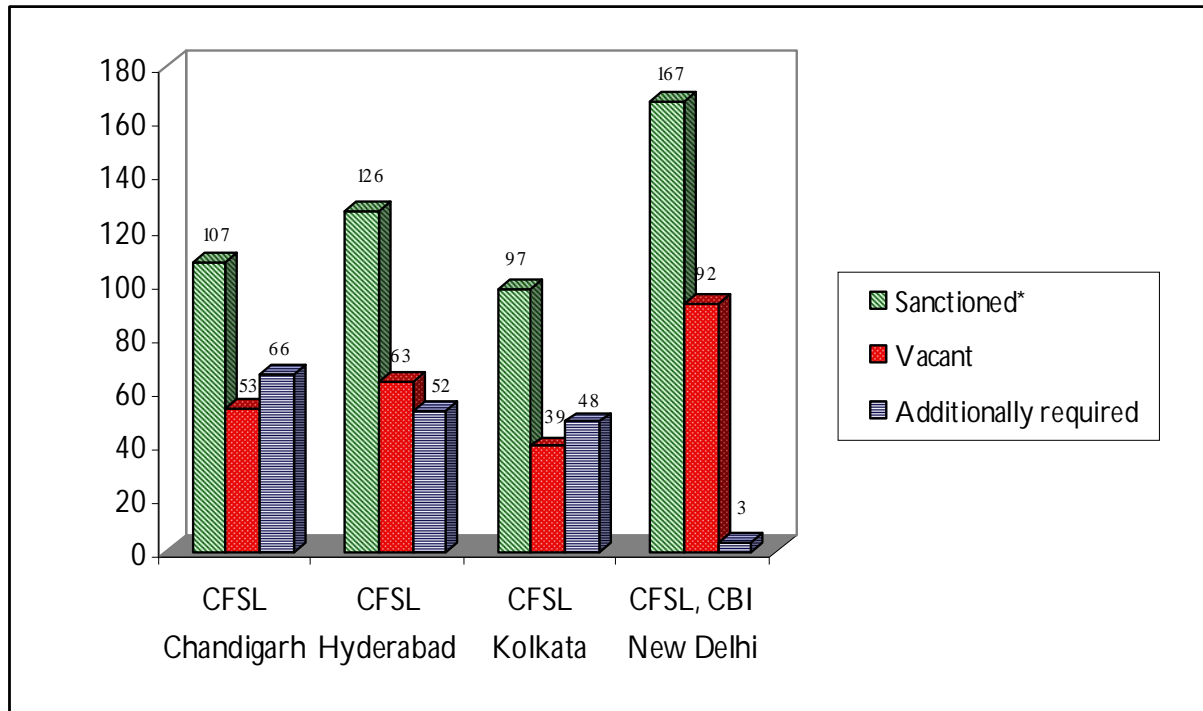
3	CFSL** CBI	New Delhi	167	75	92	03	95
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** Under the administrative control of Central Bureau of Investigation, GoI

CFSL : Central Forensic Science Laboratory

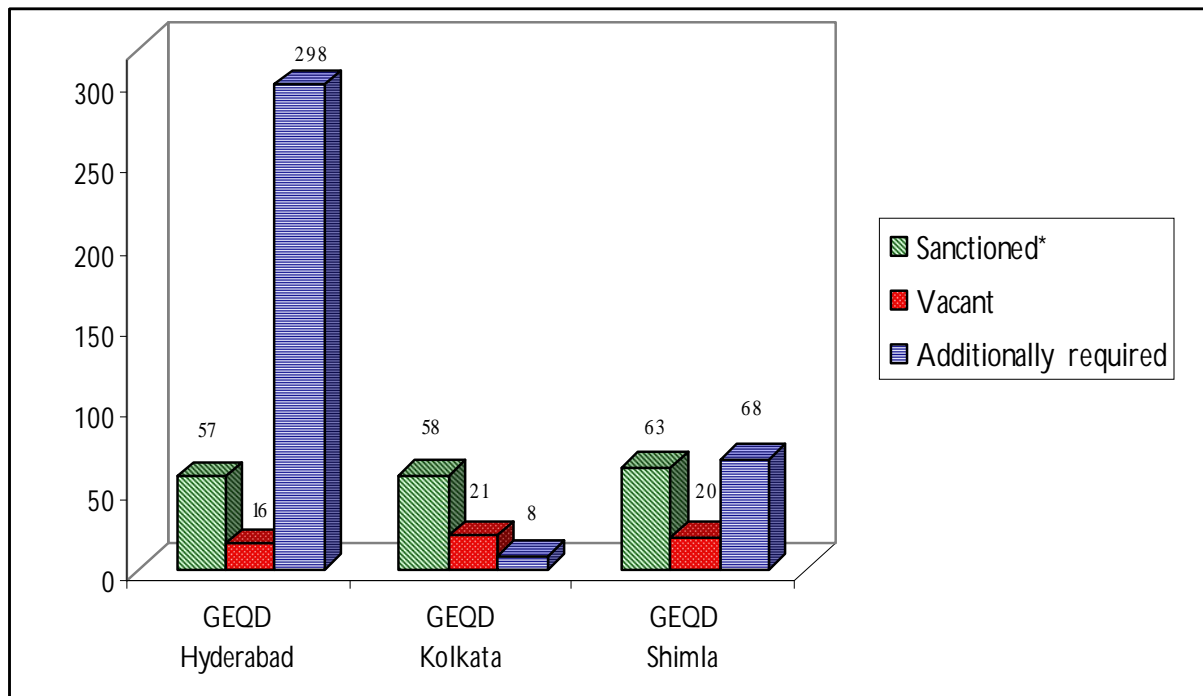
GEQD : Government Examiner of Questioned Documents

Figure 12 : Staff position of Central Forensic Science Laboratories



* Pre-abolition status (*circa* 2007 / 2008)

Figure 13 : Staff position with the Government Examiners of Questioned Documents



* Pre-abolition status (*circa* 2007 / 2008)

Table 14 : National Institute of Criminology & Forensic Science (NICFS) - - - Staff position (Forensic Science)*

S.No.	Post	Sanctioned	Filled	Vacant
1	Addl. Director	01	01	-
2	Deputy Director	02	-	02
3	Assistant Director	09	-	09
4	Senior Scientific Officer	11	01	10
5	Senior Scientific Assistant	11	03	08
6	Junior Scientific Assistant	06	06	-
7	Lab Attendant	11	07	04
Total		51	18	33

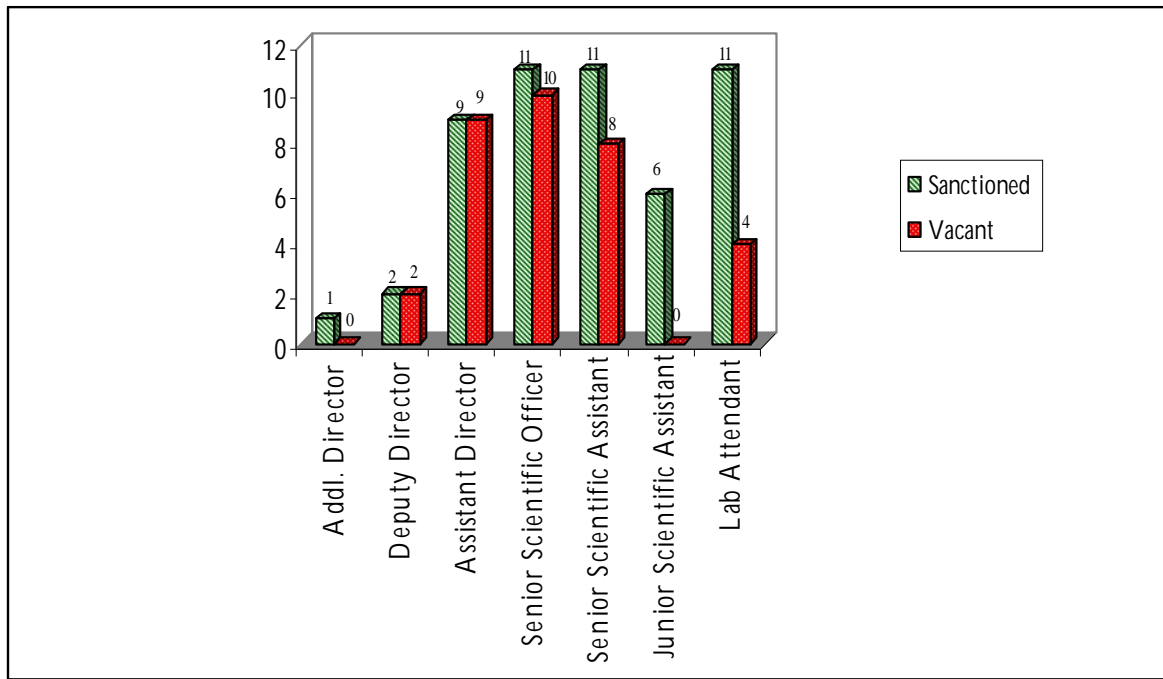
* : Full time faculty

Table 15 : National Institute of Criminology & Forensic Science (NICFS) - - - Staff position (Criminology)*

S.No.	Post	Sanctioned	Filled	Vacant
1	Professor	01	-	01
2	Reader	02	01	01
3	Lecturer	04	-	04
4	Junior Scientific Assistant	01	01	-
Total		08	02	06

* : Full time faculty

Figure 10 : National Institute of Criminology & Forensic Science (NICFS) - - - Staff position (Forensic Science)*



* : Full time faculty

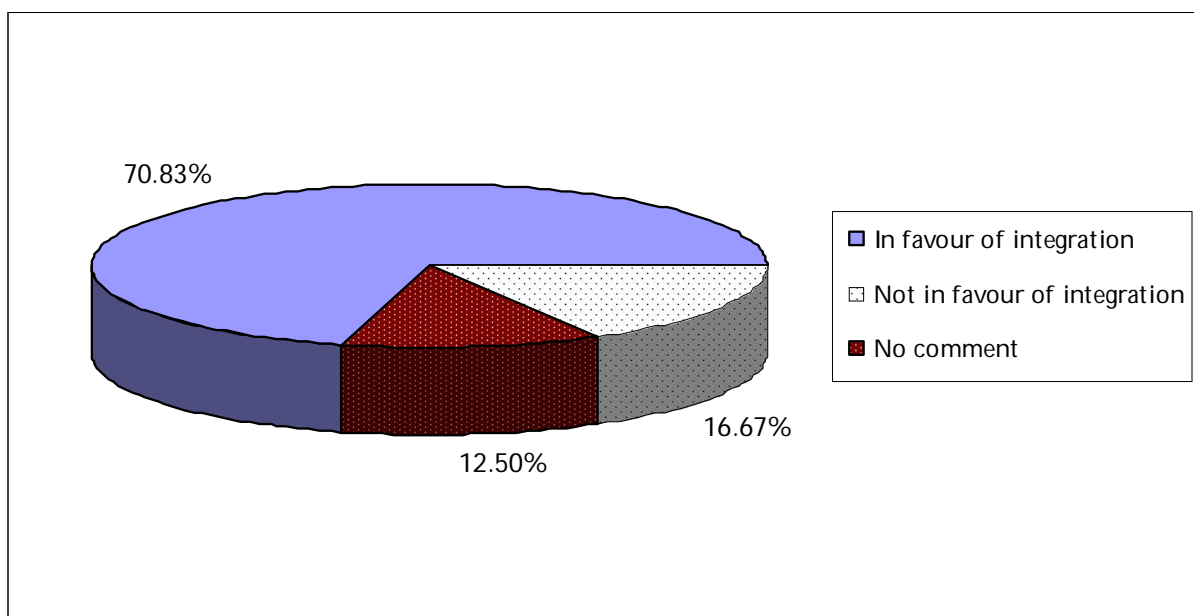
Table 16 : Human resource related problems and needs highlighted by the Central forensic and allied establishments

S. No.	Issue	Problem	Solution suggested by establishments
1	Recruitment and vacancy filling	Due to impractical R/R and Roaster, no vacancy filled since 1993	<ol style="list-style-type: none"> 1. R / R and Roaster need amendment 2. Technical Recruitment Board needs to be established 3. Deputation posting should be removed
2	Pay scale	Pay scales are lower	<ol style="list-style-type: none"> 1. Pay scales need to be enhanced equivalent to DRDO and other S & T pattern 2. For Director, equivalent to Scientist 'G', and, accordingly for lower posts
3	Promotion procedure	R / R impractical	R / R needs to be amended
4	Career progression scheme	Has not been implemented in CFSLs and GEQDs under DFS	Scheme must be implemented in all forensic organizations under DFS
5	Service condition	Not up to the mark	All India forensic service needs to be created
6	Human resource motivation	Not enough	<ol style="list-style-type: none"> 1. Certificate - Award 2. Cash - Award 3. National civilian awards in all disciplines of forensic science
7	Special allowance	Forensic work attracts health hazard and risk; and no scope for private practice	<p>Allowances like :-</p> <ol style="list-style-type: none"> 1. Risk allowance 2. Health hazard allowance 3. Non practicing allowance <p>need to be given to forensic science laboratory staff</p>

Organizational reengineering that is required for the present DFS right from strengthening its headquarters and upgrading its laboratories does involve some introduction, some incorporation, some disclaimer and some disinvestment. Varied forms of prints and patterns of probative value are encountered in forensic situations; while finger print has been studied extensively and practised globally, others are underutilized or underexplored. New activity of this kind to fill the gap needs to find slot in CFSLs.

Comprehensive and expeditious single node forensic service delivery is ideally suited for investigation. By and large this integrated approach is the time-tested practice the world over. Cost reduction is pronounced in terms of establishment, administration, operations and pooling / sharing of scientific resources / expertise. In this context, the present stand – alone (three) laboratories of forensic document examination (under DFS) headed by Deputy Director grade GEQD should get incorporated into the CFSLs (under DFS). [A positive precedence for this is available under MHA itself namely the CFSL (CBI), New Delhi which has many disciplines including Document Division and Finger Print Division]. There is no single scientific reason to the contrary, and this is well reflected in Figure 11.

Figure 11 : Consensus as to whether the offices of GEsQD should be integral part of forensic laboratory



In order to emphatically drive R & D efforts, the three CFSLs were reorganized (in 1998) into Centres of Excellence as one each for Physical, Chemical and Biological disciplines; the resultant skeleton facility for other regular services, the concomitantly leaned staff strength that too with long drawn voids, and the absence of top gear R & D output at these CFSLs have not done much good. This prompts necessity to drop the “Centres of Excellence” label.

Toxicology work in the Indian forensic context is more inclined and better purposed for the medico legal branch. Hyphenation of poison examination with forensic medicine would enable quicker medical opinion on the cause and nature of morbidity and mortality. Otherwise, as of now because of several logistics gaps between the medical campus and the science laboratory, final medico-

legal opinion is affordable after several months if not year(s). Therefore phased shifting of toxicological analysis with foster care to the medico-legal set up appears fit.

Similarly, the practice of polygraph, brainmapping and narcoanalysis should be in the purview of forensic medicine set up since these techniques involve to different extents invasiveness and warrant the availability of medical attendance. It is to be noted here that a judgement pronounced on May 05,2010 by the Supreme Court of India stipulates conducting of such tests only after the subject's informed / voluntary consent; there is however no ban which means that the administration of tests can continue [Ref 71]. Therefore these three facilities of the Central / State FSLs should be relocated in phased manner, and made available at FM set up.

Interpersonal interaction, intergroup interaction, vertical / horizontal / diagonal interaction, scientific vibrancy, organizational facelift and interinstitutional synergy in forensic work ambience appear less than desirable. Views of Central forensic establishments in this respect are given in Table 17. For a real pep few field tips are also necessary.

Table 17 : Synergonomics of Indian forensics, as viewed by Central forensic establishments

S.No.	Action	CFSL Chandigarh	CFSL Hyderabad	CFSL Kolkata	CFSL, CBI New Delhi	GEOD Hyderabad	GEOD Kolkata	GEOD Shimla
1	Should shed egoism	√	√	√	√	√	√	√
2	Happily obtain knowledge from clan	√	√	√	√	√	√	√
3	Positively accept criticism from clan	√	√	√	√	√	√	√
4	Share scientific stock with others freely	√	√	√	√	√	√	√
5	Contribute time, mind and efforts	√	√	√	√	√	√	√
6	Join regularly vertical and horizontal interaction	√	√	√	-	-	-	-
7	Always open to change for betterment	√	√	√	-	√	√	-
8	Head of the organization to take initiative	-	-	-	-	-	√	-

2.3. Recommendations

- I. The existing Directorate of Forensic Science (DFS) (MHA, GoI) should be renamed as Directorate of Forensic Service (DIFOSER) in order to widen its scope.

- II.** A separate Division / Section / Desk for forensic service (“FS”) should be created within the administrative set up of MHA in order to enable fast coordination in decision making.
- III.** Vision, mission and road – map for DIFOSER should be as follows.
- (i) Vision** for DIFOSER should be:
Deliver forensic service with quality, timeliness and credibility to provide, protect and promote justice, peace and tranquillity.
- (ii) Mission** for DIFOSER should be:
- Standardization of robust and dynamic systems for scientific management and optimal operations of forensic service delivery
 - Recruiting talent, minting professionals, and, motivating & retaining committed experts with continuing education
 - Need based and proactive upgradation of infrastructure of all sorts for different arms of forensics
 - Building, grooming and fostering strong forensic service base
 - Ceaseless empanelment and deployment of problem – solving as well as futuristic forensics through research and development
 - Encouragement and endorsement to regulation of forensic education, extension, enterprise and ethics
- (iii) Evolutionary road – map** for DIFOSER should be:

- Overhauling Indian forensic science, renovating as forensic service and strengthening - beginning August 2010; completion by Dec. 2010
- Creating practices and recombining operations [e.g., creating "Prints and Patterns" Division in every CFSL; incorporating "Document Examination" namely GEQD, in CFSL; phased transferring "Toxicology" to forensic medicine set up; inviting the CFSL (CBI) and CFPB (NCRB) to the fold of DIFOSER] - beginning August 2010; completion by March 2012
- Enlisting of and enriching with frontier forensics - ongoing; completion by August 2011
- Continuing the crusade for futuristic forensics - timeless
- Enacting the Forensic Act and implementing Forensic Council of India regulations - completion by Aug 2011
- Funding and fondling State / UT entities of forensic science, forensic medicine, finger print and chemical examination (approximate expenditure of Rupees two thousand eight hundred crores spread over seven years @ Rs. 400 crores per annum) - beginning April 2011; completion by March 2018
- Inviting and inducting the willing State / UT entities into the Central main stream forensics - beginning April 2018; continues

- Birth of Department of Forensic Service (DEFOSER), MHA, GoI - conceptualization April 2018; delivery by April 1, 2020
- Enlarging the scope by adding forensic technological and forensic medical services - April 2020 onwards
- Engaging new challenges including those from outer space (pertaining to physics, electronics, communication, exobiology, genomics, toxicogenetics, dirty nuclear bombs, etc) - timeless
- Entering a fresh horizon thro' transformation into an autonomous body (National Forensic Service Organization, NFSO) - by April, 2035

IV. This is the foundational recommendation towards top down as well as bottom up reengineering of the **organizational structure** of DIFOSER, flow chart of which is given in **Annexure –I** with a blow up in **Annexure – II**. For a practical ease, the elements are enumerated hereunder.

- (i) Definition of portfolios, distribution of duties and satisfaction of clients should be in place supported and sustained by policy directions, programme advisories, manpower strengthening, infrastructure augmentation, knowledge acceleration and customer consultation.

- (ii)** The headquarters of the Directorate (DIFOSER) should continue to function from New Delhi but with immediate strengthening and upgradation in terms of space, science managerial strength, infrastructure, management network and other logistics.
- (iii)** The practice of retaining Director – cum - Chief Forensic Scientist as the Head should continue (with the additional prefix of “Scientist G” for meeting the ongoing Flexible Complementing Scheme (FCS) – requirement thereby allowing the flow for lower cadres as well).
- (iv)** One post of Scientist E- cum – Deputy Director and three posts of Scientist D – cum – Assistant Director should be created and filled immediately for posting at the headquarters. [The existing post of Senior Scientific Officer Grade I (Forensic Science) at the headquarters should be, without any financial commitment, converted into Assistant Director since these two posts carry the same pay band and grade pay; and then this lone cadre/post of SSO Gr. I (FS) in the entire forensic set up should be abolished. Subsequently, the existing cadre of Senior Scientific Officer Grade II (CFSLs) should be redesignated as Senior Scientific Officer.]
- (v)** At the headquarters, there should be three portfolio – clusters, namely (a) *Administration & Resources*; (b) *Service & Quality*; and, (c) *Training & Research*; each cluster (having two wings each) should be coordinated by one Assistant Director under the guidance of the Chief through the Deputy Director.

- (vi)** Under the cluster *"Administration & Resources,"* there should be two wings, namely (a) *Administration;* and (b) *Infrastructure & Human Resource Recruitment and Progression (HRRP).*The *"Administration"* wing should be led by an Under Secretary (Finance) to Government, preferably a person retired in this cadre, on reemployment for five years and so on.
- (vii)** For these wings and for the other wings under the remaining two clusters, there should be action:- (a)for assessing groups/subgroups, number & cadre of ministerial & allied staff and other logistics; and, (b) for making available the requirements thereof.
- (viii)** *"Administration"* wing should deal with subjects covering: (a) Establishment; (b) Budget; (c) Purchase; (d) Five – year Plans and special Schemes; and, (e) Miscellaneous. *"Infrastructure & HRRP"* wing should deal with: (a) Building, equipments, vehicles and other infrastructure (from headquarters to the field Mobile Labs); (b) HR recruitment and assessment; (c) HR motivation and welfare; (d) HR career progression; (e) HR grievance redressal; and, (f) Reserve List of Forensic professionals (RELIF).
- (ix)** *"Service & Quality"* cluster should have two wings, namely (a) *Services & Rapid Response Forensic Authority (RAREFA),* and(b) *Standards & Quality.*

In turn each of them should have two sub – wings: *Services* and, *RAREFA* should be two such sub-wings; “*Services*” should coordinate: all forensic services (SOC, analysis, court testimony etc including document examination and to – be – created “prints & patterns” examination), in- house R & D, in – house training, client feedback on every lab report and Forensic Stakeholders’ Consultative Committee (*FOSHCOM*). Each CFSL should have *FOSHCOM* comprising five members (representing local judiciary, prosecution, police, social welfare and laboratory) with three-year term, holding consultation / meeting every January and July. “*RAREFA*” should be a 24 x 7 networked rapid entity responding to emergency, evidence, hazardous materials and disaster, through the mobile and other seats of “*Services*” and by formation of ad hoc special groups; reconstruction of scene of crime / occurrence should also be under its purview. Both these sub-wings can in addition invite and utilize the services of those enrolled in RELIF, on mutually win-win terms.

“*Standards & Quality*” wing should have two sub-wings, namely (a) *Standards*; and (b) *Quality*; the former should procure and distribute authentic samples & reference controls, arrange validation of methods, bring out Standard Operating Procedures (SOPs) & Manuals, and coordinate outputs as discipline based guidelines through the formation of Scientific Task Forces (STFs). The “*Quality*” sub-wing should ensure proficiency testing (PT), good laboratory practice (GLP), quality audit and

liaisoning of accreditation of Central / State / UT laboratories by NABL.

- (x) The two wings of the third portfolio – cluster "*Training & Research*" should be "*Training & Academics*" and "*R & D, e-Library & Intelligence.*"

Under the sub-wing "*Training*", all non in-house training / induction / continuing education / continuing professional development courses and programmes in India and abroad should be dealt with, for forensic personnel of the Centre, States and UTs; there should also be sensitization / awareness sessions in forensic science for users like judiciary, prosecution and police. For this exclusive purpose, a National Forensic Academy (NFA) should be in place by renaming the existing National Institute of Criminology & Forensic Science (NICFS) after shedding its Criminology component which in turn may be appropriately taken care of by MHA. NFA should be under the administrative control of DIFOSER. Forensic Science Unit of SVP National Police Academy (Hyderabad) should also become part / extension of the NFA. The second sub-wing "*Academics*" should focus on encouraging and endorsing regulation of forensic education and academia (by the herein proposed Forensic Council of India (FOCI), *Vide Annexure –III*), and coordinating the said Council's efforts to certify and re-certify forensic professionals.

"R & D, e- Library & Intelligence" wing should have three sub-wings. The first one *"R & D"* should act in matters pertaining to problem – solving & proactive research, product development, intramural & extramural research (IMR & EMR), project funding, crazy ideas grant (CRAIG), attracting external research funds, Ph D – research fellowship, and grooming of the upcoming (India's heartland) CFSL at Bhopal into a national Centre for Novel Forensics (CENOFO). The *"e-Library"* sub-wing should be the nodal National Forensic Library at DIFOSER headquarters with state of the art facilities, wealth of hardcopies / softcopies of books, monographs, reviews, reports, proceedings and international & Indian journals, and high capacity congestion proof server for internet access to e-journals etc. by any genuine Indian forensic establishment. The third sub-wing *"Intelligence"* at headquarters should design, develop, maintain and update Forensic Information and Documentation Centre (FOSIDOC) by generating and obtaining relevant databases from forensic as well as from non – forensic sources, to share lead giving and prophylactic details with national intelligence agencies especially for homeland security.

- (xi)** In order to effectively steer DIFOSER for efficient service delivery within the framework of work vs time vs budget, guiding beacons should be available. At the helm, therefore, a five-member Policy Panel (POP) headed by a (retired) Supreme Court Judge should be formed for three-year term; others in POP should be (i) Vice President of the proposed Forensic

Council of India – Member; (ii) Joint Secretary (MHA) (GoI) – Member; (iii) Joint Secretary (Fin) (GoI) – Member; and (iv) Director-cum-Chief Forensic Scientist – Member Secretary. POP should meet every January and July. Also there should be three Programme Advisory Committees (PACs) to advise the three portfolio – clusters. Each PAC (AR-PAC, SQ – PAC and TR – PAC) should have three members with three-year term and meet every April and October.

- V. Since it has become important to **regulate forensic profession and the concomitant education and practice** in the country, an overarching statutory body, namely Forensic Council of India (FOCI) should be constituted for stipulation and oversight. Under this regulation, maintenance of Indian Forensic Registry and Certification & Re-Certification of forensic practitioners should also be taken care of. For the purpose an Act, the Forensic Act, should be passed by the Parliament which is enabled by the Constitution of India (*Vide* Entry 65 (c) of List I – Union List in the Seventh Schedule under Article 246).

Profile of the functions of the Council is sketched in ***Annexure – III***, which includes among others constituting a fund named “Indian Forensic Service Improvement Grant (IFOSIG) Fund” through the formation of a Special Purpose Vehicle (SPV) named “Indian Forensic Service Improvement Board (IFOSIB)”. As a supplement to the government’s efforts this Fund should be feasible

by invoking Collective Corporate Social Responsibility (CCSR) of chambers of commerce and public sector and joint sector units.

The Council should also be able to fill the void of professional scientific Society and Journal.

- VI.** The 1998 – ordered conceptually laudable reorganization of CFSLs as Centres of Excellence has in practice not done much good; hence such nomenclature as Centres of Excellence should be dropped paving way for re-positioning & strengthening of all forensic discipline services and associated cadres / numbers of staff, and for enthusing in-house / intramural R & D in every CFSL under DIFOSER.
- VII.** There is no rhyme or reason for the stand – alone existence of the GEQDs (of DFS) especially considering among others the inherent forensics of document examination and administrative cost to the exchequer; therefore the establishments of the three GEQDs (Hyderabad, Kolkata and Shimla & its Chandigarh branch) should be incorporated into the CFSLs of DIFOSER. [A good precedence in this context is CFSL (CBI), Delhi which has Document Division as well as Finger Print Division along with other Divisions.]
- VIII.** Road – map guided evolution of the Central forensic service looks for inviting to its environs the CBI's CFSL and the NCRB's CFPB. Meanwhile in order to have a benefit driven priming, new Division named "Prints and Patterns" should be created (with the requisite infrastructure, staff etc) in all CFSLs, that would enable case work

examination as well as database establishment in variety of biometric features (finger print, foot print, lip print, iris pattern, etc) and inanimate indices (foot wear print, tyre impression, tool mark, counterfeit, etc).

IX. Forensic Medicine (Medico Legal) expertise in Health Ministries' field arms such as medical universities / institutes / colleges and hospitals (as also exclusive facility like Medico Legal Institute (Bhopal) of Madhya Pradesh Government's Home – Police Department) significantly and uniquely serves the cause of criminal justice essentially by ascertaining age, sex etc of subjects and cause & nature of injury / death and the like. But this important branch of knowledge service (indispensably sought after in the context of complicity of contemporary crimes, gender abuse and human rights) has been for long in doldrums, and should be rejuvenated by enlarging, encouraging, emboldening and empowering (with fund). Addition of toxicology, forensic pathology, forensic odontology, clinical forensic medicine, polygraph, brainmapping and narcoanalysis should enlarge and embolden the forensic medical functioning. Encouragement and empowerment should be by liberal funding for refreshing, expanding and modernizing the infrastructure (mortuary, autopsy theatre, cold storage, CT scan, digital X-ray, other equipments and hardwares & softwares for the ongoing as well as for the add ons), special facilities, training, certification and accreditation. Disaster Death Forensic Team (DDFT) should also be formed in the lines of USA [Ref 72] at these expertise-nodes for swift action / coordination with DIFOSER's

Rapid Response Forensic Authority (RAREFA) and National Disaster Management Authority (NDMA). RAREFA and DDFT should undergo training in Interpol Guidelines for Disaster victim Identification.

- (i)** Without any monetary expectation from (Union / State / UT) Ministry of Health and Family Welfare (MoHFW), MHA should administer grants for the next seven to ten years to improve forensic medical practice in India.
 - (ii)** Units of toxicology, polygraph (lie detection), brainmapping [brain fingerprinting; brain electrical oscillation signature (BEOS); brain electrical activation profile (BEAP)] and narcoanalysis existing with CFSLs / FSLs should be relocated at FM set up in a phased manner within the next two to three years.
- X.** Indian Forensic Service Improvement Grants (IFOSIG) Fund enabled by the proposed Forensic Council of India should be annually handed over to the MHA for pooling with its own exclusive funds to administer grants (through the DIFOSER) to enable capacity building and improve quality, timeliness and credibility of forensic service delivery by the 28 States' / 7 UTs' outlets of forensic science, forensic medicine, and finger print; the apportionment of grants in each State / UT should be as 40 % (FS), 50 % (FM) and 10% (FP) respectively. USA's "Paul Coverdell National Forensic Science Improvement Grant" programme administered by National Institute of Justice, made possible through an Act of 2000 (Public

Law 106-561), by amending their Omnibus Crime Control and Safe Streets Act of 1968 is a good model for tailored adoption to IFOSIG particularly in terms of conditions for grant-applicant States, and external entities for fiscal / professional audit [Ref 134-138].

XI. For a meaningful metamorphosis DIFOSER should in due course convince, invite and include in its precincts the forensic science laboratories, forensic medicine departments, finger print bureaux and chemical examiner's laboratories of all the States / UTs.

XII. Recommendations on HR include:

(i) DIFOSER's policies relating to human resource (recruitment, assessment, motivation, and Flexible Complementing Scheme – in situ promotion etc), purchase, autonomy and financial power delegation should be framed immediately in the lines available with Defence Research & Development Organization (DRDO) [Ref 90] and implemented.

(ii) Regarding DIFOSER's personnel categorization there should be as of now, three namely:-

(a) Central Forensic (Scientific) Service

(b) Central Forensic (Support) Service, and

(c) Central Forensic (Administrative and Allied) Service

[There should also be provision for the future Central Forensic (Technological) Service and Central Forensic (Medical) Service]

- (iii)** Wherever necessary, rules should be framed dovetailing the cadres concerned in accordance with the GoI – DoPT’s guidelines.
- (iv)** Since fast track action is necessary for recruiting / promoting HR in the essential service set up of DIFOSER, the processes concerned should be as in the DRDO, and out of the purview of Service Commissions (like UPSC, SSC etc.)
- (v)** GoI is understandably considering relook and revision of policies and procedures for all S & T service providing agencies in India (like DST, DBT, DRDO, ISRO etc); as and when new initiative becomes operational, DIFOSER should switch over immediately in the larger interest of its service, science managers and staff.
- (vi)** In the meantime there should be urgent action to delegate increased financial power to the leaders of DIFOSER as below.

- | | | |
|-----|---|-------------------------------------|
| (a) | Director – cum – Chief Forensic Scientist : | Up to Rs. 15 lakhs per transaction* |
| (b) | Director of CFSL : | Up to Rs. 10 lakhs per transaction* |
| (c) | Deputy Director (at the DIFOSER headquarters) : | Up to Rs. 5 lakhs per transaction* |

* under budget Heads relating to each of purchase, maintenance and repair

XIII. Scientific Advisory Council to the Prime Minister has noted: “... Even though the strength of police / paramilitary manpower in states has increased to meet the ever growing crime in country, the manpower position in the (forensic) laboratories has gone down both qualitatively and quantitatively. If this present state of affairs continues, the laboratories would be left with only skeleton staff, which would not be able to meet the given mandate...”[Ref 49]; this signals the imminent danger. It is therefore recommended that there should be by default continuing synchrony between the requirements (budget, space, scientists, staff, infrastructure, equipments, vehicles etc.) of forensic service and population growth / volume & pattern of crimes. Also agendas for Commissions dealing with judicial reforms, police reforms and human rights should include points on forensics.

XIV. Workforce, the backbone of forensic service is not in proper shape at present owing to manpower deficiency triggered overload and long stifled promotional chances; the latter is aggravated by the deputation mode filling of posts.

(i) It is therefore recommended that fast track special drive should be taken to (a) effect all promotions due and (b) fill all the 212 vacancies (Table 6) as per the existing rules and by reviving 107 posts abolished in 2008 [Ref 56]; and, alongside implement alignment with FCS (in situ promotion). Also such urgent steps are needed for the 92 vacancies with the CFSL (CBI), Delhi (Table 6).

- (ii)** Incidentally action should be initiated to drop the deputation mode filling of posts in DIFOSER.
- (iii)** There also need to be steps for assessing and creating additional posts required by the Central forensic establishments (540 for those under DFS; 03for CFSL under CBI) (Table 6).

The Consultants are happy to record here that, based on their Interim Report, aggressive action has been kindly initiated by the MHA, GoI in the above regard (Ref 139-142].

- (iv)** Staff position at the forensic training – centric National Institute of Criminology and Forensic Science (NICFS; MHA, GoI), Delhi is very shaky. Thirty three (out of the sanctioned 51) posts, mostly in the higher rungs, are vacant for long (Figure 10); and, with a genuine concern for professional development, these posts should be filled forthwith as per the existing rules. However, deputation mode filling should not be resorted to.
- (v)** Forensic Science (FS) wing at SVP National Police Academy (NPA; MHA, GoI), Hyderabad is an important part of the Academy's training programmes frequently meant for senior level police brass. The FS wing since decades is having one sanctioned post each of Assistant Director, Junior Scientific Officer, Senior Laboratory Assistant, Junior Laboratory Assistant and Lab Attendant; of the five, three are vacant. This vacancy should be filled fast. In addition, for inculcating varied physical, chemical and biological forensics that too upon police

leadership, there should be more cocurricular activities and commensurately more seasoned cadre posts.

(a) Therefore there should be creation and filling of the following (additional) posts for FS wing of NPA:-

Deputy Director	-	One
Assistant Director	-	Two
Junior Scientific officer	-	Two
Senior Laboratory Assistant	-	Two
Junior laboratory Assistant	-	Two
Laboratory Attendant	-	Two

(b) As spontaneously endorsed by the Director: NPA [Ref 32], for emulating and improving the Punjab model of FS – Police combine against terrorism (*Vide **Appendix 14***), there should be a new activity named “Forensic Product(s) Development” Cell within the ambit of FS wing.

(c) Also there should be a contemplation to amalgamate the FS wing of NPA with the proposed National Forensic Academy (NFA) for administrative control while continuing the NPA’s operational control.

(vi) In a related context it is noted that the Central Finger Print Bureau (CFPB, under NCRB) is now busy with institutionalizing a new networking exercise called “Crime & Criminal Tracking Network and Systems” (CCTNS) as E-governance mission mode project [Ref 141 – 142]. One of the basic requirements felt

during this venture is additional manpower [Ref 23] and, therefore, it is recommended that at the CFPB the following additional posts be created.

Dy. SP	-	Four
Inspector	-	Ten
Sub Inspector	-	Ten
Head Constable	-	Six
PA / Steno	-	Four
Date Entry Operator	-	Six
Laboratory Attendant	-	Five

For infusing more science into the upcoming facility, for initiating & encouraging R & D especially to serve homeland security and for better intercommunication & interoperability of Automated Finger Print Identification / Information System (AFIS), (forensic) science graduates and post graduates may be preferred / recruited to fill the posts.

- XV.** Work norms for case work unit and the composition of cadres in every such unit [Ref 44] should continue till Work norms per Expert is evolved. However, health hazards of different kinds like pathogenic viruses, bacteria, fungi, poisons, chemicals, solvents, vapours, sonic vibrations, uv radiation, nuclear radiation, etc are inherent in forensic work. "Health & safety" aspect of laboratory accreditation addresses this issue only minimally. Therefore there should be two pronged health care policy.

- (i) As recommended by the Sixth Central Pay commission and as accepted by the Government, the concept of Risk Insurance should be implemented as applicable to each and every employee of forensic establishments [Ref 91].
- (ii) Regular health checkup, prophylactic immunization, exposure monitoring, health conscious work ambience / procedures / gadgets and use of ecofriendly disposables should be adopted in order to nullify / minimize occupational afflictions.

XVI. Policy for human resource motivation should be reinvigorated to thwart attrition, retain expertise and achieve excellence; the resulting committed scientists & teams with sense of ownership and pride of productivity would be an asset. Therefore there should be action to initiate measures as below.

- (i) Recently upgraded / approved Award Scheme [Ref 43] listing one Life Time Achievement Award, three R & D Awards, four Meritorious Awards, and one Young Scientist Award should be enlarged to include two more Meritorious Awards (one for Forensic Engineering & Technological discipline and the other for Forensic Medical discipline).
- (ii) Other incentives offered presently [Ref 43] are Best Paper Award (for each discipline at All India FS Conference), Cash Award for Central forensic scientists publishing in international journals, and Best Crime Scene Management Awards for State FSLs. It is recommended that Best Paper Award should be

extended to the disciplines of Forensic Engineering & Technology and Forensic Medicine.

(iii) There should also be new facets of motivation as given hereunder.

- (a) A lump sum one time payment of Rs. 25,000/- (Rupees twenty five thousand only) for relevant postgraduate and higher qualification acquired while in service
- (b) Share in reward money (prevailing in Customs, Excise etc services) in cases as appropriate
- (c) Spot Cash reward (with entry of Good Service in Records) ranging from Rs. 200/- to Rs. 1000/- for any good work (from janitorial to scientific leadership), to be given by Director of CFSL and / or by Chief Forensic Scientist
- (d) Reimbursement of payment towards annual subscription for one relevant scientific society and one relevant scientific journal
- (e) Reimbursement of fee towards Certification; permission on-duty to take up Certification – specific tests and lab sessions; and, consideration of Certification as enabler for promotion
- (f) Deputation to relevant training / professional development programmes in India and abroad

XVII. Restoration of scientific atmosphere in the Central forensic campuses may be in part possible by bridging the manpower gap as recommended thereinbefore; however lot more needs to be brought in for vibrancy, (vertical / horizontal / diagonal) interaction and internal communication.

Therefore in every CFSL, the following activities should be put back on track, or set in motion at once.

- (a) Sharing with colleagues the experience on return from SOC visit / court testimony / Conference etc / training
- (b) Weekly Group Discussion, among scientists in every Division on fixed / specified time (say every Friday, 4 pm) for review and strategy
- (c) Monthly Journal Club Meeting, with all scientists of CFSL (say, at 4 pm every first Wednesday of the month) to listen to and deliberate upon presentation – cum – analysis of two recent international publications [one presentation by a cadre from Senior Scientific Officer (SSO) to Director, and the other by a cadre from Scientific Assistant (SA) to Junior Scientific Officer (JSO)]
- (d) In – house “Forensic Newsletter”, as a four –page Quarterly, with brief / crisp scripts from within the laboratory and through invited ones from judiciary, prosecution , police, forensic technology, forensic medicine and social welfare.

(e) In – house training (periodical and / or ad hoc basis) in, for example,

- The Art and Science of Crime Scene Forensics (ASCRIS) :- for SA to SSO; twenty / batch / five days
- The Art of Loving, Utilizing and Maintaining Scientific Instruments (ALUMSI):- for SA to SSO; four / batch / five days
- Mock Court:- for SA to SSO; twenty / batch / one day
- Brainstorming on “Why & How to Breath, Eat and Drink Forensics” (BREAD–F):- for all employees in the establishment’s pay roll, to instil / reinstil forensics into them; once a year, preferably during Forensic Day / Week celebration (December – January)

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3. INFRASTRUCTURE

3.1. Prelude

Laboratory environment is one of the crucial factors to ensure good forensic practice. Exclusive premises with sufficient space and relevant infrastructure are indispensable for boosting the morale and productivity of scientists and support staff. Designs and ambience - control favour evidence integrity, analytical confidentiality, equipment functionality and health and safety. Laboratories should possess all equipments and facilities necessary to provide the highest quality forensic service. Central, State and UT FSLs especially the latter two entities have problems on this score. To a limited extent Delhi NCT, Gujarat, Rajasthan, Andhra Pradesh and Tamil Nadu are probably some exceptions.

3.2. Focus

Among the Central forensic establishments NAA Unit, NICFS and FS Unit of NPA appear to be better placed with no apparent want of building / space (Table 5). DFS headquarters and its CFSLs and GEQDs, CFSL (CBI) and CFPB (NCRB) share government building / space with other tenants; they all face shortage of space and the condition of DFS headquarters is bad. Many of these

establishments including CFSL, Kolkata in fact function in (non – lab) office buildings. A survey of infrastructure like security / functional / aesthetic fixtures, equipments, library, vehicles and special facilities shows that there is a general trend of acute shortage / shortage (Table 5).

Table 5 : Infrastructure – ready reckoner on Central forensic establishments

S.No.	Central forensic organization	Building / space	Security/ functional and aesthetic fixtures	Equipments	Human resource	Library	Vehicles	Special facilities
1	Directorate of Forensic Science (Headquarters) New Delhi	Government Building, Shared / Acute Shortage	Moderate	SOE, SME	Acute Shortage	Nil	Shortage	Nil
2	CFSL Chandigarh	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Moderate	Shortage	Good
3	CFSL Hyderabad	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Moderate	Shortage	Moderate
4	CFSL Kolkata	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Moderate	Shortage	Moderate
5	CFSL, CBI New Delhi	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Moderate	Shortage	Moderate
6	GEQD Hyderabad	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Moderate	Shortage	Moderate
7	GEQD Kolkata	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Moderate	No Shortage	Moderate
8	GEQD Shimla	Government Building, Shared / Shortage	Moderate	SME, SSW, SHW	Shortage	Moderate	Shortage	Moderate
9	NAA unit Mumbai	Government Building, Shared / No Shortage	Good	No Shortage	Shortage	Good	No Shortage	Good
10	NICFS New Delhi	Government Building, Shared / No Shortage	Moderate	SME, SSW, SHW	Acute Shortage	Good	No Shortage	Good
11	FS unit SVPNPA Hyderabad	Government Building, Not Shared / No Shortage	Good	SME, SSW, SHW	Acute Shortage	Good	No Shortage	Good
12	CFPB New Delhi	Government Building, Shared / Shortage	Moderate	SOE, SME,SSW, SHW	Shortage	Nil	Shortage	Nil

CFSL : Central Forensic Science Laboratory CBI : Central Bureau of Investigation NAA : Neutron Activation Analysis
 GEQD : Government Examiner of Questioned Documents NICFS : National Institute of Criminology and Forensic Science
 SVPNPA : Sardar Vallabhbai Patel National Police Academy CFPB : Central Finger Print Bureau
 SOE : Shortage of office equipments SME : Shortage of modern scientific equipments
 SHW : Shortage of hardware SSW : Shortage of software

The condition is bound to turn worse in times to come along with the emerging forensic areas and homeland security related disciplines. The projected demand of space is more than 85,000 sq. ft. for the various units (Tables 18 and 19). A comforting development is that two CFSLs (Chandigarh and Kolkata), which are presently sharing lab – space / non – lab space with other non forensic offices (Central Detective Training Schools; CDTS), have recently acquired land for constructing new lab – design buildings. CFSL (CBI), Delhi is hopeful of getting some additional space in the same office building when some wings of CBI vacate in near future.

Table 18 : Space requirement of Central Forensic Science Laboratories

S.No.	Lab Division	CFSL Chandigarh (sq. ft.)	CFSL Hyderabad (sq. ft.)	CFSL Kolkata (sq. ft.)	CFSL, CBI New Delhi (sq. ft.)
1	Anthropology (Skull superimposition)	1500	Nil	Nil	Nil
2	Ballistics	6000	3000	Nil	1500
3	Biology	4000	2000	Nil	Nil
4	Brainmapping	400	Nil	Nil	Nil
5	Chemistry	1400	4000	5120	Nil
6	Computer forensics / digital forensics	400	3000	100	500
7	Counterfeit currency	400	800	100	Nil
8	Documents	Nil	Nil	Nil	1500
9	Explosives	1500	3000	5000	Nil
10	Fingerprint	Nil	Nil	Nil	800
11	Narcotics	4500	800	Nil	Nil
12	Photography	100	Nil	Nil	Nil
13	Physics	5400	3500	250	Nil
14	Polygraph	400	Nil	Nil	1200
15	Serology / DNA	6000	3500	5000	Nil
16	Toxicology	4000	4500	500	Nil
17	Voice identification	400	Nil	Nil	Nil
TOTAL		36,400	28,100	16,070	5,500

Table 19 : Space requirement of Government Examiners of Questioned Documents

S.No.	Lab Division	GEQD Hyderabad (sq. ft.)	GEQD Kolkata (sq. ft.)	GEQD Shimla (sq. ft.)
1	Computer forensics/ digital forensics	Nil	Nil	1600
2	Documents	Nil	Nil	600
3	Photography	Nil	Nil	400 (New unit proposed)
4	Counterfeit currency	Nil	Nil	240
TOTAL		Nil	Nil	2840

Lists of sophisticated equipments already available as well as needed by the forensic institutions are given in Tables 20 and 21. They cover those required for meeting the increase in case work and for attempting alternate approaches; some also harbour emerging areas. It is of happy concern to record here that, effecting a fusion between FBI (USA) – Visit – Report of the Chief Forensic Scientist [Ref 51] and the Consultants' Interim Report [Ref 139] , the GoI have initiated fast action to procure hardware and software tools (and training as well) for frontier forensics [Ref 140-142]. Assessment of the necessity for equipment, acquiring the skill required for operation and invoking the procedures for purchase are thus aligned pragmatically. Then, maintenance of equipments modern and functional and replacement as necessary are important for forensic quality and timeliness.

Table 20 : Equipments available with, and, needed by Central Forensic Science Laboratories

S.No.	Lab Division	CFSL, Chandigarh		CFSL, Hyderabad		CFSL, Kolkata		CFSL, CBI, New Delhi	
		Equipments available	Equipments needed	Equipments available	Equipments needed	Equipments available	Equipments needed	Equipments available	Equipments needed
1	Anthropology (Skull superimposition)	3D-Colour laser scanner, Graphical computers, Digital cameras, Skull stand, Laser colour printer, Photoshop 7 and other softwares	High resolution digital camera, Advance graphical workstation and Facial reconstruction software	NA	NA	NA	NA	NA	NA
2	Ballistics	IBIS, SEM-EDXA, Comparison microscope, BDS, Boroscope	NI	SEM EDXA, Comparison microscope, Brass Trax	Bullet Trax	Comparison microscope, Firearm signature identification system i.e. IBISTRAX system, SEM-EDXA system	Automatic comparison microscope, High speed camera for Ballistics	Gas Chromatograph, High Performance Liquid Chromatograph	GC-MS, FTIR
3	Biology	Centrifuges, Microscopes	Digital binocular microscopes with computer and softwares, upgraded centrifuge, digital	1. Genetic Analyzer 2. Gel-Doc System 3. PCR 4. Electrophoresis unit 5. Centrifuges	1. RT-PCR 2. Software for data analysis 3. Microscope	Microscope, Incubator, Weighing balance Stage microscope, Ocular microscope	NI	Centrifuge, DNA Extraction System	Electrophoresis, Refrigerated Centrifuge, Digital Orbital shaker

Contd.

Table 20 : Equipments available with, and, needed by Central Forensic Science Laboratories (*Contd.*)

			incubator, Deep freezers and refrigerator	6. Balance 7. Millipore water purifier 8. Ice flaking machine 9. Deep freezer 10. Water bath 11. Stereo microscope 12. Comparison microscope					
4	Brain mapping	Brain Electrical Oscillation Signature Profiling System (BEOS)	NI	NA	NA	NA	NA	NA	NA
5	Chemistry	TLC, HPTLC, UV-Vis spectrophotometer, GC, GC-MS, HPLC, LC-MS/MS, FTIR	VIN-7505M	High performance liquid chromatograph, Ion chromatograph, GC, Oil & Water bath viscometer, Flash point apparatus, GC-MS, HPTLC, LC-MS/MS, FTIR-Raman	UV-Vis spectrophotometer	UV-visible spectrophotometer, GC, GC-MS, LC MS, FT IR	GC-MS, FT-Raman	GLC, HPTLC	UV and GC-MS
6	Computer forensics/ digital forensics	EnCase software, SIMI software, Cell Brite, DIR	NI	1. Data Recovery Analysis Computer (DRAC) 2. Cellebrite 3. High End computers 4. Password	Latest software	DRAC2000 Workstation, Cellebrite mobile workstation, Encase V. 6.10 software	DIBS mobile workstation, High speed imaging workstation, Upgradation of existing cellebrite workstation,	Encase, forensic tool kit, cyber check, winhex, recovery tool kit, registry viewer.	Fred Workstation, Steganographics

Table 20 : Equipments available with, and, needed by Central Forensic Science Laboratories (*Contd.*)

				Recovery tool kit 5. EnCase Data Retrieval software 6. Mobile Forensics			Cell Dec system		
7	Counterfeit currency	NA	NA	High performance thin layer chromatograph	Video Spectral comparator, Photo imaging system	UV Light, Poly-view	Spectral comparator, UV spectrophotometer	NA	NA
8	Documents	NA	NA	NA	NA	NA	NA	FICN KIT, Fake Indian currency note kit, VEC - 5000, VSC, ESDA, TVC	NI
9	Explosives	Cap. HPLC, GC-MS, LC-MS/MS, HPTLC, UV-Vis spectrophotometer, FTIR	FT-Raman, IonScan, Ion chromatograph, TGA/DSC	1. HPLC 2. TGA-DSC 3. LC-MS-MS 4. Ion-chromatograph 5. Ion-mobility spectrometry 6. FTIR-Raman 7. TLC-FID	1. Robot for collection of unexploded bombs 2. Bomb frequency Jammer 3. Bomb suits 4. Bomb containers 5. Bomb vehicle 6. Kit for radioactivity measurement	Chemical test, GC MS, IC, HPLC, LC MS/MS, FT-IR	FT Raman	NA	NA
10	Fingerprint	NA	NA	NA	NA	NA	NA	Poly-light, Heating/mounting press	Poly-light for new metropolitan unit
11	Narcotics	Cap. HPLC, GC-MS, LC-MS/MS, HPTLC, UV-Vis	TLC-FID, HPTLC, FT-Raman	1. HPLC 2. HPTLC 3. LC-MS-MS 4. GC 5. GCMS	UV-VIS spectrophotometer	As per Chemistry Division	As per Chemistry Division	NA	NA

Table 20 : Equipments available with, and, needed by Central Forensic Science Laboratories (*Contd.*)

		spectrophotometer, FTIR		6. FTIR-Raman					
12	Photography	NA	NA	NA	NA	NA	NA	All cameras, Video Cameras, Audio digital recorder, Printer and scanner, Video measurement system, Recorder and player	Digital SLR, Reprint system
13	Physics	Stereo microscope, Density Kit, Sieve, Sieve shaker, Micro-macro image processing system, Dust lifting kit, XRD, AAS, FTIR, Pyrolysis GC-MS, GFAAS, UV light. Micro Ohm meter, Gauss meter, GRIM, Multimeter	XRF for elemental analysis, Comparison microscope, Physical strength testing unit, Spectral comparator, SEM-EDXA, XRF, Electrical lab	Stereo-microscope, Comparison microscope, Inductively coupled plasma-AES, Muffle furnace, XRD, FTIR-Raman	1. Tensile strength 2. Sieve shaker for soil 3. Scanning electron microscope	Chemical tests, microscope, Stereo microscope, Comparison microscope, Screw gauge, Slide caliper, Photography gadgets	AAS, XRF for elemental analysis, Comparison microscope	DGA, Stereo microscope	NI
14	Polygraph	Polygraph	NI	NA	NA	NA	NA	Computerised polygraph system	NI
15	Serology/DNA	Centrifuges, Thermocycler, Real time PCR, Genetic analyser, Microscope etc.	Tissue lyzer, Latest upgraded thermocycler, Latest and upgarded Genetic analyzer, Automated	1. Genetic analyzer 2. Gel-Doc system 3. PCR 4. Electrophoresis unit 5. Centrifuges	1. RT-PCR 2. Software for data analysis 3. Microscope	Automated DNA sequencer, Real time PCR machine	NI	NA	NA

Table 20 : Equipments available with, and, needed by Central Forensic Science Laboratories (*Contd.*)

			<p>DNA extraction system, Automated forensic DNA instruments facility and DNA View software and related softwares</p> <p>Mitochondrial DNA sequencing analysis facility and softwares.</p> <p>National DNA Index system facility and softwares.</p> <p>Missing person and mass disaster victim identification facility and mass fatality identification system and M-FISys software.</p> <p>DNA research unit.</p>	<p>6. Balance 7. Millipore water purifier 8. Ice flaking machine 9. Deep freezer 10. Water bath 11. Stereo microscope 12. Comparison microscope</p>					
16	Toxicology	Cap. HPLC,	TLC-FID,	1. HPLC	Detection &	HPTLC,GC-MS,AAS	NI	NA	NA

Table 20 : Equipments available with, and, needed by Central Forensic Science Laboratories (*Contd.*)

		GC-MS, LC-MS/MS, HPTLC, UV-Vis spectrophotometer, FTIR	HPTLC, FT-Raman	2. HPTLC 3. LC-MS-MS 4. GC 5. GCMS 6. FTIR-Raman	decomposition equipment for chemical warfare agents				
17	Voice identification	Computerised speech lab, Automatic speaker identification system, language independent speaker identification system	NI	NA	NA	NA	NA	NA	NA

NA : Not applicable / available ; NI : Not indicated

Table 21 : Equipments available with, and, needed by Government Examiners of Questioned Documents

S.No.	Lab Division	GEQD, Hyderabad		GEQD, Kolkata		GEQD, Shimla	
		Equipments available	Equipments needed	Equipments available	Equipments needed	Equipments available	Equipments needed
1.	Computer forensics/ digital forensics	Encase; Cyber Check; FTK; DIBS	As per need and technology available	Faast, HS, DIBS Lab and mobile workstations with integrated write protects for all possible media, Portable forensic lab, Forensic MD5, Forensic Dossior, Table WP Kits, EnCase V6, FTK2, Cyber Check Suit, CellBrite, CellIDEKTEK, Mobiledit etc.	Additional software /hardware tools required for embedded forensics, multimedia forensics, antiforensic analysis tool for analysis of emerging areas of digital forensics	1. Storage media analysis unit. 2. Network real time forensic analysis unit. 3. Embedded chip/plastic currency analysis unit 4. Physically damaged storage media unit	1. FTK 2. Encase 3. Cyber check suite 4. Voom Hard Copy II 5. DIBS
2.	Documents	VSC-5000;VSC-2000; VSC-4; VSC-1; KAPPA; Stereo-microscope, ESDA, Foram 685-2	New equipment shall be added as and when new	True Scan security documents examination kit, Video	Additional equipments such as portable security	VSC-2000 HR, Document Expert, Leica Microscope, Raman, IR & UV Sources of light,	Upgradation in technology from time to time

Table 21 : Equipments available with, and, needed by Government Examiners of Questioned Documents

			technology emerges	Spectral Comparator 2000 and 5000 series, Docu-center Expert, Forensic XP Spectral Comparator, Travel IR for ink and paper analysis, Leica stereo zoom microscopes for studying the line quality/intersection of strokes etc. ESDA for indentation examination	documents analysis kits, Spectroscopy equipments for R&D and method development	FTIR, Tunable light source, Kappa, Projectina, Microscope	
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Rapid Response Forensic Authority (RAREFA) as recommended presently puts extra pressure and force on the readiness and swiftness of conventional Mobile FSL. An all time alert fully functional vehicle is therefore an essential component of forensic infrastructure.

Knowledge service is always looked upon for quick and clinching solutions. Strong foundation as well as avid upgradation are therefore indispensable. Library is the sanctum sanctorum wherein every forensic practitioner should find scope for this. Books and journals are two specific arms to enable learning as a continuing process. Forensic expenditure on library is very good though with intra – institutional and inter – institutional fiscal variations over the past five years (Tables 22 and 23). It also appears however that some establishments have not realized the importance of regular readership with journals (Table 24).

Table 22 : Library expenditure of Central Forensic Science Laboratories (2005-2009)

S.No.	Year	CFSL Chandigarh		CFSL Hyderabad		CFSL Kolkata		CFSL, CBI New Delhi	
		Expenditure on library (Rs.) (2005-2009)	Expenditure on library (Rs.) (2009)	Expenditure on library (Rs.) (2005-2009)	Expenditure on library (Rs.) (2009)	Expenditure on library (Rs.) (2005-2009)	Expenditure on library (Rs.) (2009)	Expenditure on library (Rs.) (2005-2009)	Expenditure on library (Rs.) (2009)
1	2005	11,23,894		2,81,012		1,51,652		1,03,151	
2	2006	13,85,092		2,19,694		Nil		82,530	
3	2007	15,61,181		6,00,313		7,44,947		2,72,495	
4	2008	12,70,283		1,29,161		2,65,277		5,71,941	
5	2009	18,99,858	18,99,858	1,25,265	1,25,265	7,104	7,104	2,15,221	2,15,221
TOTAL		72,40,308	18,99,858	13,55,445	1,25,265	11,68,980	7,104	12,45,338	2,15,221

Table 23 : Library expenditure of Government Examiners of Questioned Documents (2005-2009)

S.No.	Year	GEOD Hyderabad		GEOD Kolkata		GEOD Shimla	
		Expenditure on library (Rs.) (2005-2009)	Expenditure on library (Rs.) (2009)	Expenditure on library (Rs.) (2005-2009)	Expenditure on library (Rs.) (2009)	Expenditure on library (Rs.) (2005-2009)	Expenditure on library (Rs.) (2009)
1	2005	1,48,251		28,365		1,59,816	
2	2006	4,23,969		24,637		76,602	
3	2007	85,501		2,38,648		1,25,844	
4	2008	91,634		1,16,300		51,212	
5	2009	2,26,850	2,26,850	48,517	48,517	18,487	18,487
TOTAL		9,76,205	2,26,850	4,56,467	48,517	4,31,961	18,487

Table 24 : Library - - - Indian and international journals being subscribed by Central forensic establishments

S. No.	Type of journal (hard / soft copy)	CFSL Chandigarh	CFSL Hyderabad	CFSL Kolkata	CFSL,CBI New Delhi	GEOD ♥ Hyderabad	GEOD ♥ Kolkata	GEOD♥ Shimla
1	International (ISI database)	09	10	05	Nil	Nil	Nil	Nil
2	International (non ISI database)	10	04	Nil	Nil	Nil	Nil	Nil
3	National (ISI database)	-	01	05	Nil	Nil	Nil	Nil
4	National (non ISI database)	05	04	Nil	04	Nil	Nil	Nil
5	Web links	-	-	-	-	-	-	-

♥ : using internet facility for surveying literature

3.3. Recommendations

- I. Landscape, building and infrastructure for scientific laboratory especially for forensics should have certain specifics, as well described by the National Institute of Standards and Technology (NIST) and the National Institute of Justice, USA [Ref 67].

(i) It is therefore recommended that each forensic establishment should have its own lab – designed premises incorporating among others the following.

- (a) Zones of perimeter security (including parking bays)
- (b) Indoor access security
- (c) Surveillance installations
- (d) Case reception area
- (e) Visitors' lounge
- (f) Uninterrupted supply of power and water with auto stand – by
- (g) 24 x 7 maintenance of electronic, electrical, mechanical and civil units, machines and gadgets
- (h) Ambience control (temperature / humidity / acoustics / suspended particulate matter)
- (i) Drainage / waste handling – disposal systems for solids, liquids and vapours of chemical / biological origin
- (j) Bomb hut
- (k) Ballistics test fire range (indoor, closed and stand-alone)
- (l) Ramp for vehicle (under chassis) examination
- (m) First – Aid kits
- (n) Fire fighting devices
- (o) Museum
- (p) Canteen / lunch – hall (operable in specific time)

- (q) Indoor game hall (operable in specific time)
- (r) Local area network (LAN) and wide area network (WAN)
- (s) Organizational information management system (indigenously developed)
- (t) Laboratory information management system (indigenously developed)
- (u) Touchless sensor based hand sanitizer dispensing devices
- (v) Transit apartments
- (w) Staff quarters
- (x) Kids' play zone

(ii) There should also be in the campus an equipped ever ready Rapid Response (Mobile) Forensic Laboratory vehicle.

(iii) Knowledge service of the forensic kind should be actively supported / sustained by state of the art as well as e- enabled Library, and this should be integral part of the infrastructure. Each CFSL should have such modern library; they in turn should be linked to each other, to that of National Forensic Academy (NFA) and to the National Forensic Library at the headquarters of DIFOSER. In fact the library of NFA should have more of training related audio, video etc. updates.

II. Scientific equipments constitute the flagship that processes and mediates knowledge application for forensic interpretation.

- (i)** It is therefore recommended that (through non-Plan as well as Plan funds) there should be a continuing system within DIFOSER to align expertise and purchase (and operation & maintenance) of money worthy useful equipments / instruments.
- (ii)** It is also recommended that beginning April 1,2011 DIFOSER should prepare (budget – encompassed) inventory of scientific equipments completing seven years on or before March 31, 2012; action should be simultaneously initiated to organize logistics to purchase inventory enlisted items. Withdrawal and replacement measures would then be completed by March 31,2013. Once initiated such seven – year cycles would become an annual affair deservingly done. A precedence in this regard is available with (USA –California’s) Sacramento County District Attorney’s Forensic Service Laboratory where five year replacement schedule is practised [Ref 61].
- (iii)** In case of underutilized equipments there should be regional consolidation for optimal usage.
- (iv)** AMC for equipments should be entered into, immediately after the supplier’s warranty (? three years) period, for such duration so as to be fully functional for seven years/till withdrawal.

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4. PROCEDURES

4.1. Prelude

Forensic Science personifies a cross - section of disciplines involving different sets of technologies and practices. Some are laboratory based (? objective) (e.g., toxicology and DNA typing); others depend on expert interpretation (? subjective) (e.g., fingerprints and bite marks). This variety leads to wide variability in respect of techniques, methodologies, human bias, sources of error, reliability and general acceptability. Further within a given discipline there could be identifiable operational differences among practitioners in different laboratories of different cities, States, countries and continents. Such disparity can occur at scene of crime / occurrence (SOC), in laboratory and / or in court (testimony).

Reliability, mediated by reproducibility would then be at stake. Quality and therefore acceptability become blurred [Ref 60 – 66, 73, 74]. US courts' rulings popularly called as "Frye standard" (Frye vs United States, 1923) and "Daubert criteria" (Daubert vs Merrell Dow Pharmaceuticals, Inc., 1993) insist that these issues should be addressed / ensured before adjudging the admissibility. This is why the quality triangle demands standardization (of

procedures), certification (of practitioners) and accreditation (of capability).

Products of incisive deliberations in the form of Standard Operating Procedures (SOPs) and Manuals need to be in the system with periodical revision / replacement as demanded by advancements in S & T. Reduction in qualified / inconclusive opinion and promotion of inter-personal / inter-laboratory uniformity are promising fruits of such exercise. Scientific evidence with enhanced quality would then attract positive feedback from forensic end-users like judiciary, prosecution and police.

Procedures and processes should also vouch for speed or timeliness of forensic service. Pendency / backlog of cases is a major pendulum in putting the clock back. Reassessing efficiency and recourse to alternatives can be two strategies to reduce / eliminate backlog. These efforts hold potential for extending participatory hand to establish national level databases to further intelligence & investigation relating to regular forensics and homeland security. Thus functional integration and synergy would also be accomplished.

4.2. Focus

Directorate of Forensic Science (DFS; MHA, GoI) has released eight forensic science Manuals in 2005, incorporating SOPs for adoption in Toxicology, Biology, Serology, DNA Profiling, Physics, Ballistics, Examination of Counterfeit Currency, and Analysis of Petroleum Products; in 2007, three Manuals were issued covering

Polygraph, Narcoanalysis, and, Brainmapping. Besides Manuals for Chemistry, Explosives, and, Narcotics have also been brought out by CFSL, Hyderabad. They need to be reviewed / revised by full fledged Scientific Task Forces (STFs) as recommended presently; and, manuals should be prepared for other disciplines also.

Development of process for emerging forensic areas (such as that developed by CFSL, Chandigarh for Speaker / Voice Identification) happens and put into practice, which however does not undergo "Frye standard" / "Daubert criteria" of gaining general acceptance in the field in which it belongs, by way of documented external validation / patent filing / publication in relevant scientific journal. Such contributions need further efforts to put the novelty on a strong scientific pedestal.

Procedures adopted by Central forensic establishments are in good tune for SOC forensics (location of clues, sketch & photo making, guidance to investigation officer and reconstruction), laboratory practice (evidence item receipt & custody, analysis and report preparation & despatch) and court testimony (discussion with seniors and prosecutors prior to testimony, deposition and examination & cross examination) (Tables 25 and 26).

Table 25 : Gross observation on forensic GLP at Central Forensic Science Laboratories

S.No.	Activity		CFSL Chandigarh	CFSL Hyderabad	CFSL Kolkata	CFSL, CBI New Delhi
1	SOC forensics	Location of clues	Good	Very good	Good	Very good
		Guidance to I.O. and sketch / photos	Very good	Very good	Good	Moderate
		Reconstruction	Good	Very good	Good	Very good
2	Laboratory practice	Receipt and custody	Very good	Good	Good	Good
		Analysis	Very good	Good	Very good	Good
		Report preparation and despatch	Good	Good	Good	Good
3	Court testimony	Discussion with seniors and prosecutors prior to testimony	Good	Moderate	Moderat e	Good
		Deposition	Good	Good	Good	Good
		Examination- in-chief, cross examination and re- examination	Very good	Good	Good	Good

Table 26 : Gross observation on forensic GLP with the Government Examiners of Questioned Documents

S.No.	Activity		GEQD Hyderabad	GEQD Kolkata	GEQD Shimla
1	SOC forensics	Location of clues	Good	Not attending SOC	Not attending SOC
		Guidance to I.O. and sketch / photos	Good	-	-
		Reconstruction	Good	-	-
2	Laboratory practice	Receipt and custody	Good	Good	Good
		Analysis	Good	Good	Good
		Report preparation and despatch	Good	Good	Good
3	Court testimony	Discussion with seniors and prosecutors prior to testimony	Good	Good	Good
		Deposition	Good	Good	Good
		Examination-in-chief, cross examination and re-examination	Good	Good	Good

Hundreds of SOC visit-studies have been undertaken by these institutions during 2005-2009 with the exception of two laboratory bound document examination units (Tables 27 and 28).

Table 27 : Scene of crime / occurrence (SOC) - study by Central Forensic Science Laboratories

S.No.	Year	CFSL Chandigarh	CFSL Hyderabad	CFSL Kolkata	CFSL, CBI New Delhi
		Number of SOC study by lab team	Number of SOC study by lab team	Number of SOC study by lab team	Number of SOC study by lab team
1	2005	38	01	03	49
2	2006	55	Nil	03	60
3	2007	53	Nil	04	82
4	2008	65	Nil	03	99
5	2009	53	07	03	106
TOTAL		264	08	16	396

Table 28 : Scene of crime / occurrence (SOC) - study by Government Examiners of Questioned Documents

S.No.	Year	GEQD Hyderabad	GEQD Kolkata	GEQD Shimla
		Number of SOC study by lab team	Number of SOC study by lab team	Number of SOC study by lab team
1	2005	01	NI	NI
2	2006	01	NI	NI
3	2007	01	NI	NI
4	2008	01	NI	NI
5	2009	03	NI	NI
TOTAL		07	NI	NI

NI : Not indicated

In addition to the SOPs detailed in the Manuals of DFS / CFSL, the institutions employ methodologies appearing in journals, presented in conferences and / or developed in – house (Tables 29 and 30). While this trend prompts more standardized Manuals for more disciplines to come, the inconclusiveness factor in laboratory findings / reports is minimal (Tables 31 and 32); however in respect of biospecimens with accelerated susceptibility to the tropical conditions of India, more efforts are needed to spruce up serological examination in order to have more conclusive results (Table 31). More than five thousand court appearances have been accomplished by the scientists experts of Central forensic units in the past five years to testify in cases examined / reported by them (Tables 33 and 34).

Table 29 : Standard operating procedures at Central Forensic Science Laboratories

S.No.	Lab Division	CFSL Chandigarh					CFSL Hyderabad					CFSL Kolkata					CFSL, CBI New Delhi				
		Methodology used					Methodology used					Methodology used					Methodology used				
		DFS/CFSL manual	As published in Journal / literature	As presented in conference	Lab's own / unreported	Not readily available	DFS/CFSL manual	As published in Journal / literature	As presented in conference	Lab's own / unreported	Not readily available	DFS/CFSL manual	As published in Journal / literature	As presented in conference	Lab's own / unreported	Not readily available	DFS/CFSL manual	As published in Journal / literature	As presented in conference	Lab's own / unreported	Not readily available
1	Anthropology (Skull superimposition)	-	√	-	√	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	Ballistics	√	√	-	-	-	√	√	√	-	-	√	-	-	-	-	√	-	-	√	-
3	Biology	√	√	-	-	-	√	√	√	-	-	√	√	-	-	-	√	-	-	√	-
4	Brainmapping	√	√	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Chemistry	√	√	-	-	-	√	√	√	-	-	√	-	-	-	-	√	-	-	√	-
6	Computer forensics/ digital forensics	√	√	-	-	-	√	√	√	-	-	√	-	-	-	-	√	-	-	√	-
7	Counterfeit currency	√	√	√	-	-	√	√	√	-	-	√	√	√	-	-	-	-	-	-	-
8	Documents	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	√	-	-	√	-
9	Explosives	√	√	-	-	-	√	√	√	-	-	√	-	-	-	-	-	-	-	-	-
10	Fingerprint	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	√	-	-	√	-
11	Narcotics	√	√	-	-	-	√	√	√	-	-	√	-	-	-	-	-	-	-	-	-
12	Photography	√	√	-	-	-	√	√	√	-	-	-	-	-	-	-	√	-	-	√	-
13	Physics	√	√	-	-	-	√	√	√	-	-	√	√	-	-	-	√	-	-	√	-
14	Polygraph	√	√	-	-	-	-	-	-	-	-	-	-	-	-	-	√	-	-	√	-
15	Serology/DNA	√	√	-	-	-	√	√	√	-	-	√	√	-	-	-	√	-	-	√	-
16	Toxicology	√	√	-	-	-	√	√	√	-	-	√	√	-	-	-	-	-	-	-	-
17	Voice identification	√	√	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 30 : Standard operating procedures of Government Examiners of Questioned Documents

S.No.	Lab Division	GEQD Hyderabad					GEQD Kolkata					GEQD Shimla				
		Methodology used					Methodology used					Methodology used				
		DFS/CFSL manual	As published in Journal / literature	As presented in conference	Lab's own / unreported	Not readily available	DFS/CFSL manual	As published in Journal / literature	As presented in conference	Lab's own / unreported	Not readily available	DFS/CFSL manual	As published in Journal / literature	As presented in conference	Lab's own / unreported	Not readily available
1	Computer forensics/ digital forensics	√	-	-	-	-	√	-	-	-	-	√	√	-	-	-
2	Counterfeit currency	√	-	-	-	-	√	-	-	-	-	√	√	-	-	-
3	Documents	√	-	-	-	-	√	-	-	-	-	√	√	√	√	-

Table 31 : Inconclusive finding reported by Central Forensic Science Laboratories
(2005-2009)

S.No.	Lab Division	CFSL Chandigarh	CFSL Hyderabad	CFSL Kolkata	CFSL, CBI New Delhi
1	Anthropology (Skull superimposition)	NI	NA	NA	NA
2	Ballistics	NI	Nil	Nil	1.0%
3	Biology	NI	~15%	15%	Nil
4	Brainmapping	NI	NA	NA	NA
5	Chemistry	NI	0.1-0.5%	Nil	Nil
6	Computer forensics/ digital forensics	NI	NI	Nil	Nil
7	Counterfeit currency	NA	NI	NA	NI
8	Documents	NA	NA	NA	20%
9	Explosives	NI	0.5-1.0%	<1.0%	NA
10	Fingerprint	NA	NA	NA	Nil
11	Narcotics	NI	Incl. in Chemistry	Incl. in Chemistry	NA
12	Photography	NA	NA	NA	10%
13	Physics	NI	0.5-1.0%	03%	10%
14	Polygraph	NI	NA	NA	10%
15	Serology/DNA	NI	Incl. in Biology	50% / 15%	Nil
16	Toxicology	NI	0.5-1.0%	Nil	NA
17	Voice identification	NI	NA	NA	NA

NA : Not available / applicable ; NI : Not indicated

Table 32 : Inconclusive finding reported by Government Examiners of Questioned Documents (2005-2009)

S.No.	Lab Division	GEQD Hyderabad	GEQD Kolkata	GEQD Shimla
1	Computer forensics/ digital forensics	NI	NI	Nil
2	Documents	NI	NI	None

NI : Not indicated

Table 33 : Instances of court testimony by the Experts of Central Forensic Science Laboratories (2005-2009)

S.No.	Lab Division	CFSL Chandigarh	CFSL Hyderabad	CFSL Kolkata	CFSL, CBI New Delhi
1	Anthropology (Skull superimposition)	Incl. in Biology	NA	NA	NA
2	Ballistics	168	26	66	177
3	Biology	224	39	61	26
4	Brainmapping	Incl. in Physics	NA	NA	NA
5	Chemistry	418	84	119	98
6	Computer forensics/ digital forensics	Incl. in Physics	04	05	01
7	Counterfeit currency	NA	Nil	NA	Nil
8	Documents	NA	NA	NA	526
9	Explosives	10	12	81	Incl. in Ballistics
10	Fingerprint	NA	NA	NA	65
11	Narcotics	Incl. in Chemistry	Incl. in Chemistry	Incl. in Chemistry	Incl. in Chemistry
12	Photography	NA	NA	NA	57
13	Physics	60	20	33	424
14	Polygraph	Incl. in Physics	NA	NA	28
15	Serology/DNA	Incl. in Biology	Incl. in Biology	15 / 51	35
16	Toxicology	75	30	13	Incl. in Chemistry
17	Voice identification	Incl. in Physics	NA	NA	Incl. in Physics
TOTAL		955	215	444	1437

NA : Not applicable / available

Table 34 : Instances of court testimony by the Experts with the Government Examiners of Questioned Documents (2005-2009)

S.No.	Lab Division	GEOD Hyderabad	GEOD Kolkata	GEOD Shimla
1	Computer forensics/ digital forensics	08	02	04
2	Documents	592	647	931
TOTAL		600	649	935

In parallel, through a specific survey during this study, judiciary's wide ranging assessment on forensics (from "Average" to "Excellent") (Table 35) and feedback from the officers of CBI (from "Good" to "Outstanding") and State police (from "Average" to "Excellent") (Tables 36 and 37) could be obtained which amount to balanced appreciation. Nevertheless there is no in – built mechanism in Indian forensics to get regular feedback from such customers (except that in Tamil Nadu the courts mark copy of judgements to the laboratory); a procedure should therefore be evolved for feedback on every report originating from laboratory.

Table 35 : Judiciary's assessment of forensic service delivery

S.No.	Feature	Assessment				
		A	G	Vg	E	O
1	Response time	24	01	-	-	-
2	Scientific competency	04	14	06	01	-
3	Opining / reporting quality	05	13	04	01	-
4	Opining /reporting speed	20	04	-	-	-
5	Corroborative utility	04	05	14	02	-
6	Probative utility	03	08	13	01	-
7	Lead giving utility	06	11	07	-	-
8	Prophylactic utility	05	13	02	-	-
9	Innocence – proving utility	09	09	06	01	-
10	Expert testimony clarity	03	16	04	02	-
11	Professional interaction	08	12	04	-	-
12	Ethical conduct	06	09	04	01	-
13	Overall forensic service delivery	07	08	04	01	-
14	Infrastructure (building, space, vehicles)	01	02	-	-	-
15	Infrastructure (equipments)	02	01	-	-	-
16	Infrastructure (library)	02	01	-	-	-
17	Human resource (No. of scientists and staff)	02	01	-	-	-
18	Human resource (qualification and expertise)	-	03	-	-	-
19	Human resource (training)	-	03	-	-	-
20	Organizational structure	-	02	01	-	-
Note	<i>Forensic science awareness among its end - user (Judicial officers)</i>	05	10	06	-	-

A : Average G: Good Vg : Very good E : Excellent O : Outstanding

Table 36 : CBI Officers' feedback on forensic service delivery

S. No.	Feature	Scale				
		A	G	Vg	E	O
1	Response time	05	14	07	-	-
2	Scientific competency	-	06	17	09	-
3	Opining / reporting quality	-	04	14	10	-
4	Opining / reporting speed	03	16	08	-	-
5	Corroborative utility	-	06	12	09	-
6	Probative utility	-	07	16	03	-
7	Lead - giving utility	02	05	15	04	-
8	Prophylactic utility	01	08	11	03	-
9	Innocence - proving utility	01	06	12	05	01
10	Expert testimony clarity	-	13	04	11	-
11	Professional interaction	-	14	06	07	-
12	Ethical conduct	-	-	20	07	-
13	Overall forensic science service - delivery	-	07	07	01	01
14	Infrastructure (building, space and vehicles)	08	07	04	-	-
15	Infrastructure (equipments)	-	08	11	-	-
16	Infrastructure (library)	01	07	11	-	-
17	Human resource (number of scientists and staff)	10	04	05	-	-
18	Human resource (qualification and experience)	-	03	13	04	-
19	Human resource (training)	07	05	07	01	-
20	Organizational structure	-	10	08	01	01

A : Average G : Good Vg : Very good E : Excellent O : Outstanding

NOTE

1. Feedback from Banks on document examination (their prime / only usage of forensic service) is "good".
2. Feedback from Customs & Central Excise Department is "good".
3. Feedback from Bar Council of India (New Delhi) is not direct, but, more a proactive spin-off looking for partnership to deliver forensic capacity building programmes [Ref.143 -145].

Table 37 : State Police Officers' feedback on forensic service delivery

S. No.	Feature	Scale				
		A	G	Vg	E	O
1	Response time	07	13	10	-	-
2	Scientific competency	01	19	10	-	-
3	Opining / reporting quality	01	11	14	03	-
4	Opining / reporting speed	07	12	10	01	-
5	Corroborative utility	01	17	11	02	-
6	Probative utility	03	15	10	02	-
7	Lead - giving utility	03	15	11	-	-
8	Prophylactic utility	05	14	10	-	-
9	Innocence - proving utility	05	12	12	01	-
10	Expert testimony clarity	02	12	12	04	-
11	Professional interaction	06	11	10	03	-
12	Ethical conduct	01	14	11	04	-
13	Overall forensic science service - delivery	05	12	07	03	-
14	Infrastructure (building, space and vehicles)	14	07	02	04	-
15	Infrastructure (equipments)	08	14	03	02	-
16	Infrastructure (library)	12	10	04	01	-
17	Human resource (number of scientists and staff)	11	12	04	-	-
18	Human resource (qualification and experience)	04	13	10	-	-
19	Human resource (training)	08	11	06	-	-
20	Organizational structure	06	12	08	-	-

A : Average G : Good Vg : Very good E : Excellent O : Outstanding

The concept of Certification (and Re-Certification) of forensic practitioners has not yet been given a try in India. Laboratory Accreditation has of course come to stay for good; all the Central forensic organizations have been accredited by NABL. On the contrary

most of the State / UT FSLs are for many reasons nowhere near the process of accreditation; this situation awaits enabling thrust.

Manpower is invariably the only / major solace for FSLs to look for with a view to reduce ever – increasing backlog / pendency of cases in laboratory (pendency *Vide* Figures 3 – 9). Exploitation of modern gadgets of S & T (including automation) does yield some relief but with limitation that forensic cases distinguish among themselves by uniqueness. Therefore, recasting operational strategy and search for other succour have to be contemplated.

Figure 3 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at CFSL, Chandigarh

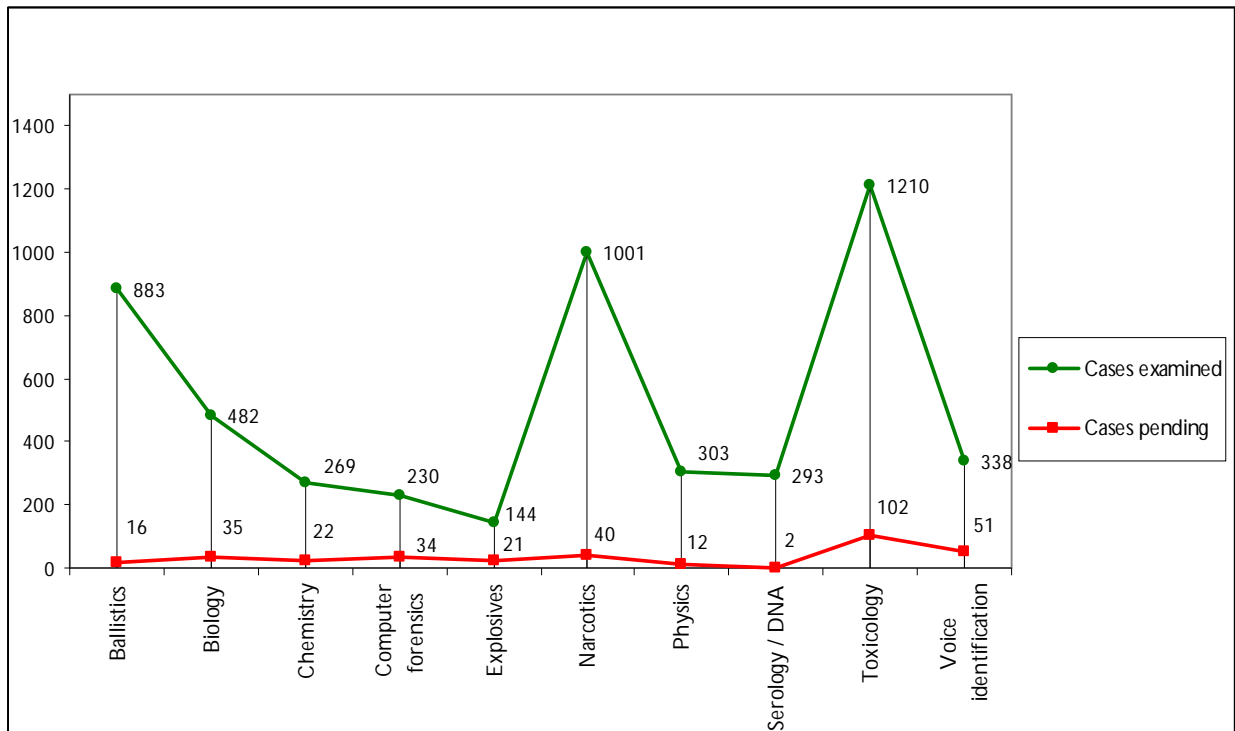


Figure 4 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at CFSL, Hyderabad

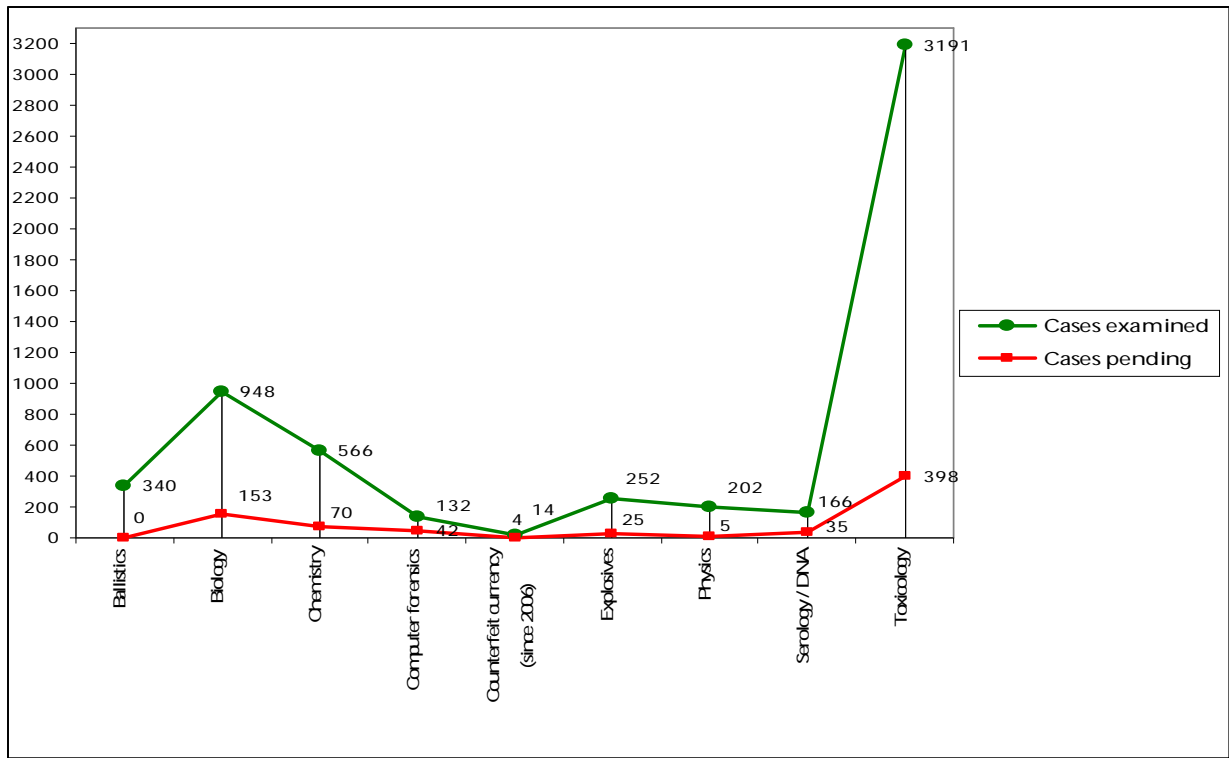


Figure 5 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at CFSL, Kolkata

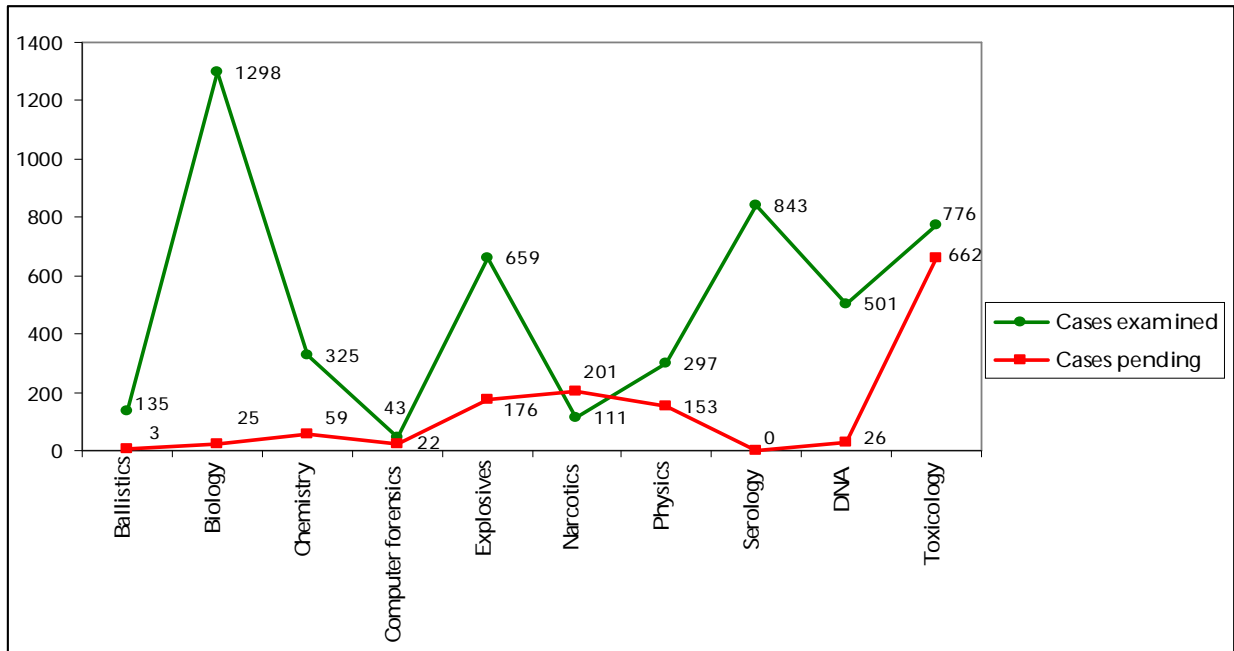


Figure 6 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at CFSL, CBI, New Delhi

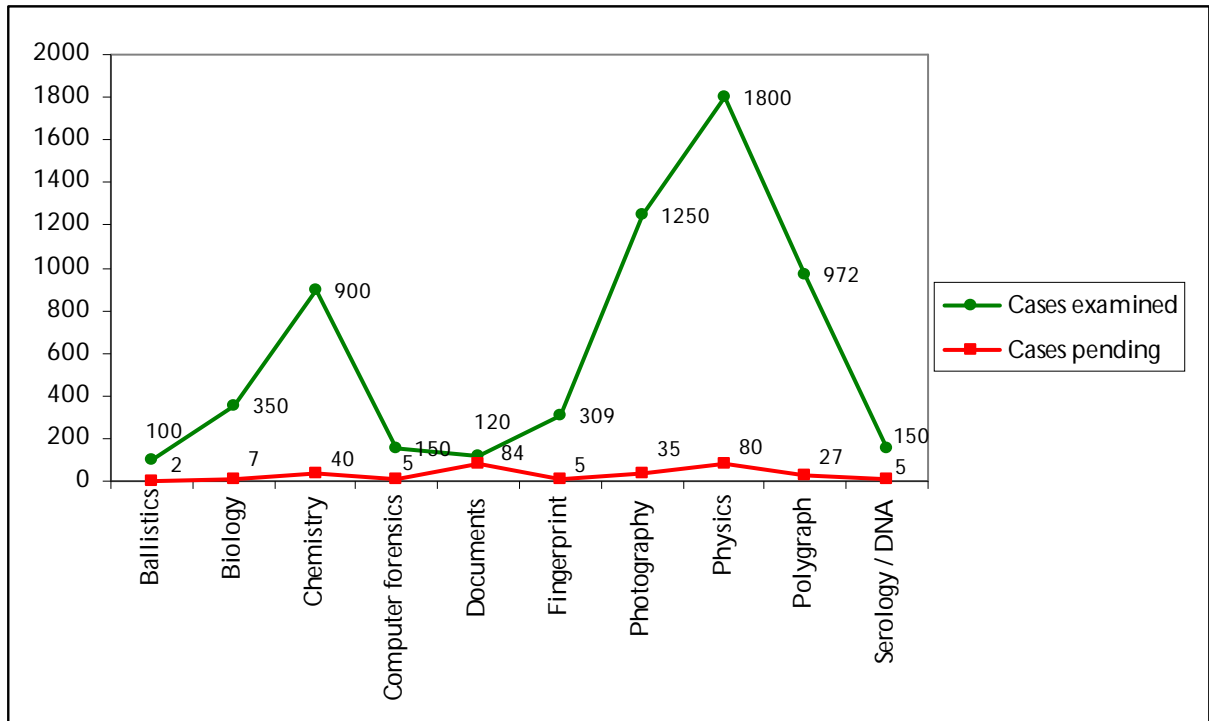


Figure 7 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at GEQD, Hyderabad

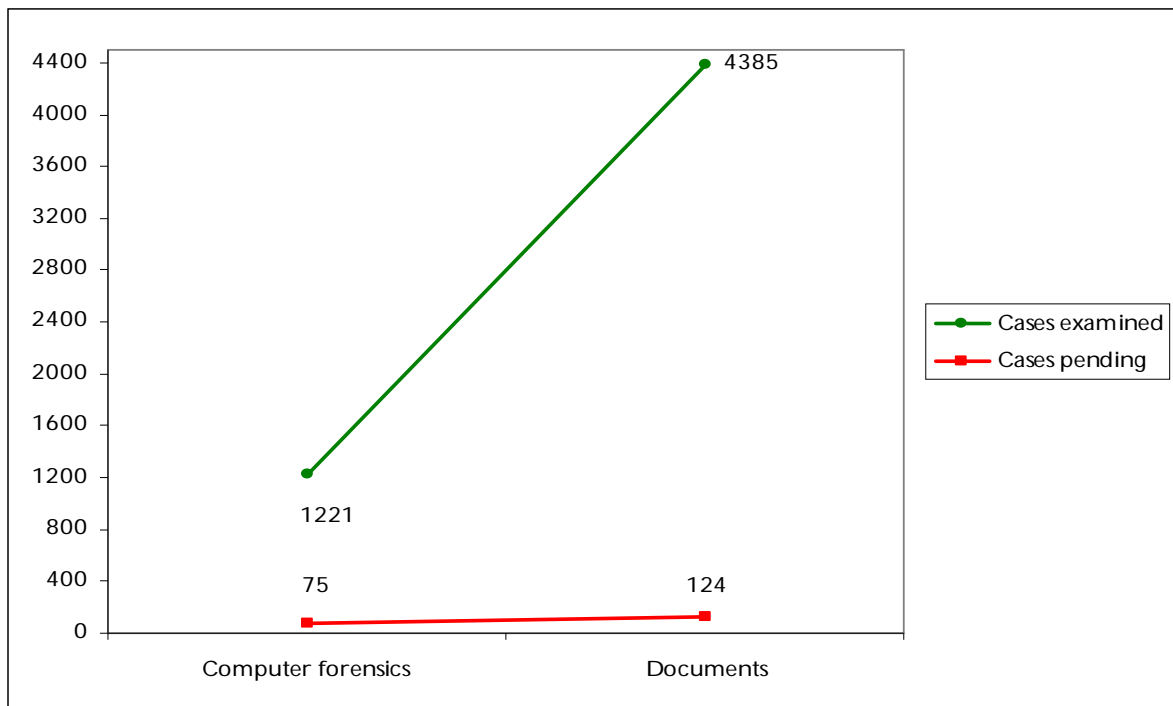


Figure 8 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at GEQD, Kolkata

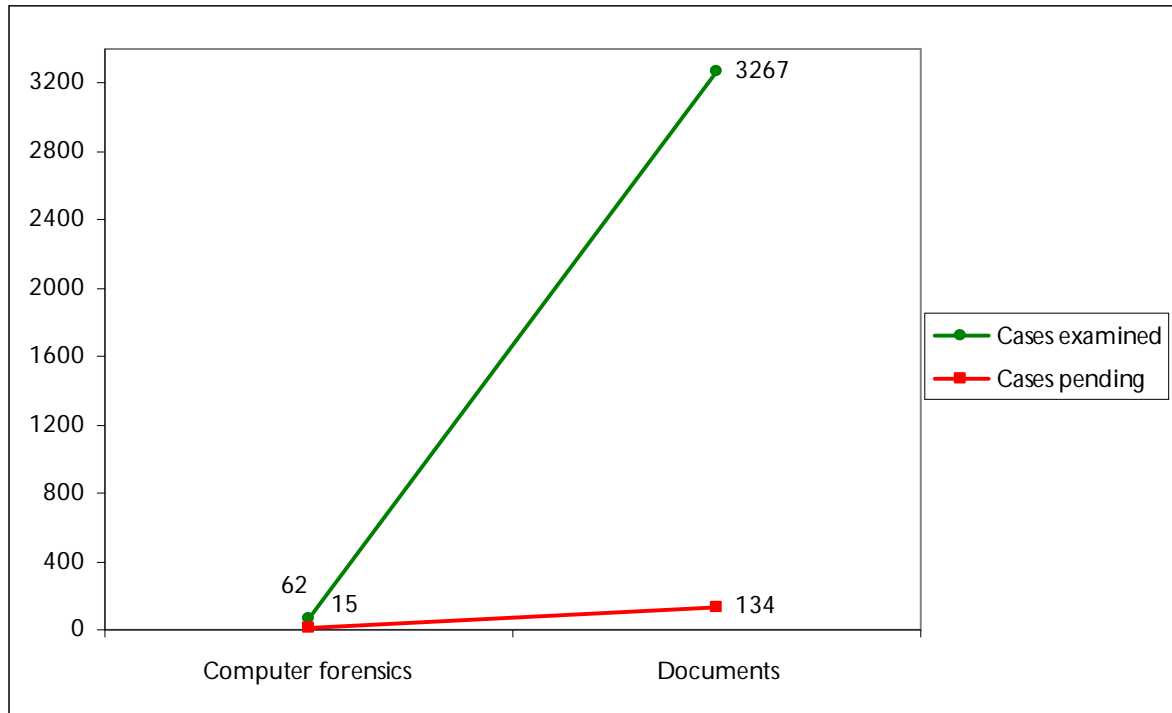


Figure 9 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at GEQD, Shimla

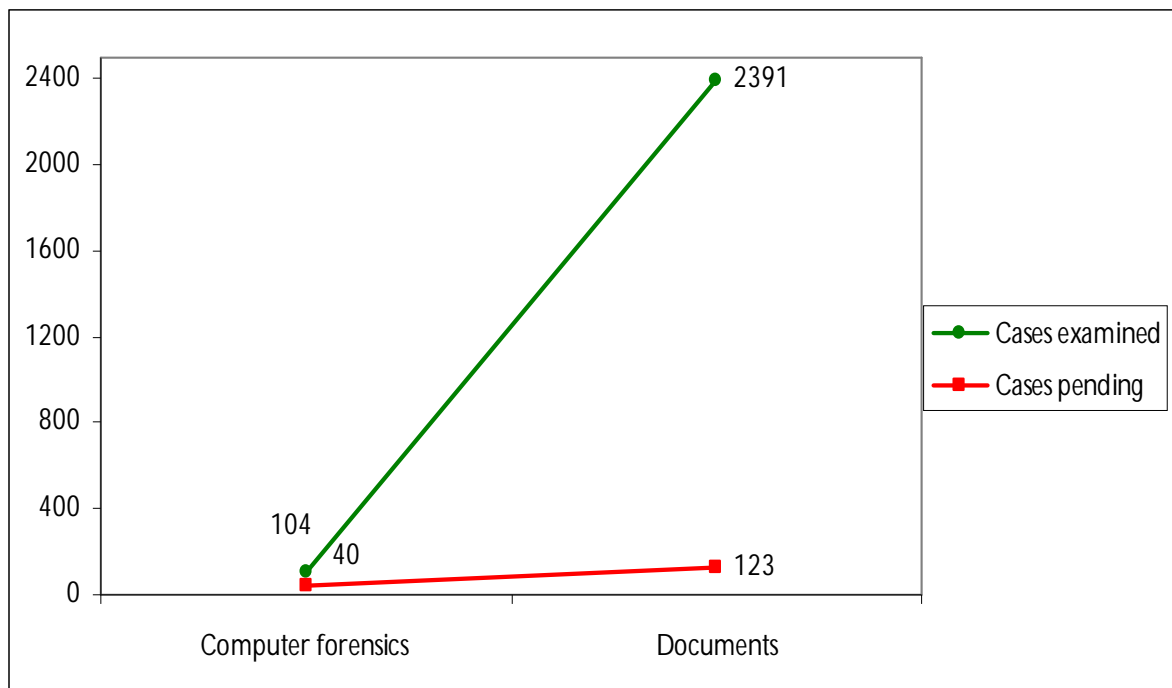


Table 38 lists thirty six items encompassing important forensic areas that need to be either strengthened or introduced to Indian forensics. Protection of country's citizens, soil, water and air space is imperative in the context of growing menace of external and internal threats. Forensic intelligence interoperable with national agencies becomes possible if relevant databases (in some specific areas enlisted in Table 38) are constituted. Functionally integrating and synergizing the forensic fraternity across the country should click this.

Table 38 : Scenario of forensic technologies / emerging areas practised abroad, and, in India's Central forensic establishments

S.No.	Global picture*	Indian scene (at the Central level)	Gap	Measures to fill / excel
1	Anthropology (skull superimposition)	CF1	-	Spreading, U
2	Ballistics	CF1,CF2,CF3,CF4	-	U
3	Biology	CF1,CF2,CF3,CF4	-	U
4	Biometrics	-	Biometrics	B, C, E, H, S, T, SF, App
5	Brainmapping	CF1	-	Relocation at FM
6	Cell phone forensics	CF2	-	Spreading, B, C, E, H, S, T, SF, App
7	Chemistry	CF1,CF2,CF3,CF4	-	U
8	Computer forensics / digital forensics	CF1,CF2,CF3,CF4,QD1, QD2, QD3	-	Consolidation, Spreading, U, H, App
9	Counterfeit currency	CF2,CF4	-	Spreading, U
10	Crime scene (including evidence & hazardous materials response)	CF1,CF2,CF3,CF4	-	B, C, E, H, S, T, SF
11	Criminal Justice Information Service	CF1, CF2, CF3 (on – going / priming) (Databases)	-	B, C, E, H, S, T, SF, Interoperability with forensic intelligence
12	Documents	CF4,QD1,QD2,QD3	-	Spreading
13	Excise	-	Excise	(Practicable as part of Chemistry as and when needed) B,C,E,H,S
14	Explosives	CF1,CF2,CF3,CF4	-	U
15	Finger Print	CF4, CFP	-	Spreading, U, App
16	Foot / foot wear print	CF1	-	Spreading, U
17	Forensic geology	CF1 (start-up)	-	H, T
18	Forensic intelligence	-	Forensic intelligence	B, C, E, H, S, T, SF, App, Interaction with MAC, NatGrid & NCTC

Table 38 : Scenario of forensic technologies / emerging areas practised abroad, and, in India's Central forensic establishments (*Contd.*)

19	Forensic odontology	-	Forensic odontology	Location at FM
20	Forensic osteology	-	Forensic osteology	B, C, E, H, S, T, Can go with Anthropology
21	Forensics against narcoterrorism	-	Forensics against narcoterrorism	E, H, T, App
22	Image analysis	-	Image analysis	B, C, E, H, S, T, SF, App
23	Microbial forensics	-	Microbial forensics	B, C, E, H, S, T, SF, App
24	Narcoanalysis	-	Narcoanalysis	Location at FM
25	Narcotics	CF1,CF2,CF3,CF4	-	U
26	Network forensics	-	Network forensics	B, C, E, H, S, T, App
27	Nuclear forensics	-	Nuclear forensics	B, E, T, App
28	Photo-fit portrait	CF1 (priming)	-	B, C, E, H, S, T, App
29	Photography	CF1,CF2,CF3,CF4,QD1, QD2, QD3	-	U
30	Physics	CF1,CF2,CF3,CF4	-	U
31	Polygraph	CF1,CF4	-	Relocation at FM
32	Prohibition	CF1,CF2,CF3,CF4	-	
33	Serology / DNA	CF1,CF2,CF3,CF4	-	U, App
34	Toxicology	CF1,CF2,CF3,CF4	-	Relocation at FM
35	Voice identification	CF1,CF4	-	Spreading, U, SF, App
36	Wild life forensics	-	Wild life forensics	B, C, H, S, T

* as available in public domain (USA, UK, Canada, Japan & Europe) / input from the Director – cum - Chief Forensic Scientist

CF1 : CFSL (Chd) CF2 : CFSL (Hyd) CF3 : CFSL (Kol) CF4 : CFSL (CBI)
 QD1: GEOD (Hyd) QD2 : GEOD (Kol) QD3 : GEOD (Shimla)
 CFP : Central Fingerprint Bureau (under National Crime Record Bureau)
 FM : Forensic Medicine

B : Budget C : Consumables E : Equipments H : Human resource
 S : Space T : Training SF : Special facility U : Upgradation (involves one or more of B, C, E, H, S, T, SF)

App : See also relevant Appendix to this Report

MAC : Multi Agency Centre (under IB)
 NatGrid : National Intelligence Grid, Gol
 NCTC : National Counter – Terrorism Council (under consideration by the MHA, Gol)

4.3. Recommendations

Procedures and processes in forensic practice need to be a blend of expertise, experience, excellence and advancement, to render quality service and garner global credibility. Therefore the following are recommended.

- (i) DIFOSER should form discipline wise Scientific Task Forces (STFs) (*Vide Annexure – II*) in the lines of Technical Working Groups (TWG) / Scientific Working Groups (SWG) of USA, to deliberate and bring out Standard Operating Procedures (SOP) / Manuals. Such exercise should naturally take care of application of recent S & T developments in evidence search / location/ collection / analysis and court testimony; for example: kits, robots, high – throughputs, automation, video teleconferencing. STFs should also review and revise such documents (already in use as well as those forthcoming for new and emerging areas) every three years, so that Good Laboratory Practice (GLP) prevails.
- (ii) There should be mandatory Certification (and quadrennial Re-Certification) of forensic professionals by the proposed Forensic Council of India (FOCI; *Vide Annexures I and III*).
- (iii) Every forensic laboratory should be accredited by National Accreditation Board for Testing and Calibration Laboratories (NABL) accompanied by the stipulated upkeep and surveillance.

(iv) Forensic Sciences Department of Government of Tamil Nadu is unique in the country in that it receives by default a copy of judgement in every case wherein the laboratory report has been taken on the court file. There is otherwise no system in the Indian forensic context to receive regular feed back from the service users. Therefore it is recommended that :-

(a) Every laboratory report / opinion should be accompanied by two copies of standardized Feedback Format (model, *Vide Attachment – C*) requesting the prosecutor / counsel and the investigation officer / police to fill and return.

(b) Appropriate request / direction / order of the Government should be sent to the Registrars of High Courts for their follow up instruction in turn to the Sessions and lower courts, to routinely mark / send to the laboratory a copy of judgements as and when pronounced in lab report-filed cases.

(v) Pendency is an international scourge in many spheres including courts; so is the case with Indian forensics more explicit in State / UT FSLs than in Central units. To avert “denied justice” caused by “delayed justice”, and to uphold credibility, timeliness should be adhered to in laboratory functions. Therefore, for elimination and avoidance of case backlog, the following are recommended for the CFSLs of DIFOSER.

- (a) There should be periodical internal assessment of capabilities and self regulation assisted strategic amends.
- (b) Flexi – work weeks, additional shifts and overtime duty may be tried with projected targets for employee – scientists.
- (c) On convenient terms, senior retired scientists in the Reserve List of Forensic professionals (RELIF; *Vide Annexure – II*) may be invited to help in clearing pendency all by himself / herself and / or as a blend – group with younger forensic scientists led by the retiree.
- (d) Forthcoming debut of Public Private Partnership (PPP) in Indian forensics (Goa Government, DFS of MHA / GoI and Truth Labs) should be a model worth evaluating and emulating.
- (e) In order to avoid input of every item in every case into the laboratory, there should be awareness campaign (on the benefits of “optimal forensics” in contrast to “ritual forensics”) in all possible forums targeting investigation officers, medical officers, prosecutors, lawyers, judiciary, insurance firms and media.
- (f) Time management for more availability of analysts in the laboratory should be accomplished by requesting officials in the crucial chain of justice administration to routinely take on file the laboratory report under the amended

Section 293 Cr. P.C. and summon personal appearance of experts only in situations of absolute need.

(vi) Fragmented picture of forensic landscapes in the country warrants functional integration and synergy. Some ongoing efforts have been given reinforcement by XI Plan schemes [Ref 27]; however it appears that more thrust is needed to curtail sympatric isolation. Basically attitudinal change among the Central forensic scientists and enlightened involvement by States' / UTs' FSLs are to be induced. The following recommendations form the platform of national matrix for application in conventional forensics and for utility as forensic intelligence to serve homeland security.

- a. Integrated ballistic information system (IBIS) database has been in place for few years at CFSL, Chandigarh with correlation e-server and data acquisition station; the interacting ones are two CFSLs (Hyderabad and Kolkata) and one State FSL (Mumbai) that have data acquisition station. Gujarat State FSL has its own full fledged IBIS set up but without any obvious co-participant. Ways and means should therefore be devised by DIFOSER to invite all the State / UT FSLs and introduce them to the joy of active participation in pooling & sharing of ballistic data with the nodal base at CFSL (Chandigarh); this lab in turn should have strengthened relationship with the DRDO's Terminal Ballistics Research Laboratory (TBRL; Chandigarh).

- b. Thenceforth it should be easier that similar arrangements fall in place for the DNA database node at CFSL, Kolkata which on its part is expected to have extended relationship with the Centre for DNA Fingerprinting & Diagnostics (CDFD; Hyderabad).
- c. Likewise the not-much-grown Bomb database at CFSL, Hyderabad (interacting with National Security Guard, NSG) looks for grooming and participatory patronage.
- d. Another attempt at CFSL, Hyderabad on chromatographically resolvable geographical indicators database for opium requires attention; under XI Plan, its NAA Unit (at BARC, Mumbai) is pursuing this through isotope tracking [Ref 27]. Interaction with Narcotics Control Bureau (NCB), and involvement of all the Indian FSLs are however necessary
- e. Organized take off in the XI Plan of data repository for counterfeit (Indian/foreign) currency should further ensure discernible integration and synergy across the Indian forensic spectrum. Workable assistance from Reserve Bank of India should be a kindling enabler.

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5. RESEARCH

5.1. Prelude

Yesterday's tools may not suit for today's work and will not solve tomorrow's problems. Forensics should have the techniques of day after tomorrow in order to face and floor the ever increasing science and sophistication in the violations of criminal law, civil codes, regulatory procedures and social fabric. Research and Development (R & D) is the prime strategy to realize this. Improvement in operational procedures, innovation in analytical examinations, incisiveness in report interpretation and imagination in process / product development can all form areas for R & D in forensics. Case work related problem solving as well as proactive pursuit for future application are achievable; induction of novel technologies is value addition to the laboratories.

5.2. Focus

Directorate of Forensic Science (DFS; MHA, GoI) has been enthusiastically patronizing forensic research in varied forms, since its notional creation out of MHA's Bureau of Police Research and Development (BPR & D) (December 31, 2002; Ref 42) and operational incorporation (? April 1, 2003). The then ongoing BPR & D's funding modes were also continued with facelift. Plan projects,

extramural research projects and (PhD) research fellowship projects are being funded by DFS. Research in these projects indulge in case worthy problems, database constitution and sparse innovation. Forensic relevance is ingrained into the probes concerned (Table 39 and 40). Further for publishing in international journals, Central scientists are recognized by Cash Award from DFS. Regretfully all the DFS funded research projects appear to be tenable only at Central forensic establishments thereby preventing entry of fresh thought and insight from outside the boundaries; this can possibly lead to inbreeding. However some relief from this perspective is visible in XI Plan schemes [Ref 27].

Table 39 : Topics of ongoing research funded by Directorate of Forensic Science under Extramural Research Projects

S.No.	Research topic
1	National resource centre for forensic psychology / centre of excellence in forensic psychology
2	Pilot project for setting up model DNA database unit
3	Development of new methodology for the analysis of pirated CD - DVD
4	Reliability of phalangeal flexion creases in personal identification
5	Metric assessment of sex from human skeletal parts : a comprehensive study on Indian samples
6	Application of miniaturized separation system (CE) in various fields of forensic science
7	Application of nano-particles in forensic science
8	Comparison of human chronological age estimated from the structure of dentine using scanning electron microscope and tooth cementum annulations count using polarizing microscopy

Table 40 : Topics of ongoing research funded by Directorate of Forensic Science under (Ph.D) Research Fellowship

S.No.	Research topic
1	Y Chromosomal single nucleotide polymorphisms in personal identification
2	Analysis of degraded human DNA by autosomal markers with short amplicons
3	Molecular Forensics and phylogenetics of crocodiles: Special emphasis on Indian crocodile species
4	DNA markers : Characterization for species identification and phylogeny of some endangered snakes of India
5	Genetic variation of X-chromosomal markers in Indian population
6	Molecular marker studies of social stratification among north Indian muslims
7	Single nucleotide polymorphisms in human pigmentation genes for mapping bio-geographical ancestry of Indian population
8	Detection of apoptosis as a marker to identify early brain damage in ischemia case
9	Studies on nuclear DNA markers : Novel approaches for the conservation of Indian crocodiles
10	Document forensics – Classifying different printing technology
11	Visual information retrieval for document forensics
12	Development of algorithms for improved steganalysis applied to digital forensics
13	Digitization of biometric features – Arterial blood flow pattern on surfaces of fingers
14	Studies on digital forensics for the detection of computer frauds and cyber crimes (with stress on network security)
15	Establishment of link between printer / photocopier and inks of suspected documents using instrumental techniques
16	Physical and chemical examination of writing pen inks for forensic applications
17	Validation of SOPs in handwriting identification in post-Daubert era
18	Synthesis of some organic molecules for potential applications in forensic science and studies on their physio-chemical properties
19	An image processing and pattern recognition frame work for forensic document fraud analysis
20	Forensic analysis of digital images for detecting image manipulation
21	Spectrographic and automatic analysis of speech sample recorded in forensic contexts
22	Electronic vapor detection of illicit materials
23	Studies on sound patterns of Gun-shots for characterization of Firearms(small arms) and creation of data bank for forensic interpretation
24	Psychology (Brain Electrical Oscillations Signature profiling and lie detection) – a normative study
25	Digital signal processing
26	Security issues in the wireless communication
27	Studies on the development of suitable methods for the qualitative and quantitative determination of antibiotic drugs in forensic samples
28	Anaesthetic drugs

As shown in Tables 41 and 42, huge amounts to the tune of crores of rupees have been spent for research by Central forensic units; of course the figures shown might include the costs of equipments purchased for case work that were additionally found useful for R & D. DFS's CFSLs show research interest in almost every ongoing discipline (Table 43) cutting across the veiled barriers in the nomenclature of "Centres of Excellence" (Physical Sciences – Chandigarh; Chemical Sciences - Hyderabad; and, Biological Sciences – Kolkata) [Ref 39]. Similar is the situation with the CFSL (CBI), New Delhi and DFS's, GEQDs. The thrust disciplines cover those that are emerging and also those that are proactively futuristic (e.g., computer forensics, image analysis and DNA profiling).

Table 41 : Research expenditure of Central Forensic Science Laboratories (2005-2009)

S.No.	Year	CFSL Chandigarh		CFSL Hyderabad		CFSL Kolkata		CFSL, CBI New Delhi	
		Expenditure on research (Rs.) (2005-2009)	Expenditure on research (Rs.) (2009)	Expenditure on research (Rs.) (2005-2009)	Expenditure on research (Rs.) (2009)	Expenditure on research (Rs.) (2005-2009)	Expenditure on research (Rs.) (2009)	Expenditure on research (Rs.) (2005-2009)	Expenditure on research (Rs.) (2009)
1	2005	15,08,544		1,98,86,421		7,56,946		76,68,260	
2	2006	1,50,68,687		1,89,05,051		9,24,950		34,34,923	
3	2007	98,62,786		Nil		10,60,570		34,22,442	
4	2008	Nil		Nil		17,91,070		1,02,81,165	
5	2009	Nil	Nil	2,82,000	2,82,000	20,04,600	20,04,600	93,79,974	93,79,974
TOTAL		2,64,40,017	Nil	3,90,73,472	2,82,000	65,38,136	20,04,600	3,41,86,764	93,79,974

Table 42 : Research expenditure of Government Examiners of Questioned Documents (2005-2009)

S.No.	Year	GEOD Hyderabad		GEOD Kolkata		GEOD Shimla	
		Expenditure on research (Rs.) (2005-2009)	Expenditure on research (Rs.) (2009)	Expenditure on research (Rs.) (2005-2009)	Expenditure on research (Rs.) (2009)	Expenditure on research (Rs.) (2005-2009)	Expenditure on research (Rs.) (2009)
1	2005	3,84,314		Nil		66,65,362	
2	2006	2,17,537		Nil		94,64,768	
3	2007	1,50,488		Nil		31,04,330	
4	2008	Nil		Nil		10,76,322	
5	2009	Nil	Nil	Nil	Nil	39,80,429	39,80,429
TOTAL		7,52,339	Nil	Nil	Nil	2,42,91,211	39,80,429

Table 43 : Disciplines of research interest to the Central forensic establishments

S. No.	Discipline	CFSL Chandigarh	CFSL Hyderabad	CFSL Kolkata	CFSL,CBI New Delhi	GEOD Hyderabad	GEOD Kolkata	GEOD Shimla
1	Ballistics	√	√	√	-	-	-	-
2	Biology	√	√	√	√	-	-	-
3	Case work	√	√	√	-	√	√	√
4	Chemistry	√	√	√	-	-	-	-
5	Computer forensics / digital forensics	√	√	√	√	√	√	√
6	Documents	-	√	-	√	√	√	√
7	Explosives	√	√	√	√	-	-	-
8	Image analysis	√	√	√	√	√	√	√
9	Narcotics	√	√	√	√	-	-	-
10	Photography	-	√	-	√	-	-	-
11	Physics	√	√	√	√	-	-	-
12	Serology / DNA	√	√	√	√	-	-	-
13	SOC	√	√	√	√	-	-	-
14	Toxicology	√	√	-	-	-	-	-

SOC : Scene of crime / occurrence

In terms of research productivity, the performance of Central forensic units is both appealing and appalling. As per information received from them (with / without supporting documents and indication as to the international / national status of research outcome), more than 300 outputs have seen the light of the day during 2005 – 2009 (Table 44); however among the document examining compartments of Central forensics only one has been a contributor unit to this total that too with a meager input of 3; the other two document units have drawn blank ! Acute shortage of manpower, resultant work load, lack of research aptitude, lack of skill, lack of proper environment, lack of promotion and lack of incentive have been identified as impediments to research in the environs of the seven Central forensic units studied (Table 45). While the issues of human resource impoverishment and the associated case overload on the incumbents need to be mitigated (as recommended presently elsewhere), other impediments call for primarily an attitudinal change among the forensic practitioners; after all, R & D should be a passion and a habit. Another learning from this is that recruitments and assessments should henceforth avoid mediocrity.

Table 44 : Research publications / presentations by Central forensic establishments
(2005 – 2009)

S. No.	Status	Type	CFSL Chandigarh	CFSL Hyderabad	CFSL Kolkata	CFSL CBI New Delhi	GEOD Hyderabad	GEOD Kolkata	GEOD Shimla
1	International	Original publication	12	08 (NAA)	23	NI	Nil	Nil	03
2		Case report	04	Nil	01	NI	Nil	Nil	Nil
3		Oral / poster presentation	03	03	14	NI	Nil	Nil	Nil
4		Review	02	Nil	Nil	NI	Nil	Nil	Nil
5		Popular article	01	Nil	Nil	NI	Nil	Nil	Nil
6	National	Original publication	13	79 (Incl. NAA =12)	08	NI	Nil	Nil	Nil
7		Case report	04	13	01	NI	Nil	Nil	Nil
8		Oral / poster presentation	56	11 (NAA)	14	NI	Nil	Nil	Nil
9		Review	01	05	01	NI	Nil	Nil	Nil
10		Popular article	07	Nil	Nil	NI	Nil	Nil	Nil
Total			103	119	62	30	Nil	Nil	03

NAA : Neutron Activation Analysis Unit

NI : Not indicated

Table 45 : Impediments in Central forensic establishments in taking up research activity (2005 – 2009)

S. No.	Impediment	CFSL Chandigarh	CFSL Hyderabad	CFSL Kolkata	CFSL,CBI New Delhi	GEOD Hyderabad	GEOD Kolkata	GEOD Shimla
1	Acute shortage of manpower	√	√	√	√	√	√	-
2	Lack of incentive	√	√	√	√	√	√	√
3	Lack of promotion	√	√	√	-	√	√	√
4	Lack of proper environment	√	√	√	-	√	-	-
5	Lack of research aptitude	√	√	-	-	√	-	-
6	Lack of skill	-	-	-	-	√	√	-
7	Work load	√	-	-	√	-	√	√

Younger generation of forensic researchers namely the full time PhD scholars availing DFS's Junior / Senior Research Fellowships (see also Table 40) should be given a better deal in terms of CSIR – parity, e – library access and hostel accommodation. It is true that they form a “floating population” but it is also true that most of them constitute a committed group of forensic innovators. This flock needs to be actively encouraged.

Then, innovation can have origin / stimulus from any number of other sources as well (e.g., serendipity, inspiration and perspiration); fancy and crazy ideas do also contribute. Exceptional Unconventional Research Enabling Knowledge Acceleration (EUREKA) Grants of National Institute of Health (USA), Discovery /

Exploration Grants of Gates Foundation (USA), New Idea Fund of CSIR (India), and Kite – flying special grants at National Chemical Laboratory (NCL, Pune; CSIR, India) are focused on such flashes [Ref 103 -106]; it is likely that Forensic Science can benefit by this route as well.

5.3. Recommendations

Research is founded on aptitude, focus, sacrifice and perseverance; then come motivation, incentives and awards. Researching should be a passion and a habit. Recommendations for reorienting forensic R & D are as follows.

- (i)** Encouragement should be given to every forensic scientist (and team) to pursue case work hyphenated R & D, intramural innovative R &D and Ph D – guiding R & D; such researchers should also bring in R & D project money from outside the bounds of DIFOSER through international and national funding agencies.
- (ii)** Current incentive of Cash Award of Rs. 2500/- on the eve of every publication in international journal should continue.
- (iii)** Extramural research projects should be funded relevantly and really out of DIFOSER environs at campuses having researchers of proven credentials.
- (iv)** The tenability of forensic directed Junior (/Senior) Research Fellowships (JRF) to young PhD aspiring talents, should be extended to other seats of knowledge beyond DIFOSER “homes”.

Research interests of the Fellows should be actively promoted by ensuring their fellowship terms on par with CSIR, e-library access and hostel accommodation. An efficiency bar, in the form of minimum of one publication in journal having impact factor not less than 1, may be introduced before elevating the JRF to SRF at the end of two years.

(v) Forensic Science is amenable for off-the-beaten-track thoughts. In order to grab high risk generation next fancy concepts with possibility of far reaching benefits, a new venture called "Crazy Ideas Grant" (CRAIG) should be introduced by DIFOSER (with a budget allocation of Rupees 5 lakhs per annum); for this a Selection Committee of three members with three-year term should be constituted by inviting young science leaders from National Centre for Antarctic and Ocean Research, Indian Space Research Organization and Defence R & D Organization.

(vi) Exclusive budget provision for foreign travel should be earmarked by DIFOSER to enable its employees and research fellows chair sessions, deliver talks and present research papers at scientific meetings.

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6. TRAINING

6.1. Prelude

Science is dynamic and therefore its application is dynamic. Forensic science is in this realm and so forensic practitioners should be dynamic and adaptive. Training is a comprehensive means to ensure and sustain these professional qualities for optimal and salubrious forensics. Without training, scientists cannot update their knowledge and would face the danger of going outdated fast. For meaningful and interactive participation, S & T support staff as well as administrative & allied staff need to be periodically trained. Training and retraining of all forensic employees should be a continuing policy and process in forensic set up. In – house courses in laboratory and external programmes within India and in foreign countries should serve the purpose. Encouragement for effective participation should also be in the fabric of service.

Induction / orientation / reorientation / refresher / mid career / short term / long term / Diploma / PG Diploma Courses, symposia, seminars, workshops, brainstorming, brainbashes, think – tanks, group discussions and meetings are some patterns of imparting training; continuing education can be extended training with concentration on forensic professional development programmes.

Specific forensics (e.g., SOC, laboratory subjects, SOPs, uncertainty and error, bias in interpretation, statistics, databases, research methodology and court testimony); interplay of forensic science, technology, medicine and law; computer and soft skills; management; leadership; and institution building are important themes for appropriate coverage in training schedules.

Right from induction level recruits up to the senior cadre science managers in service, training plays honing, minting and capacity building roles. Such a spectrum should give provision for all the key players in Indian forensics namely those with Central, State and UT FSLs and related entities. In consonance, forensic end – users (e.g., judiciary, prosecution and police) should also be sensitized to the advantages and limitations of forensic techniques and practices, through appropriate awareness – capsule courses. To facilitate all these important dimensions of training a well established Academy with competent faculty is required.

6.2. Focus

Scientists of Central forensic establishments undergo training within and outside their work – places; foreign exposure is part of it. Most of the employees of State / UT forensic units get opportunity only twice or thrice in their entire service span of about twenty five years; in contrast every single Central scientist attends training about ten times this figure. This is the lopsided reality demanding a balance.

Considerable expenditure has been incurred by the Central units to train their people (Tables 46 and 47). Sadly, among themselves (between the DFS's units and the CBI's unit) there is gross variation; while DFS's CFSL, Kolkata spent more than Rs. 20 lakhs, the CBI's CFSL (New Delhi) afforded Rs. 40,000/- only in the past five years. In terms of appraising the utility of training, figures are provided in Tables 48 and 49. While the number of attendees and the number of programmes attended are significantly in hundreds for DFS's CFSLs, it is shockingly none with respect to CBI's CFSL (New Delhi) (Table 48); this is a serious matter warranting solutions possibly in terms of policy and budget [Ref 55]. In a different angle, assessment of the utility of training as decipherable by the number of lab examination – reports relevant to training generated (post – attendance) by the trainee (Table 48) reveals that there needs to be planning and coordination between requirements and programmes; of course the exercise should incidentally take cognizance that every training does not / need not have orientation to lab analysis / report.

Table 46 : Training expenditure of Central Forensic Science Laboratories (2005-2009)

S.No.	Year	CFSL Chandigarh		CFSL Hyderabad		CFSL Kolkata		CFSL, CBI New Delhi	
		Expenditure on training (Rs.) (2005-2009)	Expenditure on training (Rs.) (2009)	Expenditure on training (Rs.) (2005-2009)	Expenditure on training (Rs.) (2009)	Expenditure on training (Rs.) (2005-2009)	Expenditure on training (Rs.) (2009)	Expenditure on training (Rs.) (2005-2009)	Expenditure on training (Rs.) (2009)
1	2005	20,000		1,50,000		4,09,929		Nil	
2	2006	35,000		1,50,000		5,19,050		Nil	
3	2007	62,700		1,50,000		3,20,190		14,000	
4	2008	26,000		1,50,000		3,55,831		26,000	
5	2009	20,226	20,226	98,000	98,000	4,50,000	4,50,000	Nil	Nil
TOTAL		1,63,926	20,226	6,98,000	98,000	20,55,000	4,50,000	40,000	Nil

Table 47 : Training expenditure of Government Examiners of Questioned Documents (2005-2009)

S.No.	Year	GEOD Hyderabad		GEOD Kolkata		GEOD Shimla	
		Expenditure on training (Rs.) (2005-2009)	Expenditure on training (Rs.) (2009)	Expenditure on training (Rs.) (2005-2009)	Expenditure on training (Rs.) (2009)	Expenditure on training (Rs.) (2005-2009)	Expenditure on training (Rs.) (2009)
1	2005	88,212		1,03,060		17,000	
2	2006	1,04,522		39,714		77,800	
3	2007	1,19,244		1,29,607		58,400	
4	2008	3,77,067		42,208		20,501	
5	2009	1,48,586	1,48,586	24,406	24,406	1,23,180	1,23,180
TOTAL		8,37,631	1,48,586	3,38,995	24,406	2,96,881	1,23,180

Table 48 : Training attended in the past by the personnel working with Central Forensic Science Laboratories

S.No.	Training details	CFSL Chandigarh	CFSL Hyderabad	CFSL Kolkata	CFSL, CBI New Delhi
1	Number of attendees	32	22	11	None of the staff has attended such training.
2	Number of programmes	74	380	33	
3	Number of (training - relevant) reports signed	NI	60 approx. by one person only	Nil	

NI : Not indicated

Table 49 : Training attended in the past by the personnel working with Government Examiners of Questioned Documents

S.No.	Training details	GEQD Hyderabad	GEQD Kolkata	GEQD Shimla
1	Number of attendees	In-service on-the-job training is imparted.	03	Basic in-house training is imparted in the field of Questioned Document examination at the entry level i.e. ACIO-I, and their knowledge is updated from time to time in the respective field by training in other institutions to groom the document experts.
2	Number of programmes		06	
3	Number of (training - relevant) reports signed		71	

A document examining unit (Kolkata) has obviously implemented the benefits of training in its work component (Table 49); the other two units mention about in – house training only which means that the experts concerned had no opportunity for external exposure. Conjoint observation on matters relating to document units' handling of library, research and training components show that they

need to come out of the shell and bask in mainstream light in the overall interest of forensic service. This statement gains importance on a comparison between Table 50 (current training requirement of CFSLs) and Table 51 (current training requirement of GEQDs); the document units have all declared training as adequate with no further requirement (Table 51).

Table 50 : Current training requirement of Central Forensic Science Laboratories

S.No.	Lab Division	CFSL Chandigarh		CFSL Hyderabad		CFSL Kolkata		CFSL, CBI New Delhi	
		Training adequate	Training required	Training adequate	Training required	Training adequate	Training required	Training adequate	Training required
1	Anthropology (Skull superimposition)	-	√	-	-	-	-	-	-
2	Ballistics	√	-	-	√	-	√	-	√
3	Biology	√	-	-	√	√	-	NI	NI
4	Brainmapping	√	-	-	-	-	-	-	-
5	Chemistry	√	-	-	√	√	-	NI	NI
6	Computer forensics/digital forensics	√	-	-	√	-	√	-	√
7	Counterfeit currency	-	-	-	√	√	-	NI	NI
8	Documents	-	-	-	-	-	-	-	√
9	Explosives	√	-	-	√	-	√	-	-
10	Fingerprint	-	-	-	-	-	-	-	√
11	Narcotics	√	-	-	√	-	√	-	-
12	Photography	√	-	-	√	-	-	NI	NI
13	Physics	√	-	-	√	√	-	NI	NI
14	Polygraph	√	-	-	-	-	-	-	√
15	Serology/DNA	√	-	-	√	-	√	NI	NI
16	Toxicology	√	-	-	√	-	√	-	-
17	Voice identification	√	-	-	-	-	-	-	-

NI : Not indicated

Table 51 : Current training requirement of Government Examiners of Questioned Documents

S.No.	Lab Division	GEQD Hyderabad		GEQD Kolkata		GEQD Shimla	
		Training adequate	Training required	Training adequate	Training required	Training adequate	Training required
1	Computer forensics/digital forensics	√	-	√	-	√	-
2	Counterfeit currency	√	-	√	-	√	-
3	Documents	√	-	√	-	NI	NI

NI : Not indicated

There is however no second opinion that forensic service would go incapacitated without training and continuing professional development. Underscoring this, MHA established the Institute of Criminology and Forensic Science at Delhi in 1972, which is now known as Lok Nayak Jayaprakash Narayan National Institute of Criminology and Forensic Science (NICFS). Short term and long term forensic induction, orientation, refresher, mid career etc. courses as well as continuing educational Diploma and PG Diploma courses were being conducted regularly by NICFS. In the academic year 2004 – 05 the Institute commenced full time MSc. (Forensic Science) Course that too with depleted faculty strength which has led to steady erosion and disappearance of the core forensic training courses essentially meant for professional development of in service personnel. (It may not be out of context here to mention that a spin – off during the present study namely spontaneous gesture of partnership from Bar Council of India’s Directorate of Legal Studies to offer forensic capacity building programmes has been channelized by

the Consultants to NICFS for positive follow up [Ref 143 – 145]). Since there is a constant need to train forensic scientists of the country regularly, NICFS may be converted into National Forensic Academy (NFA) by dropping its Criminology component and by renaming. [Criminology may then be taken care of separately by MHA.] NFA can then be strengthened suitably to administer forensic programmes and courses to scientists and stakeholders.

6.3. Recommendations

DIFOSER should formulate a Training Policy for scientific, support and administrative & allied service personnel. While in-house brainbashing and selective external exposure would hone the latter two, more progressive approach should be adopted for scientists – recruits and in service. A nodal academy of high competence should be available to translate this into action. The following recommendations are made towards this end.

- (i)** Indian forensic professionals (S&T, medical and finger print professionals serving Central, State and Union Territory governments) should undergo one foreign training every five years, and one course in India every three years. Stimulus package including funds etc for all, should come from the Central government.
- (ii)** Type of training should be as indicated below for different age groups.

- (e) 25 to 40 years : Hands - on and Refresher training / Professional Development
- (f) 41 to 50 years : Hands – on and Mid career Professional Development / Leadership / Vertical interaction
- (g) 51 to 55 years : Vertical interaction / Leadership with modified doctrines / Institution building
- (h) 56 years and above : Institution building

(iii) Fresh recruits should undergo induction training for not less than six months in Academy followed by six months on-the-job training in lab.

(iv) Completion of and performance in training courses and continuing education/professional development programmes should be advantages for assessment, promotion and certification.

(v) Criminology component of NICFS should be taken care of separately by MHA, and NICFS should become a full fledged National Forensic Academy (NFA) headed by forensic scientist under the administrative control of DIFOSER.

(vi) DIFOSER headquarters should move to this Sector -3, Rohini (Delhi) campus of about five acres with about 35% vacant land; besides, in Sector 5, there is understandably a three acre

residential quarters campus with about two acres vacant area. Functional integration and expansion are therefore easy.

- (vii)** Scientists of operational CFSLs would be directly concerned with in-house training only; all other training courses in forensics, continuing education / professional development programmes for in service forensic personnel, capacity building measures and awareness courses for forensic clients like judiciary, prosecution and police should be the role-impregnated functions of NFA. As required, CFSL scientists would be invited as resource persons for (induction, refresher, orientation, mid career, Diploma, PG Diploma and awareness) courses conducted by NFA anywhere in India on its own and / or in collaboration with any forensic and non-forensic organization.
- (viii)** DIFOSER enabled foreign training should also be handled by NFA covering themes such as databases, emerging forensic areas, quality, standards, soft skills and leadership. This should be programmed by tie – up with agencies like FBI (USA), NIST (USA), RCMP (Canada), FSS (UK), NPIA (UK) and NRIPS (Japan).
- (ix)** For discharging its training mandate NFA should have MoU, for real time forensic adjunct lab facility, with CFSL (CBI), Delhi and CFSL, Chandigarh. This should be in addition to NAF's in-house SOC/laboratory/mock court etc infrastructure.

- (x)** Research at NFA and by NFA faculty would be in any forensic discipline as well as in professional development / training /continuing education technology.
- (xi)** Trainers – faculty of NFA should themselves undergo foreign training once in every three years.
- (xii)** NFA should also explore the possibility of getting accreditation under the Quality Council of India umbrella.
- (xiii)** A related recommendation is that NICFS should keep its MSc (Forensic Science) Course in abeyance as this out-of- the-main-aim exercise at the expense of prime objectives has already caused significant damage to forensic professional development programmes of NICFS.

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7. EDUCATION

7.1. Prelude

Metaphysics, the theoretical philosophy of being and knowing, has over time been experimented upon and supplemented by supporting data. Learning or gaining knowledge and skill has then become more logical thereby making education possible as a formal and prolonged process to give intellectual instruction for particular purpose. Forensic Science is a composite of multiple disciplines with their inherent basics, unique techniques and varied interpretations; hence forensic practice is comparable to operating a multipronged multifunctional tool. Dynamic advancements in Science and Technology alter / add to the shape and shine of the prongs. Education in modern forensics began as part of Chemistry at University of Strathclyde (UK) and has spread across continents.

In India, during 1959, Sagar University (Madhya Pradesh) pioneeringly started education in forensic science and criminology. Since then forensic education has grown almost exponentially to the extent that private stakeholders are also in the arena. Forensic profession for justice administration in India has been entirely in public governmental sector; of late private organizations are entering the field. Besides there is increase in volume of crimes, variety of

crimes and intricacy of crimes; alongside judiciary, police, media and general public are better aware of forensics. The writing on the wall is that there is demand for forensic practitioners and there is supply of forensic science pass outs. In extrapolation there is an urgent need for ensuring quality of professionals and quality of education.

7.2. Focus

The 1959 – debut in forensic education by Sagar University was followed by Punjabi University, Patiala in offering MSc (Forensic Science) programme from the academic year 1974 – 75. Then in the line was the (Government of Tamil Nadu) Forensic Science Laboratory that assumed the global distinction as the only serving government laboratory to have University affiliation and conduct two – year full time MSc (Forensic Science) Course of the University of Madras from 1976 – 77; Ph D programme was offered from October 1981. The present picture is that of variety and fancy. As given representatively in Table 8, there are as of now numerous public funded / government aided / non – governmental Universities, institutions and colleges in India that conduct (full time / part time / distance mode / on – line) Certificate, Diploma, PG Diploma, Degree and Postgraduate courses and Doctoral programmes in forensic science and its sub – disciplines.

Table 8 : Bird's – eye view of capricious forensic education in India

S. No.	University / Institution	Certificate, diploma or degree offered (<i>FT / PT / DM / OL</i>)	Number of seats
1	Amity University Noida	(d) B.Sc.(H) (FS) - <i>FT</i> (e) M.Sc. (FS) - <i>FT</i> (f) Ph.D. (FS) - <i>FT</i>	NI NI NI
2	Asian School of Cyber Law Pune	Certificate (CC) - <i>OL</i>	NI
3	Bundelkhand University Jhansi	(d) PG Diploma (FS) - <i>FT</i> (e) B.Sc.(H) (FS) - <i>FT</i> (f) M.Sc. (FS) - <i>FT</i>	40 60 40
4	Department of Anthropology University of Delhi Delhi	Certificate (FS) - <i>FT</i>	NI
5	Dr. B. R. Ambedkar University Agra	M.Sc. (FS) - <i>FT</i>	15
6	Dr. H.S. Gour Vishwavidhyalaya Sagar	(c) B.Sc. (FS) - <i>FT</i> (d) M.Sc. (FS) - <i>FT</i>	10 18
7	IFO Forensic Standards and Research Delhi	Seven certificate courses (FS) - <i>DM</i>	NI
8	Intense Forensic Services India Pune	Eleven courses - <i>OL</i>	NI
9	Kurukshetra University Kurukshetra	M.Sc. (FS) - <i>FT</i>	20+ 5(additional)

Contd.

Table 8 : Bird's – eye view of capricious forensic education in India (*Contd.*)

10	Maharashtra Govt. Institute of Forensic Science Aurangabad	(c) PG Diploma (FS) - <i>FT</i> (d) B.Sc. (FS) - <i>FT</i>	40 50
11	NICFS (affiliated to Guru Gobind Singh Indra Prastha University, Delhi) Delhi	(f) Induction, refresher and awareness courses - <i>FT</i> (g) Certificate - <i>FT</i> (h) Diploma - <i>FT</i> (i) PG Diploma - <i>FT</i> (j) M.Sc. (FS) - <i>FT</i>	NI NI NI NI 26
12	Osmania University Hyderabad	M.Sc. (FS) - <i>FT</i>	NI
13	Panjab University Chandigarh	(c) M. Sc. (FS) - <i>FT</i> (d) Ph. D. (FS) - <i>FT</i>	NI NI
14	Punjabi University Patiala	(c) PG Diploma (FS) - <i>DM</i> (d) M.Sc. (FS) - <i>FT</i>	100 (in-service personnel) 16
15	Sam Higginbottom Institute of Agriculture, Technology & Science Allahabad	(e) Diploma (DOC / FP) - <i>FT</i> (f) B.Sc. (FS) - <i>FT</i> (g) M. Sc. (FS) - <i>FT</i> (h) Ph.D. (FS) - <i>FT/PT</i>	NI NI NI NI

FT : Full time*PT* : Part time*DM* : Distance mode*OL* : On – line

H : Honours Degree

FS : Forensic Science

NI : Not indicated

CC : Cyber crime


DOC : Documents

FP : Finger print

Interestingly GoI – MHA's NICFS, primarily meant to train forensic entrant recruits and in service personnel (through a plethora of regular short term and long term programmes) and instill forensic awareness in judiciary, prosecution and police (through days

– long sessions), has chosen (since 2004-05) to run full time two – year MSc (Forensic Science) Course of GGSIP University, Delhi. There is no doubt that NICFS has good infrastructure; but a major problem lies in the meagre faculty strength (two) (Table 52) whose knowledge – time / efforts are to be shared between the MSc (FS) programme and their mainstream training programmes. In fact all the 100% availability of the two faculty by itself is not sufficient even for the mandated training programmes; while being so, further damage has been made by the new add on namely MSc (FS) Course, resulting in slow and steady disappearance of the training component (Table 7). Therefore while appreciating the regulations and syllabi of NICFS's MSc Course, it is to be decided that this course be kept in abeyance right away and the required thrust be reinstated for the training part. Views of Central forensic establishments as given in Table 53 also reflect this. It should also be in its further interest if the institute is devoid of Criminology and renamed as National Forensic Academy (NFA) in the lines of National Judicial Academy and National Police Academy.

Table 52 : Current facilities at National Institute of Criminology and Forensic Science (NICFS) for conducting M.Sc. / M.A. Courses

S.No.	Feature	For M.Sc. (Forensic Science)	For M.A. / M.Sc.♠ (Criminology)
1	Full time permanent faculty to teach	Addl. Director - 01 M.Sc. (Chem.), Ph.D. (Chem.) Senior Scientific Assistant - 01 B.Sc., AIC (equivalent to M.Sc.)	Reader - 01 M.A., LL.M.
2	Library	Books	Sufficient
		Journals	06
3	Publication	Presented in national conf. - 03	Not known
		Case report - 01	
		Review - 01	
		Total (2005-2009) - 05	
4	Accommodation	 15 double bed rooms with attached rest rooms and combined kitchen facilities at the hostel in the premises	
5	Equipments	Good	Not known
6	Scholarship	Governed by GGSIP University rules	Not known
7	Disciplinary action	As per GGSIP University rules	Not known
8	Performance evaluation	Regular internal assessment, and, Final by external	Not known

M.Sc. : Master of Science; M.A. : Master of Arts; Ph.D : Doctor of Philosophy;
 B.Sc. : Bachelor of Science; AIC : Associate of Institution of Chemists; LL.M. : Master of Laws
 GGSIP : Guru Gobind Singh Indra Prastha University, New Delhi

♠ While the Syllabus and Regulations are understandably the same, B.Sc. holders passing this course are awarded M.Sc. (Criminology) Degree whereas B.A. holders passing this course are awarded M.A. (Criminology).

Table 7 : Activity grid of NICFS, *Vide* Calendars of courses for 2009 and 2010-2011

S.No.	Courses / workshops / seminars / certificate, Diploma, PG Diploma and M.A. / M.Sc.(Crim.), M.Sc. (FS)	Forensic Science (in working days)				Criminology (in working days)			
		2009		2010-2011		2009		2010-2011	
		No. of courses etc.	No. of days	No. of courses etc.	No. of days	No. of courses etc.	No. of days	No. of courses etc.	No. of days
1	Advance, latest techniques, refreshers, orientation courses	13	107	06	26	13	65	16	66
2	Certificate courses	07	Each of 60	-	-	-	-		
3	Foundation courses	01	60	-	-	-	-		
4	Diploma courses	01	365	-	-				
5	PG Diploma course	04	03 of 365 01 of 552	-	-				
6	Workshop	-	-	09	32				
7	Seminars	-	-	02	06			01	03
8	M.Sc. (FS)	01	365	01	365	-	-	-	-
9	M.A. / M.Sc. (Crim.)	-	-	-	-	01	365	01	365

Table 53 : Role of NICFS, as viewed by Central forensic establishments

S. No.	Laboratory	Induction training to fresh recruits	Refresher training to serving scientists (contg. edn.)	Awareness training to forensic end - users	Conducting of M.Sc. (Forensic Science) Course		Forensic Science and Criminology faculties should be		Become modern training institute in forensic science
					Continue	Suspend	Separate	Remain together	
1	CFSL, Chandigarh	√	√	√	-	√	√	-	√
2	CFSL, Hyderabad	√	√	√	-	√	√	-	√
3	CFSL, Kolkata	√	√	√	-	√	√	-	√
4	CFSL, CBI, New Delhi	√	√	√	-	√	√	-	√
5	NAA, BARC, Mumbai	-	-	√	-	-	-	-	√
6	GEOD, Hyderabad	-	-	√	-	-	-	-	-
7	GEOD, Kolkata	-	-	√	-	-	-	-	-
8	GEOD, Shimla	√	√	√	-	√	√	-	-

Nevertheless as given in Table 54, forensic science education is popular with some identifiable scope for placement; role – modal scientists in the field, crime scene investigation etc episodes in media, attractive advertisements and availability of admission are some of the reasons attributable to the popularity. As assessable through survey in the present study and through other sources, it is apparent that full time equivalent faculty strength to handle MSc (FS) Course is not adequate in majority of the academia (Table 55). Also there is no uniformity in the regulations, syllabi and dispensation of the programme (Table 56). Course curricula of the Indian forensic educational variety appear *prima facie* on par with professional needs and international standards; however the more serious issues of faculty, infrastructure, teaching technology, practical sessions, forensic exposure, and evaluation system need to be looked into a bit closer. This prompts a statutory regulation.

Table 54 : Popularity of forensic science education in India and scope of M.Sc. (FS) pass outs, as viewed by Central forensic establishments

S.No.	Laboratory	Popularity of forensic science degree courses can be attributed to				Scope of M.Sc. (FS) pass outs			
		Scientists of the field	Crime scene investigating series in media	Attractive advertisements	Admission availability	Chances to get job in Forensic Science Lab in comparison to core science pass outs	Self employment as private expert	Chance of getting job increases if more FSLs are established	Can seek employment as lecturer in forensic teaching institute / university
1	CFSL, Chandigarh	√	√	√	√	Equal chances	√	√	√
2	CFSL, Hyderabad	√	√	√	√	Equal chances	√	√	√
3	CFSL, Kolkata	√	√	√	√	Equal chances	√	√	√
4	CFSL, CBI, New Delhi	√	√	√	-	Equal chances	-	√	√
5	NAA, BARC, Mumbai	-	√	-	-	Equal chances	-	-	-
6	GEQD, Hyderabad	√	-	-	√	Equal chances	-	√	-
7	GEQD, Kolkata	√	√	-	-	-	√	√	√
8	GEQD, Shimla	√	-	-	√	Equal chances	-	√	-

Table 55 : M.Sc. (Forensic Science) Course - - - faculty strength in some universities / institutes

S. No.	University / Institute	Professor*	Associate* Professor / Reader	Assistant * Professor / Lecturer	Contractual**	Faculty strength	Intake of students
1	Amity University Noida	-	02	06	-	08	NI
2	Bundelkhand University Jhansi	-	-	01	-	01	40
3	Dr. B.R. Ambedkar University Agra	01	-	-	01	02	15
4	Dr. H.S. Gour Vishwavidyalaya Sagar	01	01	-	-	02	18
5	Kurukshetra University Kurukshetra	03	01	01	-	05	20 + 5 (additional)
6	NICFS (affiliated to Guru Gobind Singh Indra Prastha University, Delhi) Delhi	-	01	01	04	06	26
7	Osmania University Hyderabad	-	-	-	01	01	NI
8	Panjab University Chandigarh	01	-	03	-	04	NI
9	Punjabi University Patiala	03	01	02	-	06	20
10	Sam Higginbottom Institute of Agriculture, Technology & Sciences Allahabad	01	-	04	03	08	30

★ : or equivalent ; percentage of time available for M.Sc. (FS) is unknown

★★ : Whether full time (or) part – time is unknown; guests not given

NI : Not indicated

NICFS : National Institute of Criminology and Forensic Science

Table 56 : M.Sc. (Forensic Science) Course - - - pedagogics at some universities / institutes

S. No.	University / Institute	No. of papers		Teaching hours / week	Practical hours / week	Tutorial hours/ week	Attachment to FSL (no. of days)	Whether attachment is a part of degree programme	Topics covered
		Theory	Practical						
1	Amity University Noida	28	06 and Dissertation	19	07	05	30	Yes	Forensic ballistics, biology, chemistry, documents and finger print, serology, and toxicology
2	Bundelkhand University Jhansi	14	05 and Dissertation	NI	NI	04	NI	Yes	General forensic science, ballistics, biology, chemistry criminology and law, documents, explosives, finger print, research methodology, serology, and toxicology
3	Dr. B.R. Ambedkar University Agra	08	02	24	18	NI	21	Yes	General forensic science, anthropology, ballistics, biology, chemistry, computer forensics, criminal

Contd.

Table 56 : M.Sc. (Forensic Science) Course - - - pedagogics at some universities / institutes (*Contd.*)

									law, document, finger print , forensic medicine, instrumentation, serology including wild life forensics, and toxicology
4	Dr. H.S. Gour Vishwavidyalaya Sagar	16	08	24	18	NI	30	Yes	General forensic science, ballistics, biology, chemistry, criminalistics, Cr P.C. 1973 and Evidence Act, cyber forensics, documents, drugs of abuse, fingerprints, forensic medicine, instrumentation, medical jurisprudence, physics, polygraph, serology / DNA, and toxicology
5	Kurukshetra University Kurukshetra	12	06 and Project	12	08	NI	Started recently; 1 st batch passes out in June 2010	NI	General forensic science, anthropology, ballistics, biology, chemistry, documents, finger print, forensic medicine, psychology,

Contd.

Table 56 : M.Sc. (Forensic Science) Course - - - pedagogics at some universities / institutes (*Contd.*)

									serology / DNA, and toxicology
6	NICFS (affiliated to Guru Gobind Singh Indra Prastha University, Delhi) Delhi	12	07 and Dissertation	22	08	NI	30	Yes	General forensic science, ballistics, biology, chemistry, computer forensics, documents, photography, and physics
7	Osmania University Hyderabad	25	06 and Dissertation	34	11	05	NI	Yes	NI
8	Panjab University Chandigarh	12	16 and 4 case files	NI	NI	NI	Started this year only	Yes	General forensic science, anthropology, audio video analysis, , ballistics, biology chemistry, criminology, documents, drugs of abuse, explosives, finger print, immunology, instrumentation, odontology, osteology, physics, psychology, quality management , serology / DNA, statistics, and toxicology

Contd.

Table 56 : M.Sc. (Forensic Science) Course - - - pedagogics at some universities / institutes (*Contd.*)

9	Punjabi University Patiala	16	07 and Special report	20	15	NI	55	Yes	General forensic science, ballistics, biology, chemistry, criminalistics, document, finger print, photography, serology, and toxicology
10	Sam Higginbottom Institute of Agriculture, Technology & Sciences Allahabad	29	07 and Dissertation	24	18	03	90	Yes	General forensic science, ballistics, biology, chemistry, documents, explosives, fingerprint, physics, sociology, and toxicology

FSL : Forensic Science Laboratory

NI : Not indicated

NICFS : National Institute of Criminology and Forensic Science

From employment angle, it is disheartening to know that MSc (FS) passed boys and girls are working (for consolidated monthly remuneration ranging from Rs. 5,000/- to Rs. 10,000/-) as Forensic Analyst / Forensic Associate / Analyser at Central and State FSLs, on ad hoc contract basis. Aptitude and standards of forensic science pass outs are comparable to students of other streams of Science and Technology. There are however some views on their employability and performance (Table 57) worth contemplating.

Table 57 : Employability and performance by forensic human resource entrants, as viewed by Central forensic establishments

S.No.	Educational qualification	CFSL Chandigarh	CFSL Hyderabad	CFSL Kolkata	CFSL, CBI New Delhi	GEQD Hyderabad	GEQD Kolkata	GEQD Shimla
1	Person with B.Sc. (Forensic Science), and M.Sc. (Forensic Science)	Not eligible as per R/R	Not eligible as per R/R	Poor Not eligible as per R/R	Good	No comment	No comment	No comment
2	Person with B. E. / B. Tech. (core subject), and M.Sc. (Forensic Science) / PG Diploma in Forensic Science	Not eligible as per R/R	Not eligible as per R/R	Poor Not eligible as per R/R	Good	No comment	No comment	No comment
3	Person with B.Sc. (core subject), and M.Sc. (Forensic Science)	Good	Good	Good	Good	No comment	No comment	No comment
4	Person with M.Sc. / M.E. / M.Tech. (core subject)	Very good	Very good	Very good	Good	No comment	No comment	No comment
5	Person with M.Sc. (core subject), and M.Sc. (Forensic Science) / PG Diploma in Forensic Science	Very good	Very good	Excellent	Good	No comment	No comment	No comment
6	Person with M.E. / M.Tech (core subject), and M.Sc. (Forensic Science) / PG Diploma in Forensic Science	Not eligible as per R/R	Not eligible as per R/R	Not eligible as per R/R	Good	No comment	No comment	No comment

The “demand” for MSc (FS) Degree holders (namely jobs with forensic related establishments) is present across India; but the quantum is not commensurate with the “supply”. Another shade is that these aspirants need to prove their edge over the similarly placed competitors from core natural science subjects. Recent advertisements for recruitment to different levels of scientific posts at Central and State FSLs [Ref 97-102] have as a matter of fact mentioned forensic science as one of the eligible subjects. Tamil Nadu Public Service Commission has given further leverage in announcing that every thing being equal forensic science hands would be given preference [Ref 102].

Under the circumstances, presuming (may not be correctly though) that MSc (FS) study by itself ensures the pass out landing in appropriate forensic related job, and, considering the availability of openings with the user – industry (forensic institutions), the presently observed non – sync between “supply” and “demand” is because :-

- (i) supply is in much more excess of demand
- (ii) demand per se suffers owing to ban on recruitment / promotion, procedural delay, non – readiness of recruitment rules, deputation mode filling related issues, and budget deficiency.

Regulation of forensic education and fast track recruitments hold some potential to address this mismatch.

7.3. Recommendation

Forensic education in India dawned in 1959 at Sagar University (Madhya Pradesh) and is in zenith with the most recent (2009) first of its kind Forensic University in Gujarat. The foregone half a century has yielded an interplay of courses from Certificate to Master's offered by variously funded Universities and private entrepreneurs. Considering the complexity of several contemporary issues in forensic education, the Consultants recommend its regulation by constituting a statutory autonomous body Forensic Council of India (FOCI) through a Forensic Act by the Indian Parliament (*Vide Annexure – III*).

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8. HOMELAND SECURITY

8.1. Prelude

Incidence of terrorism triggered bombing is on the increase throughout the world. Threat perceptions loom large. Every country is seized of this issue seriously and is making all concerted efforts to foil and prevent the evil. Protecting the homeland is the foremost duty / concern for which nations employ varied sets of strategies [Ref 130]. Role of forensic science in homeland security is being ascertained and accentuated in recent times especially after its manifold contribution to the investigation of major terrorist bombings in the USA [Ref 119]. Extrapolation of conventional forensics with new roles and repurposing is apparently the first step. Next is institutionalization of large – scale or specialized forensic science capabilities. Simultaneously comes the operational integration with intelligence, law enforcement, investigation and defence. Reconstruction of crimes, health threats and catastrophes; management & identification of victims in disasters; DNA profiling of own people and of enemies; development of diagnostic assays, reference collection of biological agents for comparison, and biocontainment laboratories for handling and investigating biocrimes

/ bioterrors; and, integration of security enabling biometrics and proactive intelligence are some examples.

8.2. Focus

India is facing internal problems as well as external threats manifested in ever so many ways. Unrest and atrocities due to Maoists and naxals from within, and, escalated cross – border tension and terrorism pose challenges. Motherland augments all her resources to ensure shielding soil, water and air against the wrong – doers; frustrating and preventing them is the inherent component of the operation package. Organized terror in Punjab during 1980s and early 1990s and iron hand containment through Operation Blue Star etc. remain illustrative of the country's determination to quell and quash lawlessness and rebellion.

“The development and application of the forensic science disciplines to support intelligence, investigations and operations aimed at the prevention, interdiction, disruption, attribution, and prosecution of terrorism” is important for homeland security [Ref 119]. Fresh avenues of threat (e.g., nuclear radiation and anti forensic techniques) pose more severe faces [Ref 120 – 122]. However there are models and ways and means to address them; innovative implements, integrated databases and informative intelligence are the prime approaches [Ref 123 -132]. National Investigation Agency (NIA), Multi Agency Centre (MAC), National Intelligence Grid (NatGrid) and National Counter – Terrorism Council (NCTC) are some of the recent Indian strategic projections in this context. It is

incidentally of more than mere interest to note that Indian chambers of commerce and industry have been evincing constant concern with the application of Science & Technology for homeland security [Ref 133].

From the imminent perspective of homeland security, thrust forensic areas for practice and R & D have been identified for swift adoption and described briefly in **Appendices 1 to 17**. Some of them are new to Indian forensics, some are in limited practice, and some find place in the list of 28 schemes being implemented under XI Plan [Ref 27]. Also they have all been listed along with the needful / traditional forensic disciplines in Table 38 indicating therein the technology / resource gaps as well as the requisite measures to fill and excel (such as budget, consumables, equipments, human resource, space, training, and special facility). The Consultants are happy to record here that after their Interim Report the MHA, GoI has initiated fast action towards procurement of softwares and arrangement of foreign training in respect of some of these highlighted forensic areas [Ref 139 -142].

8.3. Recommendation

Employment of conventional, emerging and futuristic forensics for homeland security is of urgent concern in the face of global, external and internal threats. The following seventeen areas highlighted in **Appendices 1 – 17** are therefore strongly recommended for aggressive pursuit / induction.

1. Nuclear Forensics
2. Image Processing
3. Cell Phone Forensics
4. Digital Forensics
5. Network Forensics
6. Speaker Recognition
7. Photo –fit Portrait
8. Biometrics
9. Automated Fingerprint Identification System
10. High – throughput DNA Sequencing & Genotyping
11. Microbial Forensics
12. Forensics against Narco – terrorism
13. Forensic Intelligence
14. Coordination between Forensic Intelligence & Police for Innovation (Punjab model)
15. Terror through Firearms / Ammunitions : Lessons from Punjab
16. Terror through Explosives : Lessons from Punjab
17. Terrorist Funding ; A Probe from Punjab

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9. MISCELLANEOUS

9.1. Prelude

Forensic Science serves the cause of justice and peace and therefore the forensic professionals have to necessarily interact with agencies, personnel, and laws / rules / procedures / Codes / Acts dealing with evidence, enforcement, investigation, prosecution and justice dispensation. By such coming together forensic experts, police, prosecutors and judiciary are able to understand and appreciate each others' domains. Changing scenario of involvement of more of S & T in commission of crime as well as in its solution requires frequent interaction. Suggestion, criticism and assessment are the main useful products out of this exercise

Self – indoctrination of quality and self – assessment of capability are indispensable for laboratories to render meaningful forensic service. Once satisfactory, they should be subjected to external adjudication; this is where the concept of “accreditation” plays an enabling role. Associated practice and stipulated surveillance ensure sustainment.

9.2. Focus

During the present study it has been observed that, for operational betterment, some minimal amendments need to be made in relevant Acts / Code relating to forensic interface. Draft – worthy proposals for the purpose are provided in ***Annexure – IV*** pertaining to Section 45 of the Indian Evidence Act, Section 293 of the Code of Criminal Procedure, and Section 79A of the Information Technology Act.

Through a specially designed Feedback Format, a survey was conducted among forensic service end – users including judiciary, prosecution, police and CBI. From the response trickles very useful suggestions have been derived to improve forensic service delivery (Figures 14 - 16); and, most of them have been taken care of in this Report.

Figure 14 : Judiciary's suggestions for improving forensic service delivery

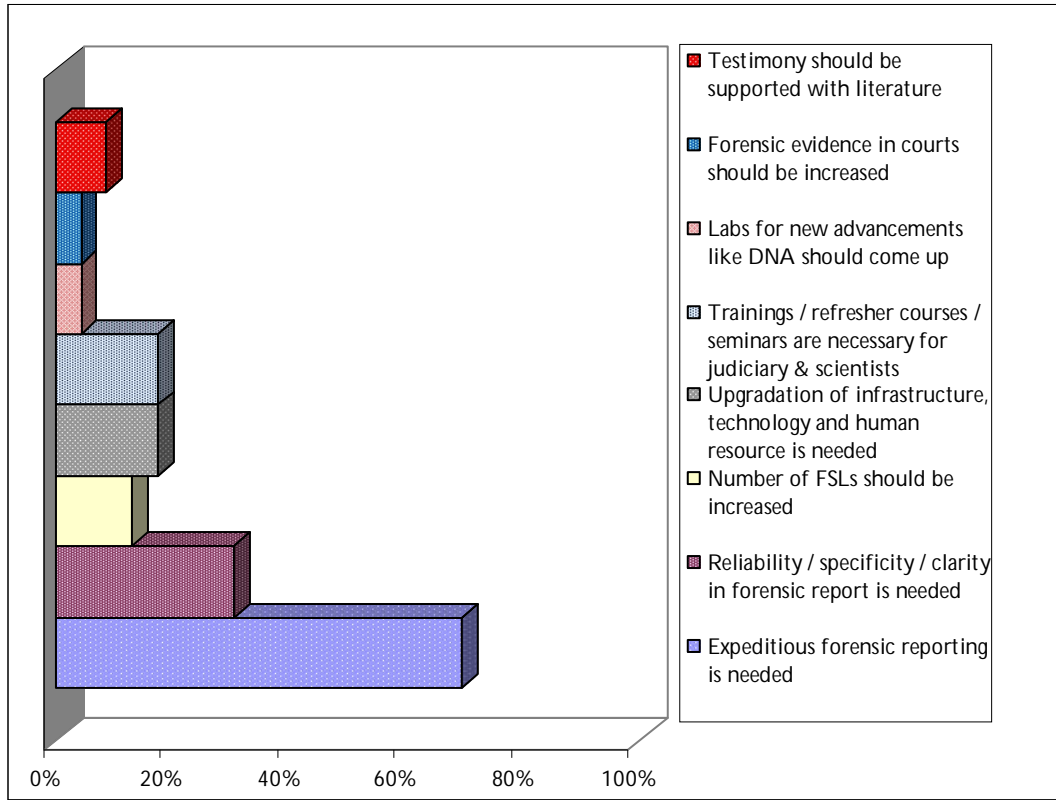


Figure 15 : Suggestions from CBI officers for improving forensic service delivery

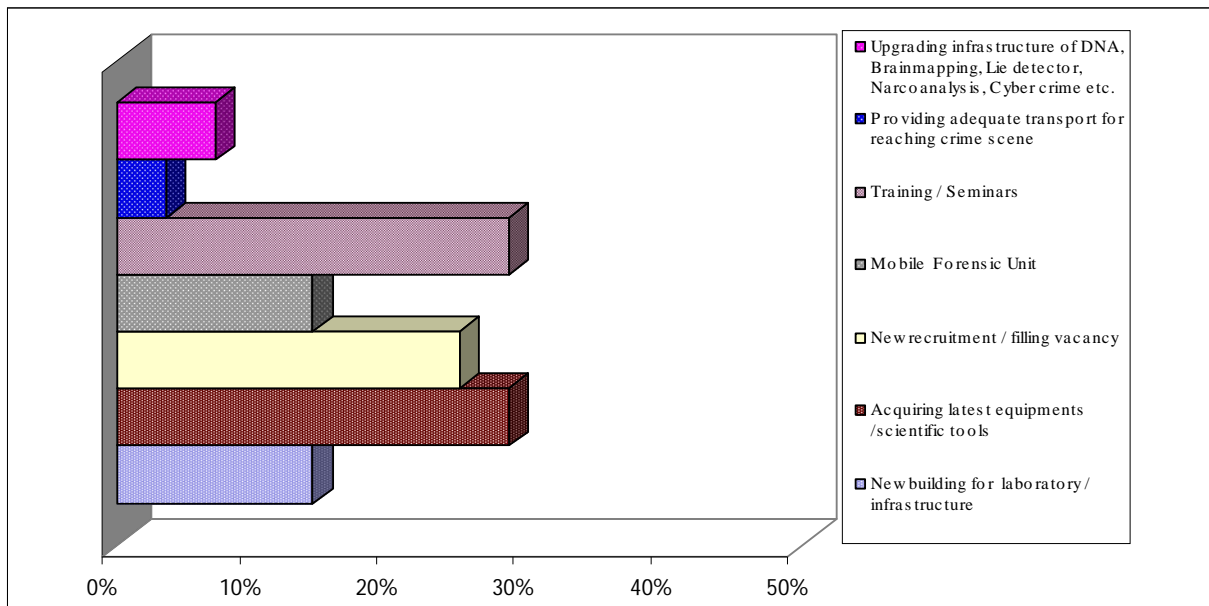
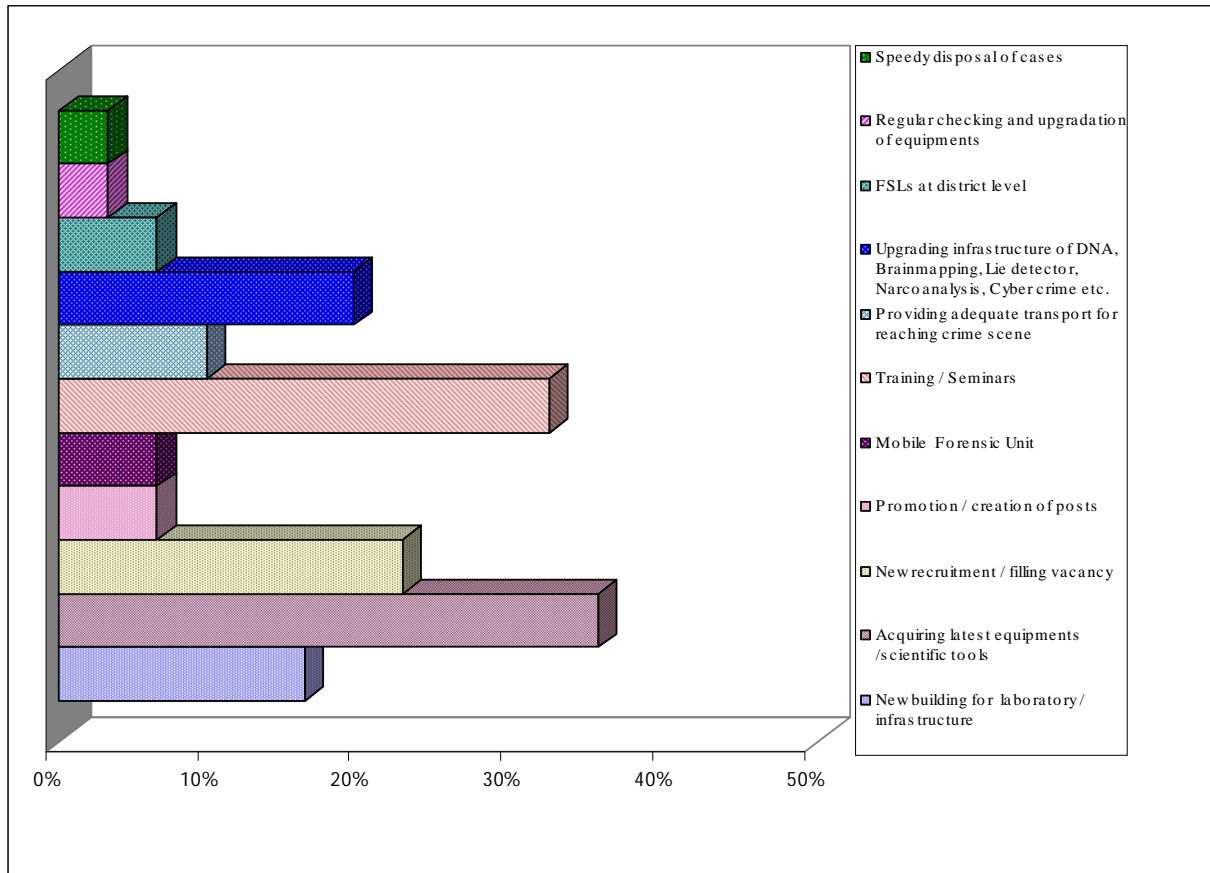


Figure 16 : Suggestions from State Police Officers for improving forensic service delivery



Regarding forensic awareness among such “customers”, their self assessment feedback inputs and / or observations by Central forensic establishments reveal that there is considerable scope for the requisite enhancement (Figures 17-23); lists of constraints that retard or dilute, and, of ways to improve are given in the figures concerned. Recommendation hereunder spells out more.

Figure 17 : Judiciary's self assessment on forensic science awareness

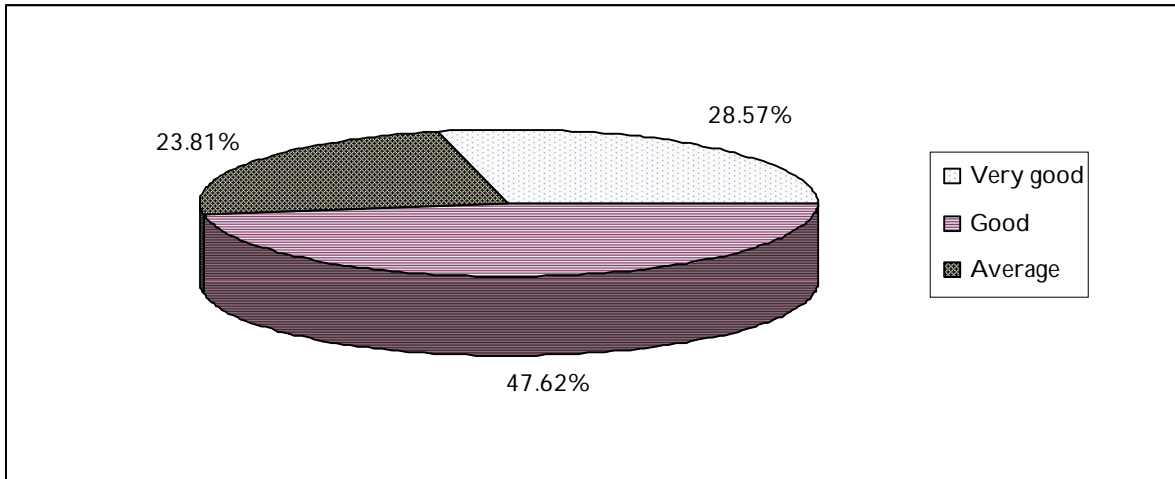
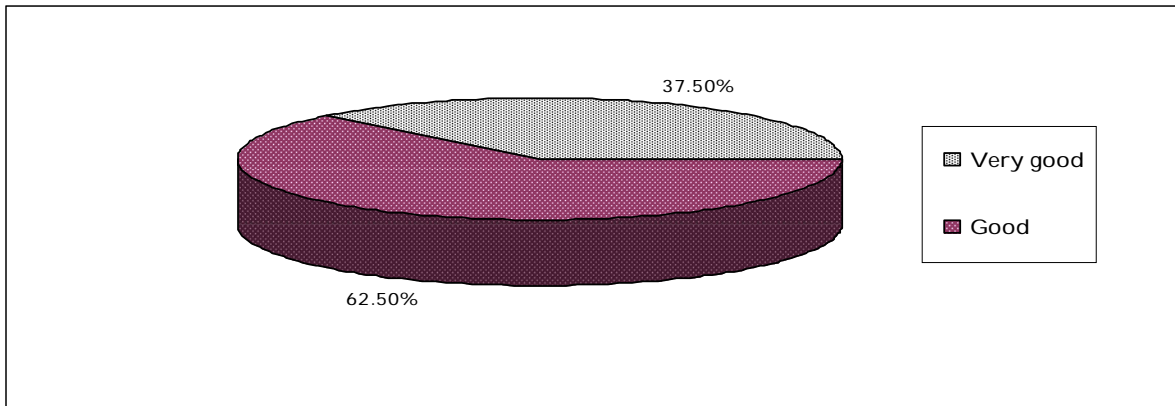
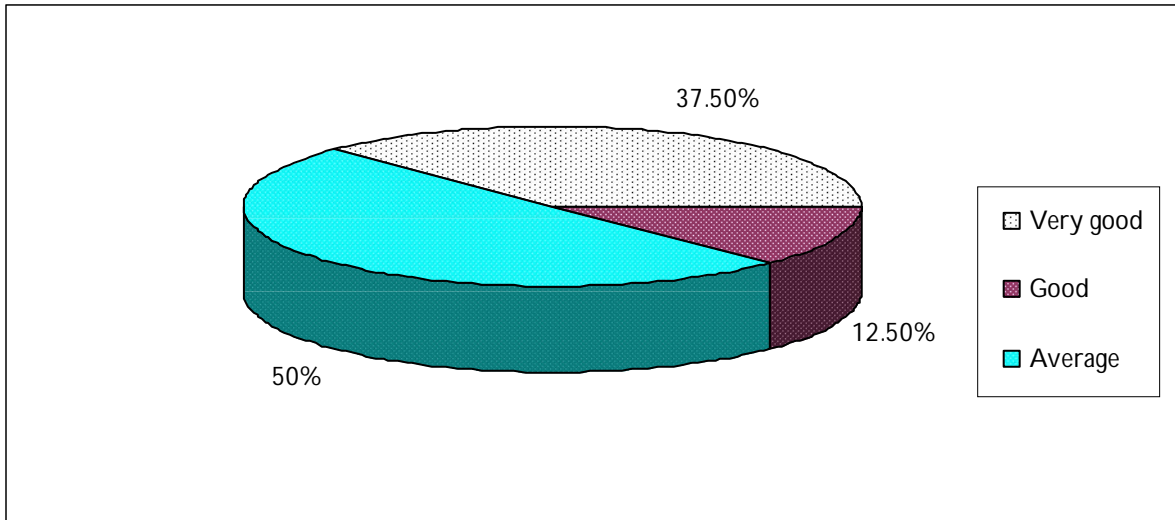


Figure 18 : Forensic science awareness among judiciary, as viewed by Central forensic establishments



Constraints among judiciary in achieving excellence in forensic science awareness	Ways to improve awareness among judiciary
<ul style="list-style-type: none"> • Not trained / exposed to working of forensic labs • Less presentation of scientific evidence to the courts by investigating officers • Technical intricacies of scientific examination • Basic qualifications other than science • Case work load 	<ul style="list-style-type: none"> • In-service training courses for judicial officers • Judicial academies to include forensic science in training programme • Interaction between judiciary, police and forensic scientists • Inclusion of forensic science in curriculum for law degree • More use of scientific methods for investigation

Figure 19 : Forensic science awareness among prosecutors and lawyers, as viewed by Central forensic establishments



Constraints among prosecutors and lawyers that dilute forensic science awareness	Ways to improve awareness among prosecutors and lawyers
<ul style="list-style-type: none"> • Ignorance of importance of physical evidences • Basic qualification • Scanty exposure to forensic examination • Variation of forensic examination among laboratories • Painstaking efforts handling in scientific evidence 	<ul style="list-style-type: none"> • Attachment of prosecutors and lawyers at forensic laboratories • Periodical training courses • Infusing confidence on forensic evidence • Introduction of forensic science in curriculum for law degree

Figure 20 : Self assessment by CBI officers on forensic science awareness

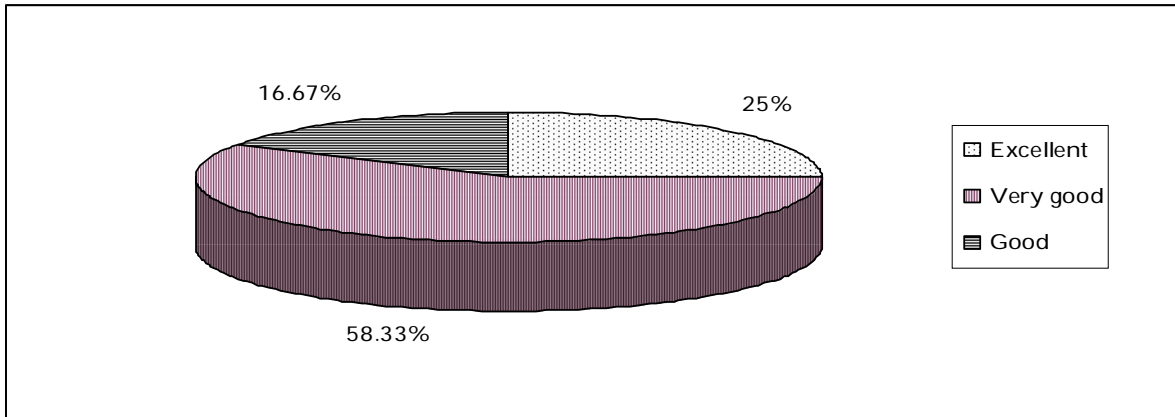
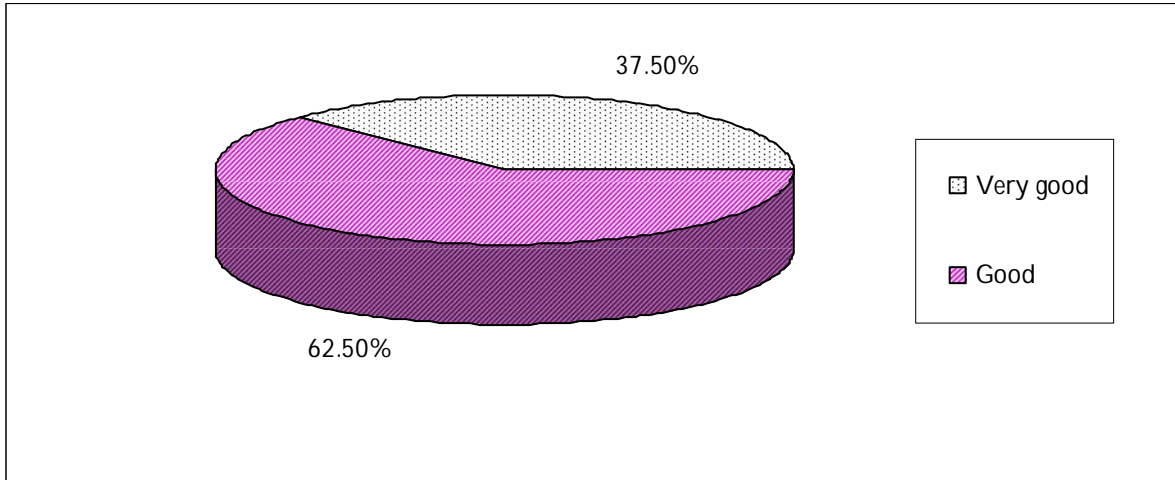


Figure 21 : Forensic science awareness among officers of CBI, as viewed by Central forensic establishments



Constraints among officers of CBI that dilute forensic science awareness	Ways to improve awareness among officers of CBI
<ul style="list-style-type: none"> • Less exposure to the working of forensic labs • Less training in forensic science • Delayed case investigation which reduces the evidential value • Scarcity of scientific expertise in certain fields 	<ul style="list-style-type: none"> • More training courses • Exposure to forensic laboratory working • More stress on scientific examination of physical evidence • Developing second line of expertise with science education background

Figure 22 : Self assessment by police officers on forensic science awareness

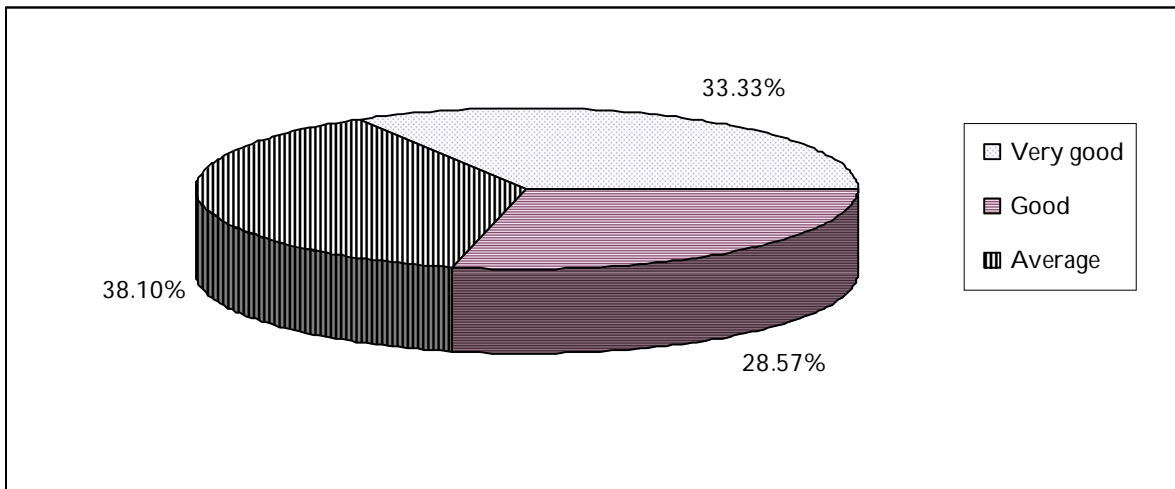
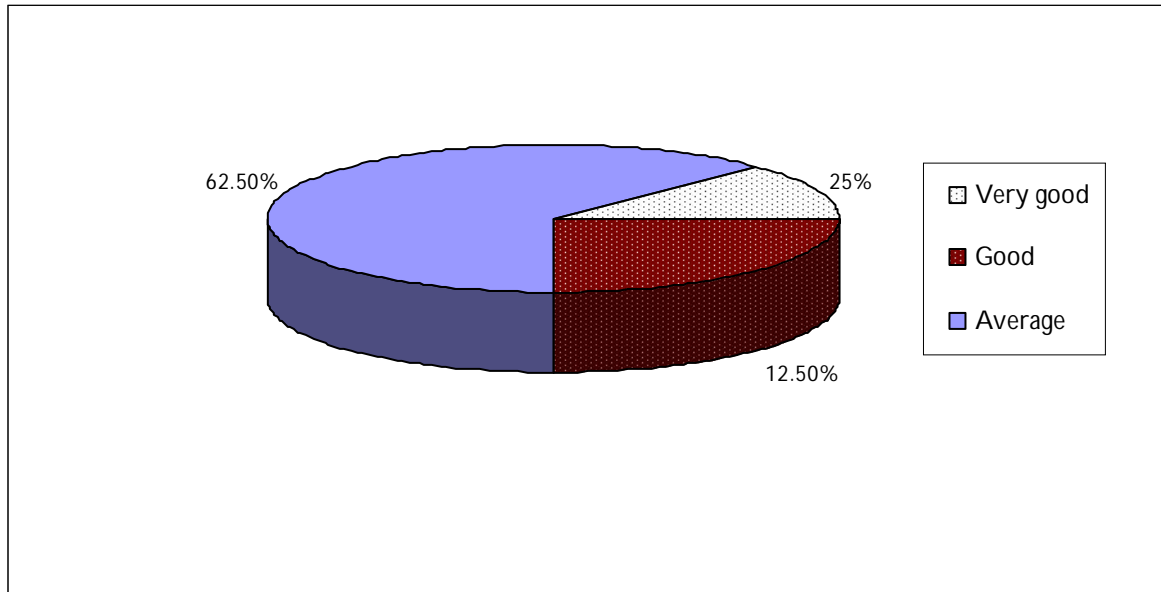


Figure 23 : Forensic science awareness among police, as viewed by Central forensic establishments



Constraints among police that dilute forensic science awareness	Ways to improve awareness among police
<ul style="list-style-type: none"> • Less scientific qualification • Work pressure • Clubbing of law and order duty with scientific investigation • Inadequate training 	<ul style="list-style-type: none"> • Recruitment of police personnel with B.Sc. (FS) and M.Sc. (FS) and core science degrees • Awareness programme • Separating crime investigation and law & order duties • Adequate training

All the seven Central operational forensic establishments [DFS's CFSLs, DFS's GEQDs and CBI's CFSL] are reportedly accredited (ISO / IEC 17025) by National Accreditation Board for Testing and Calibration Laboratories (NABL). Accreditation has covered management, operations, personnel, equipment, physical plant, security, and health & safety. However, regrettably, most of the State / UT FSLs are far away from this essential requirement for contemporary forensic service delivery.

Tables 58 to 69 provide an overall picture of the intense and high volume forensic service being delivered by the State / UT FSLs across the length and breadth of India. [The figures / information given are of course, not in totality because they have been provided as selective “islands” that too of different choices by enthusiastic eight of the seventeen responders to the twenty eight requests made.] Timeliness of service (case turnaround times; Tables 58 – 1 and 58 – 2), performance (cases examined / cases pending; Tables 59 – 1 to 59 – 3), equipment status (available / wanted; Tables 60 -1 to 60 -4), space requirement (Table 61), staff position (including additional hands needed; Table 62), scene of crime / occurrence (SOC) – study (Table 63), standard operating procedure (SOP) – practice (Tables 64 -1 to 64 -3), court testimony (Table 65), special expenditure (on training, research, and library; Table 66), training undergone / required (Table 67; Tables 68 – 1 and 68 -2), and, case study & research publication / presentation (Table 69) details in respect of the State / UT FSLs speak in volumes. They however need encouragement in all forms so that the essential attitude and requisite logistics would fall in place for quality / capability promulgating accreditation. Fostering role that can be well played by MHA, GoI in this context has been highlighted in the text (of Chapter 2. Organization) and in Recommendation 10.

Table 58 - 1 : Turnaround times* effected in the year 2009 by some State / UT Forensic Science Laboratories

S.No.	Lab Division	FSL, Himachal Pradesh			FSL, Jammu & Kashmir			FSL, Madhya Pradesh			FSL, Manipur		
		Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)- involved analysis	Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)- involved analysis	Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)- involved analysis	Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)- involved analysis
1	Anthropology (Skull superimposition)	05	10	15	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	Ballistics	03	15	30	03-04	NI	NI	03	05	15	03	10	90
3	Biology	02	04	07	02-04	NI	NI	01-03	03	15	03	30	NI
4	Brainmapping	03	06	15	NA	NA	NA	NA	NA	NA	NA	NA	NA
5	Chemistry	05	10	15	05	NI	NI	01-02	05	15	NA	NA	NA
6	Computer forensics/digital forensics	05	10	15	NA	NA	NA	NA	NA	NA	NA	NA	NA
7	Documents	03	06	10	04-05	Lengthy cases	NI	NA	NA	NA	15	30	NI
8	Excise	01	02	07	NA	NA	NA	NA	NA	NA	NA	NA	NA
9	Explosives	05	10	15	03-04	NI	NI	NA	NA	NA	NA	NA	NA
10	Narcoanalysis	02	04	08	NA	NA	NA	NA	NA	NA	NA	NA	NA
11	Narcotics	03	06	15	03-04	NI	NI	NA	NA	NA	03	10	NI
12	Photography	01	02	04	02-03	NI	NI	NA	NA	NA	NA	NA	NA
13	Physics	03	06	09	NA	NA	NA	01	05	15	07	15	NI
14	Polygraph	02	04	08	02-03	NI	NI	NA	NA	NA	NA	NA	NA
15	Prohibition	01	02	04	NA	NA	NA	NA	NA	NA	NA	NA	NA
16	Serology/DNA	05	10	15	02-03	NI	NI	03	05	15	NA	NA	NA
17	Toxicology	05	10	15	05	NI	NI	03	05	15	NA	NA	NA
18	Voice identification	07	14	21	NA	NA	NA	NA	NA	NA	NA	NA	NA
19	Instruments	05	10	15	NA	NA	NA	NA	NA	NA	NA	NA	NA
20	R & D	30	180	360	NA	NA	NA	NA	NA	NA	NA	NA	NA

* Time (in days) from the receipt of the evidence item by the lab to the readiness of the lab report for despatch

FSL : Forensic Science Laboratory NA : Not available / applicable NI : Not indicated

Contd..

Table 58 - 2 : Turnaround times* effected in the year 2009 by some State / UT Forensic Science Laboratories (Contd.)

S.No.	Lab Division	FSL, Mizoram			FSL, Rajasthan			FSL, Tamil Nadu			FSL, West Bengal		
		Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)- involved analysis	Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)- involved analysis	Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)- involved analysis	Classical / routine analysis	New problem analysis	Innovation (in process, procedure, device)- involved analysis
1	Anthropology (Skull superimposition)	03	NI	NI	NA	NA	NA	14	30	NI	NA	NA	NA
2	Ballistics	07	NI	NI	10	10	NI	03	07	14	21	42	42
3	Biology	04	NI	NI	10	25	NI	01-02	07	15	30	60	60
4	Brainmapping	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
5	Chemistry	05	NI	NI	10	15	NI	02	15	30	30	60	60
6	Computer forensics/digital forensics	NA	NA	NA	15	30	Can't predict	03	15	30	NA	NA	NA
7	Documents	10	NI	NI	05	10	>30	05	30	NI	30	40	40
8	Excise	02	NI	NI	03	07	NI	01-02	07	NI	NA	NA	NA
9	Explosives	07	NI	NI	NA	NA	NA	02	10	20	NA	NA	NA
10	Narcoanalysis	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
11	Narcotics	02	NI	NI	07	15	NI	02-03	15	30	NA	NA	NA
12	Photography	03	NI	NI	02-03	07	Can't predict	01	02	03	03	07	07
13	Physics	07	NI	NI	10	15	Can't predict	07	10	14	21	40	75
14	Polygraph	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
15	Prohibition	NA	NA	NA	NA	NA	NA	02	07	10	NA	NA	NA
16	Serology/DNA	04	NI	NI	05 / 15	30	NI	07 / 03-20	07 / 60	NI / 60	NA	NA	NA
17	Toxicology	15	NI	NI	15	35	NI	06	20	30	21	45	45
18	Voice identification	NA	NA	NA	15	30	Can't predict	04-05	NI	NI	NA	NA	NA
19	Instruments	NA	NA	NA	NA	NA	NA	01	03	NI	01-03	07	07
20	R & D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

* Time (in days) from the receipt of the evidence item by the lab to the readiness of the lab report for despatch

FSL : Forensic Science Laboratory NA : Not available / applicable NI : Not indicated

Table 59 - 1 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at some State / UT Forensic Science Laboratories

S.No.	Lab Division	FSL Andaman & Nicobar Islands		FSL Bihar		FSL Himanchal Pradesh		FSL Jammu & Kashmir	
		CE	CP	CE	CP	CE	CP	CE	CP
1	Anthropology	NA	NA	NA	NA	NA	NA	NA	NA
2	Ballistics	NA	NA	182	02	251	NI	355	Nil
3	Biology	NA	NA	NA	NA	2222	88	1275	Nil
4	Brainmapping	NA	NA	NA	NA	NA	NA	NA	NA
5	Chemistry	NA	NA	2610	1370	1885	33	350	05
6	Computer forensics/ digital forensics	NA	NA	NA	NA	NA	NA	NA	NA
7	Documents	NA	NA	NA	NA	1053	13	1450	90
8	Excise	3273	Nil	NA	NA	NA	NA	NA	NA
9	Explosives	NA	NA	819	46	14	13	500	05
10	Fingerprint	NA	NA	NA	NA	NA	NA	271	Nil
11	Narcoanalysis	NA	NA	NA	NA	NA	NA	NA	NA
12	Narcotics	NA	NA	NA	NA	1406	71	1000	20
13	Photography	NA	NA	NA	NA	1159	Nil	NA	NA
14	Physics	NA	NA	144	37	741	NI	NA	NA
15	Polygraph	NA	NA	09	08	NA	NA	20	Nil
16	Prohibition	NA	NA	NA	NA	NA	NA	NA	NA
17	Serology/DNA	NA	NA	NA	NA	778 / 18	73 / 03	NA	NA
18	Toxicology	NA	NA	2913	1037	5170	42	2800	105
19	Voice identification	NA	NA	NA	NA	NA	NA	NA	NA
20	Instruments	NA	NA	NA	NA	NA	NA	NA	NA
21	R & D	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL		3273	Nil	6677	2500	14697	336	8021	225

CE : Cases examined ; CP : Cases pending
 NI : Not indicated; NA : Not available / applicable

Contd..

Table 59 - 2 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at some State / UT Forensic Science Laboratories (*Contd.*)

S.No.	Lab Division	FSL Madhya Pradesh		FSL Maharashtra		FSL Manipur		FSL Mizoram	
		CE	CP	CE	CP	CE	CP	CE	CP
1	Anthropology	NA	NA	NA	NA	NA	NA	NA	NA
2	Ballistics	10177	163	5645	413	338	873	42	01
3	Biology	27569	5891	48603	2677	111	08	08	68
4	Brain mapping	NA	NA	205 (Psychology)	159 (Psychology)	NA	NA	NA	NA
5	Chemistry	10177	163	20766	712	388	02	786	Nil
6	Computer forensics/ digital forensics	NA	NA	136	305	NA	NA	NA	NA
7	Documents	NA	NA	Incl. in Physics		216	77	215	09
8	Excise	Incl. in Chemistry		11657	66	NA	NA	NA	NA
9	Explosives	NA	NA	NA	NA	NA	NA	Incl. in ballistics	
10	Fingerprint	NA	NA	NA	NA	NA	NA	NA	NA
11	Narco analysis	NA	NA	Incl. in psychology		NA	NA	NA	NA
12	Narcotics	Incl. in Chemistry		16327	51	NA	NA	Incl. in chemistry	
13	Photography	NA	NA	1780	12	NA	NA	03	Nil
14	Physics	2357	103	2446	43	NA	NA	Incl. in ballistics	
15	Polygraph	NA	NA	Incl. in psychology		NA	NA	NA	NA
16	Prohibition	NA	NA	314696	8008	NA	NA	NA	NA
17	Serology/DNA	350 (DNA)	109 (DNA)	88276 / 988	4914 / 156	NA	NA	NA	NA
18	Toxicology	28894	7431	98924	7016	NA	NA	Incl. in chemistry	
19	Voice identification	NA	NA	173	339	NA	NA	NA	NA
20	Instruments	NA	NA	NA	NA	NA	NA	NA	NA
21	R & D	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL		79524	13860	610622	24871	1053	960	1054	78

CE : Cases examined ; CP : Cases pending
NA : Not available / applicable

Contd..

Table 59 - 3 : Cases examined (2005-2009) / cases pending (as of Dec 31, 2009) at some State / UT Forensic Science Laboratories (Contd.)

S.No.	Lab Division	FSL Nagaland		FSL Rajasthan		FSL Tamil Nadu		FSL West Bengal	
		CE	CP	CE	CP	CE	CP	CE	CP
1	Anthropology	Nil	Nil	NI	NI	1134	Nil	NA	NA
2	Ballistics	Nil	Nil	NI	NI	791	Nil	665	402
3	Biology	Nil	Nil	NI	NI	3054	14	2772	11023
4	Brain mapping	Nil	Nil	NI	NI	NA	NA	NA	NA
5	Chemistry	Nil	Nil	NI	NI	3299	68	939	749
6	Computer forensics/ digital forensics	Nil	Nil	NI	NI	100	NI	NA	NA
7	Documents	Nil	Nil	NI	NI	2932	80	499	300
8	Excise	Nil	Nil	NI	NI	115307	32	NA	NA
9	Explosives	Nil	Nil	NI	NI	713	Nil	NA	NA
10	Fingerprint	Nil	Nil	NI	NI	NA	NA	119 (Footprint)	40 (Footprint)
11	Narco analysis	Nil	Nil	NI	NI	NA	NA	NA	NA
12	Narcotics	272	Nil	NI	NI	1532	Nil	NA	NA
13	Photography	Nil	Nil	NI	NI	4633	Nil	NA	NA
14	Physics	Nil	Nil	NI	NI	1206	45	880	1531
15	Polygraph	32	Nil	NI	NI	NA	NA	NA	NA
16	Prohibition	Nil	Nil	NI	NI	12316	Nil	NA	NA
17	Serology/DNA	Nil	Nil	NI	NI	7354 / 1427	59 / 50	NA	NA
18	Toxicology	Nil	Nil	NI	NI	15474	134	9436	37766
19	Voice identification	Nil	Nil	NI	NI	03	Incl. in Physics	NA	NA
20	Instruments	Nil	Nil	NI	NI	620	Nil	NA	NA
21	R & D	Nil	Nil	NI	NI	NA	NA	NA	NA
TOTAL		304	Nil	106568	12282	171895	482	15310	51811

CE : Cases examined ; CP : Cases pending
NI : Not indicated; NA : Not available / applicable

Table 60 - 1 : Equipments available with, and, needed by some State / UT Forensic Science Laboratories

S.No.	Lab Division	FSL, Andaman & Nicobar Islands		FSL, Bihar		FSL, Delhi		FSL, Himachal Pradesh	
		Equipments available	Equipments needed	Equipments available	Equipments needed	Equipments available	Equipments needed	Equipments available	Equipments needed
1	Anthropology (Skull superimposition)	NA	NA	Nil	Anthropometry, Video comparison microscope	NA	NA	Anthropological equipments and superimposition apparatus (Video Cameras, monitors etc.)	Nil
2	Ballistics	NA	NA	Comparison microscope twin video comparator	Nil	Comparison microscope, velocity measuring instrument	Nil	Comparison Microscope	Velocity measuring equipment (Rs. 25 Lac)
3	Biology	NA	NA	Microscope, UV lamp occult cabinet	Stereo microscope with computer attachment, Hot plate	NA	NA	Oven, Hot Plate, Incubator, Centrifuge, Shaker, UV Chamber, Water bath, Trinocular Microscope, Dissection microscope, Fluorescence Microscope	Water purifier/Distillation apparatus
4	Brainmapping	NA	NA	NA	NA	NA	NA	NA	NA
5	Chemistry	Minimum minor lab equipments/facility required for for excise cases only available	Borosil all quartz water distillation assembly. To prepare ion free water for analysis.	Chemical lists TLC, balance, Automatic distillation analysis viscometer flash point ,GC,	GCMS, Muffle furnace of high range (1000 °C), XRD, pH meter, HPLC, HPTLC , UV, FTIR	UV, GC, GC-MS, LC-MS, Ion Chromatograph, HPLC	Nil	TLC, UV-Vis, GC	PH meter

			Approximate cost 1 Lacks INR	HPTLC, IR, UV-Vis, HPLC (all out of order)					
6	Computer forensics/ digital forensics	NA	NA	NA	NA	NA	NA	Forensic Workstation, Forensic Duplicator and Fast Bloc	We are in the process of establishing the Unit. Many instruments are required in the days to come
7	Counterfeit currency	NA	NA	Microscope, UV lamp FLCN detection kit	High power microscope	NA	NA	VSC-2000, CVM, Stereo-Microscope, Multi-Mete	Nil
8	Documents	NA	NA	UV lamp, Microscope	High power microscope, UV lamp	NA	NA	VSC-2000, CVM, Stereo-Microscope, Multi-Mete	Requisition for Forensic XP-4010D & MASS-2D already submitted under modernization plan.
9	Explosives	NA	NA	NA	NA	NA	NA	NA	NA
10	Fingerprint	NA	NA	NA	NA	NA	NA	NA	NA
11	Narcotics	NA	NA	NA	NA	NA	NA	HPLC, UV Vis Spectrophotomete	GCMS, FTIR (Approx 70 Lacs), These instruments are required for structure elucidation of unknown compounds/samples
12	Photography	NA	NA	NA	NA	NA	NA	NA	NA

13	Physics	NA	NA	Microscope refractometer TV comparator, UV lamp	Scanning Electron Microscope with attachment, Muffle furnace of high range (1000 °C), XRD, Turin video comparison microscope	NA	NA	XRF, Testometric, pH Meter, Microscope, XRF, TLC, Twin video comparator , Tensile tester	GRIM, Atomic absorption Spectroscope, UV Vis, Conductivity meter, Restoration of numbers by magnetic equipment
14	Polygraph	NA	NA		New Polygraph Machine- to replace old polygraph machine i.e., not in good condition	NA	NA	NA	NA
15	Serology/DNA	NA	NA	NA	NA	NA	NA	DNA extraction equipment, PCR, Real Time PCR, DNA sequencer/Genetic analyser	One more PCR Machine (INR- 4-5 lakh), One Plate Centrifuge (1-2 lakh) One Minus 20 refrigerator (300 liter) (Rs1 lakh), One 4 degree refrigerator (Rs 20,000) , Two Heating Block/Thermo mixer (Rs. 60000), A high end computer. (Rs.

									80,000), Statistical software for Genetic data interpretation (DNA view or Geneproof Rs. 2-3.5 lakhs) , Laminar flow (1-2lakhs)
16	Toxicology	NA	NA	GC-IR, UV-Vis spectrophotome ter, UV cabinet (all out of order)	GC with head space, GC-MS, FTIR, UV-Vis Spectrophotom eter, HPTLC, HPLC	NA	NA	TLC, GC, UV-VIS AND GC-HS	FTIR - for the detection of un- known poisons and drugs
17	Voice identification	NA	NA	Computer	Needs update instrument for this purpose	NA	NA	NA	NA

NA : Not applicable / available ; NI : Not indicated

Table 60 - 2 : Equipments available with, and, needed by some State / UT Forensic Science Laboratories

S.No.	Lab Division	FSL, Jammu & Kashmir		FSL, Madhya Pradesh		FSL, Manipur		FSL Mizoram	
		Equipments available	Equipments needed	Equipments available	Equipments needed	Equipments available	Equipments needed	Equipments available	Equipments needed
1	Anthropology (Skull superimposition)	NA	NA	NA	NA	NA	NA	NA	NA
2	Ballistics	Comparison Microscope and vernier calliper		Comparison Microscope, Polarograph. Velocity measuring system	IBIS system for firearm and ammunition linkage and results storage as data bank. Cost-100 Lacs, SEM - EDXA for GSR analysis cost-150 lacs approx.	1. Comparison microscope. 2. Digital calliper. 3. Heater/ blower	1. Ballistics data acquisition system (for measuring velocity of bullet, rate of fire etc) 2. Universal receiver (for test firing.) 3. Boroscope (for examination of barrel). 4. IBIS for data storage & sharing). 5. Human dummy (for reconstruction of SOC). 6. Mobile firing gun rest system(for test firing). 7. Electronic top loading balance (for weighing). 8. Armourers	1) Leica FSC comparison microscope 2) Atomic absorption Spectroscopy 3) Bullet Recovery box 4) Ballistic firing unit	1) Scanning electron Microscope 2) Ballistic boroscope 3) Densitometer for glass examination 4) Safety Vault of different size for storing firearms and ammunitions 5) Human voice identification system 6) Digital image processing system

							workshop kit (for repairing of firearm), 1. Zoom stereo microscope. 2.LA- ICP-MS 3. Macroscope 4. Comparison Microscope		
3	Biology	vertical electrophorouous , hot air oven, monocular, microscopes,Binocular Microscope Deep freezer Referizrator, Microscope, U/V, Micrometer, vertical electrosphereses	Horizontal electrophorous, microtone comparision microscope, electronic balance, PH meter cellaose metallic sheets etc., Horizontal electrophorous, microtone comparision microscope, electronic balance, Microcentrifuse, 20,000/=	Reseach microscope, Binacular microscope,Electrophorosis, Cooling centrifuge, Deep freezers, Centifuge, Rotatory Shaker, Flask shaker, UV cabinets, UV lamps, Projection microscope, Stereo microscope	Horizontal Deefrzers cost Rs.5 lacs ,Colling centrifuge- Rs. 3 lacs. Gel plate electrophorosis cost Rs. 2 lacs,	1. Research Microscope. 2. Zoom Stereo Microscope.	1. DNA typing equipment. 2. Electrophoresis. 3. High resolution zoom Tissue processing unit,	1) Leica Multiview Microscope 2) Leica Trinocular Flourescent Microscope 3) Microtome 4) Centrifuge 5) Deep freezer 6) Electrophoresis 7) Digital incubator 8) pH meter 9) compound Microscope 10) Dissecting Microscope	1) DNA facilities for DNA profiling 2) Different types of calipers for Anthropologica l examination
4	Brainmapping	NA	NA	NA	NA	NA	NA	NA	NA
5	Chemistry	ultraviolet spectrometer Gas Liquid chromatography High preasure liquid	GC-MS	UV spectrophotometer., GLC with FID, HPLC, Digital Balance, Piercing	GC with FID for the determination of inflammable liquids with auto sampler.	1. G.C. head space 2. TLC set. 3. UV spectrophotometer	1. G.C. MS 2. LC MS 3. HPTLC with UV cabinet 4. Ultra pure water	1) GC 2) HPLC 3)HPTLC 4) Electronic balance 5) Furnace 6) UV,Vis spectrophotomete	1) GC-MS 2) Ion-Chromatograph

		chromotograher , U &U GLC HPLC		apparatus,	Cost-30 lac, Densitometer with beer alcolyser. Cost Rs. 30 lacs		purification system (cost unknown)	r 7) Millipore water deioniser 8)Automatic flash point apparatus 9) Auto distillation system 10) Precisa electronic Balance 11) UV cabinet 12)Centrifuge 13) water bath 14)M.P. apparatus 15) Freezing chamber 16) pH meter 17) Oven 18) automatic solvent extractor	
6	Computer forensics/ digital forensics	NA	NA	NA	NA	NA	NA	NA	NA
7	Counterfeit currency	VSC 20001 HR Comparison Microscope variance called U-V Chamber Transmittted light chambers	VSC 5000 Forensic XP- 4010 imaging spectrometer	NA	NA	1. Stereo zoom microscope. 2. Magnifying glass.	1. Document examination system. Cost Rs. 45,00,000.	1) Projectina Docucentre 2) VSC 4C 3) Stereo microscope 4) UV cabinet	1) VSC 6000 2) ESDA
8	Documents	VSC 2000 HR Comparison Microscope illustrated Magnifiers.	VSC 5000 Stereo zoom Microscope UTM	NA	NA	1. Stereo zoom microscope. 2. Magnifying glass.	1. Document examination system. With electrostatic detection device, FTIR and SEM	1) Projectina Docucentre 2) VSC 4C 3) Stereo microscope 4) UV cabinet	1) VSC 6000 2) ESDA
9	Explosives	Ultraviolet spectroparamet er	10 N Mobility M.S,	NA	HPLC with MS Cost-100 lacs.	NA	NA	Incl. in Ballistics	Incl. in Ballistics

		GLS,HPLC							
10	Fingerprint	Lunar testers of fixed focal length for comaprison	Polyview Comparator FACTS for comparision to enhance to visibility ridge characteristics. To compare the prints simulteneuousl y	NA	NA	NA	NA	1) Automated Fingerprint Identification System (AFIS) 2) Fuming chamber 3) Flourescent tube with magnifyer 4) Finger Print slab, roller, ink and powders 5) Light beam box	Forensic Video optical comparator
11	Narcotics	Ultraviolet spectrophotometer GLS HPLC	GCMS	HPLC,	HPTLC with scanner Cost-50 lacs, HPLC with MS cost 150 lacs	1. G.C. head space 2. TLC set. 3. UV spectrophotometer	1. G.C. MS 2. LC MS 3. HPTLC with UV cabinet 4. Ultra pure water purification system (cost unknown)	Incl. In Chemistr	Incl. in Chemistry
12	Photography	Camera reprovit, Computer enlarger, dark room facility	Digital Camera with printing facilty 1000000	NA	NA	NA	NA	1) Film SLR 2) Camera x3 3) Digital SLR 4) Video camerax 2 5) Enlarger 6)Reprovit Unit	1) Photo Printer 2) IR-Camera 3) Digital Still Camera (spare)
13	Physics	NA	NA	Density gradient, FTIR, Spectroscope, IR, UV spectrophotomete r. Stereo microscope, Microscope, IR lamp, SLR, TLR	NA	NA	NA	NA	NA

				and digital camera, dark room and its accessories, ICP unit					
14	Polygraph	Computerised Polygraph System	portable polygraph machine	NA	NA	NA	NA	NA	NA
15	Serology/DNA	NA	NA	UV spectrophotometer, Sequencer, Cryogenic Grinder, PCR, Electrophoresis, Centrifuges micro & macro refrigerated and non refrigerators. Deep freezers. Cold chest freezer, Bioprep stations. Laminar flow cabinet. Milli-Q water purification system	Fume hood Cost Rs. 3 Lacs. Microprocessor base water bath Cost Rs.2.5 lac, Fragment analyser 4 capillary Rs. 18 lac. Fire hazard detection system Rs.5 lacs	NA	NA	NA	NA
16	Toxicology	U.V, GLC, HPLC	NA	HPTLC, GC with FID and ECD detector, Automatic Solvent extractor.	HPTLC-MS with scanner Cost Rs.150 lacs., Automatic solvent evaporator, Cost Rs. 10 lacs, Microwave Digester Rs 10 lacs, Automatic distillation unit- Rs 3 lacs.	1. HPTLC 2. Deep freezer 3. Hot air oven 4. Incubator 5. Rotary shaker 6. Hot water bath 7. Ph meter 8. Fume chamber	1. Electronic top loading balance 2. Solvent extraction system. 3. GC MS 4. LC MS	Incl. In chemistry	Incl. In chemistry
17	Voice identification	NA	NA	NA	NA	NA	NA	NA	NA

Table 60 - 3: Equipments available with, and, needed by some State / UT Forensic Science Laboratories

S.No.	Lab Division	FSL, Nagaland		FSL, Punjab		FSL, Rajasthan		FSL Tamil Nadu	
		Equipments available	Equipments needed	Equipments available	Equipments needed	Equipments available	Equipments needed	Equipments available	Equipments needed
1	Anthropology (Skull superimposition)	Nil	Nil	NA	NA	3-D video super imposition device	Upgradation	Computer aided video super imposition device	Rotograph, for taking Dental X-ray of suspected skull
2	Ballistics	Nil	Nil	Latest lieca Comparison microscope	Nil	comparison microscope	Nil	Comparison Microscope Velocity measurement system EDXRF analyzer	New comparison microscope with latest facilities (Rs. 50 -60 Lacs), Automatic mobile firing (gun) rest system (Rs. 25-30 lacs), SEM-ED & RF (Rs. 50-60 lacs)
3	Biology	Nil	Nil	Microscope, Computer	Nil	Microscope, Gel documentation, uv Spectrophotometer, Refrigerated centrifuge, Deep freezer, Centrifuge, PCR Machine, Tronocular microscope	Gene Sequencer purchase in progress) , Water purification System(13 Lakh), Minor Equipments-2 Lakhs Comparison Microscope. Zoom Microscope etc	Binocular microscope	Comparison microscope with all accessories, handheld spectroscope

							Zoom stereo high resolution microscope, water bath, wood microtome, hot plate, tissue floatation bath		
4	Brainmapping	Nil	Nil	NA	NA	NA	NA	NA	NA
5	Chemistry	Nil	Nil	Densitometer, Spectronic 70, HPLC	Nil	GLC, Diesel analyzer, Gasolene analyser, Able flash, cleavland flash, automated distillation, Oily petroleum products, GLC, Automated distillation, Diesel analyzer, Able flash	Automated viscometer Approx 15 lakh	UV-visible spectrophotometer, Digital pH meter, GC-DHA, automatic distillation unit, automatic flash point unit, automatic densitometer, automatic stabinger viscometer, automatic cloud & pour point, automatic aniline point, GC-DHA, Raman spectral comparater, video spectral comparater. Stereo microscope	Particle size analysers (30 lacs), GC-FID, potentiometric titrator (automatic), Sulphur analyzer, Atomic absorption Spectrometer
6	Computer forensics/ digital forensics	Nil	Nil			phone SIM cell Dek check		EnCase, FTK, DIB SWORK Station, Paraben devfice seizure, Cell Dek, Oxygen phone forensic mobile	Network forensic tools, additional softwares and hardwares

								DIT, Forensic sentinel visualizer	
7	Counterfeit currency	Nil	Nil	Stereo microscope, VSC-1, VSC-2000HR, ESDA	Nil	NA	NA	Lens projection microscope, VSC 5000, stereo microscope, poly ray, tensile testing Machine, Thickness gauge, porosity tester	
8	Documents	Nil	Nil	NA	NA	NA	NA	VSC, ESDA, Microscope, Hand lens, stereo microscope	VSC-6000 including 800X magnification, raman spectroscopy, ESDA, True Scan pitagora, Eye-D
9	Excise	NA	NA	NA	NA	NA	NA	Densitometer, beer analyzer, UV-Vis spectrophotometer	New Densitometer, New beer analyzer, pH meter
10	Explosives	Nil	Nil	NA	NA	NA	NA	Ion scan- mass spectrometer, Ion chromatography	HPLC, Capillary electrophoresis
11	Fingerprint	AFIS	Nil	NA	NA	NA	NA	NA	NA
12	Narcotics	1) G.C 2) HPLC 3) U.V-VIS 4) ELIX-3, MILLI-Q	Nil	UV-Vis Spectrophotometer, IR Spectrophotometer, GC-MS	Nil	HPLC HPTLC UV	GC MASS (approx 50 lakhs) FTIR (approx 18 lakh)	TLC, UV0Vis spectrophotometry, GC-MS	FTIR, HPLC, Polarimeter
13	Photography	Nil	Nil	NA	NA	Camera enlarger, Reprint unit, UV light	Digital Camera with complete unit and Reprint unit	Lens, computer, Reprint-II A, Auto Re-enlarger, digital photography	Digital cameras

14	Physics	Nil	Nil	NA	NA	Old microscope compressive Strenghtety Machine other performed equipment stve shaker vibrat cable making machinery premightly applicant between tentative equipme, XRF	Zoom stereo high resolution microscope, water bath, wood microtome, hot plate, tissue floatation bath New set of microscope opticle digital image reader, Barcod reader, Hologram reader, XRD	Different types of microscopes includingb polarizing microscope, Hand magnifier, Stereo microscope, multimeter, IR spectrophotomete r, raman spectral comparator, Tensile testing machine	Test bench for testing, GRIM, FTIR
15	Polygraph	Lafayeete Computerised Polygraph LX 4000-605C	Nil	NA	NA	NA	NA	NA	NA
16	Serology/DNA	Nil	Nil	NA	NA	Incl. in Biology	Incl. in Biology	Centrifuge, PCR, RT-PCR, genetic analyzer, deep freezers	Total robotic Instrument for extraction
17	Toxicology	Nil	Nil	NA	NA	Microvave solvent Extraction system U V vis spectrophotometer FTIR HPLC HPTLC GCHSMS	Microvave solvent Extraction system U V vis spectrophotomet er FTIR HPLC HPTLC GCHSMS	UV-Vis, GC- Head space, Solvent evaporater, deep freezer	Nil
18	Voice identification	Nil	Nil	NA	NA	NA	NA	Computer speech lab, stereo microscope, digital audio recorder, headphones, mic	New and advanced softwares for speech format conversion and adaptability with computer speech lab

Table 60 - 4 : Equipments available with, and, needed by some State / UT Forensic Science Laboratories

S.No.	Lab Division	FSL, West Bengal	
		Equipments available	Equipments needed
1	Anthropology (Skull superimposition)	NA	NA
2	Ballistics	Comparison microscope, Velocimeter, atomic absorption spectrophotometer	Stereo microscope, GSR kits
3	Biology	Microscope, Electrophoresis, UV lamp	UV Spectrophotometer, Crime-lite, Computer with software along with photo magnify facility
4	Brainmapping	NA	NA
5	Chemistry	UV Spectrophotometer, HPTLC, HPLC	Spectro-fluorimeter, DRIFT
6	Computer forensics/ digital forensics	NA	NA
7	Counterfeit currency	Metallurgical microscope, VSC3000, FTIR	Nil
8	Documents	IR Spectrophotom	Nil

		eter, UV Spectrophotometer, VSC-3000	
9	Excise	NA	NA
10	Explosives	NA	NA
11	Fingerprint	NA	NA
12	Narcotics	Spectrophotometer, HPLC, HPTLC	GC-MS, LC-MS, ASE
13	Photography	Camera, Video graphy	Computer with software
14	Physics	Comparison microscope, Stereozoom, microscope, metallurgical microscope, Foot print kit	UV Spectrophotometer, Spectrograph, Microspectrophotometer, Ion chromatograph
15	Polygraph	NA	NA
16	Serology/DNA	NA	NA
17	Toxicology	HPTLC, HPLC, GC, ASE	GC-MS, LC-MS, Ion Chromatography
18	Voice identification	NA	NA

Table 61 : Space requirement of some State / UT Forensic Science Laboratories

S.No.	Lab Division	FSL Bihar (sq. ft)	FSL Himachal Pradesh (sq. ft)	FSL Jammu & Kashmir (sq. ft)	FSL Manipur (sq. ft)	FSL Mizoram (sq. ft)	FSL Tamil Nadu (sq. ft)	FSL West Bengal (sq. ft)
1	Anthropology	NI	NI	NI	NI	NI	1200	NI
2	Ballistics	2000	NI	540	4750	8400	NI	1000
3	Biology	1000	800	4000	2500	3600	NI	2400
4	Brainmapping	NI	NI	NI	NI	NI	NI	NI
5	Chemistry	NI	NI	700	4880	3000	NI	NI
6	Computer forensics/ digital forensics	NI	NI	NI	NI	NI	NI	NI
7	Documents	NI	NI	1500	2500	2400	NI	NI
8	Excise	NI	NI	NI	NI	NI	NI	NI
9	Explosives	NI	NI	NI	NI	600	NI	NI
10	Fingerprint	NI	NI	NI	NI	600	NI	NI
11	Narcoanalysis	NI	NI	NI	NI	NI	NI	NI
12	Narcotics	NI	300	NI	Incl. in Chemistry	600	NI	NI
13	Photography	NI	NI	2000	NI	600	NI	NI
14	Physics	4300	NI	NI	2400	NI	NI	1800
15	Polygraph	NI	NI	600	NI	NI	NI	NI
16	Prohibition	NI	NI	NI	NI	NI	NI	NI
17	Serology/DNA	NI	NI	NI	NI	600	NI	NI
18	Toxicology	NI	NI	700	3000	600	NI	3200
19	Voice identification	700	NI	NI	NI	NI	NI	NI
20	Instruments	NI	NI	NI	NI	NI	NI	NI
21	R & D	NI	NI	NI	NI	NI	NI	NI

NI : Not indicated

Table 62 : Staff position at some State / UT Forensic Science Laboratories

S.No.	Laboratory	Sanctioned	Filled	Additionally required
1	FSL, Andaman and Nicobar Islands	00	01 (On contract)	05
2	FSL, Arunachal Pradesh	NI	01	NI
3	FSL, Bihar	NI	140	NI
4	FSL, Delhi	337	137	NI
5	FSL, Himachal Pradesh	NI	23	20
6	FSL, Jammu & Kashmir	NI	61	99
7	FSL, Jharkhand	NI	NI	NI
8	FSL, Madhya Pradesh	NI	91	NI
9	FSL, Maharashtra	NI	112	173
10	FSL, Manipur	NI	03	23
11	FSL, Mizoram	NI	11	02
12	FSL, Nagaland	NI	09	Nil
13	FSL, Punjab	NI	NI	NI
14	FSL, Rajasthan	NI	345 (Incl. main lab + mobile lab)	NI
15	FSL, Tamil Nadu	NI	144	82
16	FSL, Tripura	NI	NI	NI
17	FSL, West Bengal	192	106	17

NI : Not indicated

Table 63 : Scene of crime / occurrence (SOC) - study by some State / UT Forensic Science Laboratories

S.No.	Year	FSL Arunachal Pradesh	FSL Bihar	FSL Himachal Pradesh	FSL Jammu & Kashmir	FSL Madhya Pradesh	FSL Maharashtra	FSL Manipur	FSL Mizoram	FSL Nagaland	FSL Punjab	FSL Rajasthan	FSL Tamil Nadu	FSL West Bengal
		Number of SOC study by lab team	Number of SOC study by lab team	Number of SOC study by lab team	Number of SOC study by lab team	Number of SOC study by lab team	Number of SOC study by lab team	Number of SOC study by lab team	Number of SOC study by lab team	Number of SOC study by lab team	Number of SOC study by lab team	Number of SOC study by lab team	Number of SOC study by lab team	Number of SOC study by lab team
1	2005	FSL, started functioning from 2008 with Chemistry / Narcotics and FPB	58	19	287	10	1562	03	46	03	23	-	05	152
2	2006		74	13	948	12	1800	03	63	02	17	151	07	126
3	2007		69	23	1094	15	890	Nil	70	03	09	61	08	154
4	2008		89	18	1066	14	153	03	74	04	30	969	05	188
5	2009		78	21	984	16	691	06	117	03	25	1084	04	206
TOTAL			368	94	4379	67	5086	15	370	15	104	2265	29	826

Table 64 – 1 : Standard operating procedures at some State / UT Forensic Science Laboratories

S.No.	Lab Division	FSL, Bihar					FSL, Himachal Pradesh					FSL, Jammu & Kashmir					FSL, Madhya Pradesh				
		Methodology used					Methodology used					Methodology used					Methodology used				
		DFS/CFSL manual	As published in Journal / literature	As presented in conference	Lab's own / unreported	Not readily available	DFS/CFSL manual	As published in Journal / literature	As presented in conference	Lab's own / unreported	Not readily available	DFS/CFSL manual	As published in Journal / literature	As presented in conference	Lab's own / unreported	Not readily available	DFS/CFSL manual	As published in Journal / literature	As presented in conference	Lab's own / unreported	Not readily available
1	Anthropology	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	Ballistics	✓	-	✓	✓	-	✓	-	-	-	-	✓	-	-	-	-	✓	-	-	-	-
3	Biology	-	-	✓	✓	✓	✓	-	-	-	-	✓	-	-	-	-	✓	-	-	-	-
4	Brainmapping	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Chemistry	✓	-	-	-	✓	✓	-	-	-	-	✓	-	-	-	-	-	-	-	-	-
6	Computer forensics/ digital forensics	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	Documents	✓	-	✓	✓	-	✓	-	-	-	-	✓	-	-	-	-	✓	-	-	-	-
8	Excise	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	Explosives	-	-	-	-	-	-	-	-	-	-	✓	-	-	-	-	✓	-	-	-	-
10	Fingerprint	-	-	-	-	-	-	-	-	-	-	✓	-	-	-	-	-	-	-	-	-
11	Narcoanalysis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Narcotics	✓	-	-	-	-	✓	-	-	-	-	✓	-	-	-	-	✓	-	-	-	-
13	Photography	-	-	-	-	-	✓	-	-	-	-	✓	-	-	-	-	✓	-	-	-	-
14	Physics	✓	-	✓	✓	✓	✓	-	-	-	-	✓	-	-	-	-	✓	-	-	-	-
15	Polygraph	✓	-	✓	-	-	-	-	-	-	-	✓	-	-	-	-	-	-	-	-	-
16	Prohibition	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	Serology/DNA	-	-	-	-	-	✓	-	-	-	-	✓	-	-	-	-	✓	-	-	-	-
18	Toxicology	✓	✓	✓	-	-	✓	-	-	-	-	✓	-	-	-	-	✓	-	-	-	-
19	Voice identification	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	Instruments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	R & D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 64 – 2 : Standard operating procedures at some State / UT Forensic Science Laboratories

S.No.	Lab Division	FSL, Manipur					FSL, Mizoram					FSL, Nagaland					FSL, Punjab				
		Methodology used					Methodology used					Methodology used					Methodology used				
		DFS/CFSL manual	As published in Journal / literature	As presented in conference	Lab's own / unreported	Not readily available	DFS/CFSL manual	As published in Journal / literature	As presented in conference	Lab's own / unreported	Not readily available	DFS/CFSL manual	As published in Journal / literature	As presented in conference	Lab's own / unreported	Not readily available	DFS/CFSL manual	As published in Journal / literature	As presented in conference	Lab's own / unreported	Not readily available
1	Anthropology	✓	-	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	Ballistics	✓	-	-	-	-	✓	-	-	-	-	-	-	-	-	✓	✓	-	-	-	-
3	Biology	✓	-	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	Brainmapping	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Chemistry	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	✓	✓	-	-	-	-
6	Computer forensics/ digital forensics	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	Documents	✓	✓	✓	✓	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	Excise	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	Explosives	-	-	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	Fingerprint	-	-	-	-	-	✓	-	-	-	-	✓	-	-	-	-	-	-	-	-	-
11	Narcoanalysis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Narcotics	✓	✓	-	-	-	✓	-	-	-	-	✓	-	-	-	-	-	-	-	-	-
13	Photography	-	-	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	Physics	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	Polygraph	-	-	-	-	-	-	-	-	-	-	✓	-	-	-	-	-	-	-	-	-
16	Prohibition	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	Serology/DNA	-	-	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	Toxicology	✓	-	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	Voice identification	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	Instruments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	R & D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 64 – 3 : Standard operating procedures at some State / UT Forensic Science Laboratories

S.No.	Lab Division	FSL, Rajasthan					FSL, Tamil Nadu					FSL, West Bengal				
		Methodology used					Methodology used					Methodology used				
		DFS/CFSL manual	As published in Journal / literature	As presented in conference	Lab's own / unreported	Not readily available	DFS/CFSL manual	As published in Journal / literature	As presented in conference	Lab's own / unreported	Not readily available	DFS/CFSL manual	As published in Journal / literature	As presented in conference	Lab's own / unreported	Not readily available
1	Anthropology	-	-	-	-	-	✓	-	✓	-	-	-	-	-	-	-
2	Ballistics	✓	-	-	-	-	✓	-	-	-	-	✓	✓	✓	✓	✓
3	Biology	✓	-	-	-	-	✓	-	-	-	-	✓	✓	✓	-	✓
4	Brainmapping	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Chemistry	-	-	-	-	-	✓	-	-	-	-	✓	-	-	-	-
6	Computer forensics/ digital forensics	-	-	-	-	-	✓	✓	✓	✓	-	-	-	-	-	-
7	Documents	-	-	-	-	-	✓	-	-	-	-	✓	✓	-	-	-
8	Excise	-	-	-	-	-	✓ (BIS Specifications)	-	-	-	-	-	-	-	-	-
9	Explosives	-	-	-	-	-	✓	-	-	-	-	-	-	-	-	-
10	Fingerprint	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Narcoanalysis	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Narcotics	-	-	-	-	-	✓	✓	-	-	-	-	-	-	-	-
13	Photography	-	-	-	-	-	✓	-	-	-	-	✓	✓	-	-	-
14	Physics	-	-	-	-	-	✓	-	-	-	-	✓	✓	✓	-	✓
15	Polygraph	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	Prohibition	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	Serology/DNA	✓	-	-	-	-	✓	-	-	-	-	✓	-	-	-	-
18	Toxicology	✓ (BPR & D)	-	-	-	-	✓	-	-	-	-	✓	✓	✓	-	✓
19	Voice identification	✓ (ISI Standard)	-	-	-	-	✓	-	-	-	-	-	-	-	-	-
20	Instruments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	R & D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 65 : Instances of court testimony by the Experts of some State / UT Forensic Science Laboratories (2005-2009)

S.No.	Lab Division	FSL, Himachal Pradesh	FSL, Jammu & Kashmir	FSL, Madhya Pradesh	FSL, Maharashtra	FSL, Manipur	FSL, Mizoram	FSL, Tamil Nadu	FSL, West Bengal
1	Anthropology	NI	NI	NI	NI	NI	NA	200	NI
2	Ballistics	NI	NK	20%	09	10	08	156	25%
3	Biology	120	NK	05%	35	05	03	126	25-30%
4	Brain mapping	NI	NI	NI	NI	NI	NA	NI	NI
5	Chemistry	≈50	NI	20%	149	05	39	616	20%
6	Computer forensics/ digital forensics	NI	NI	NI	01	NI	NA	02	NI
7	Documents	Nil	NI	NI	Incl in Physics	16	NA	856	15%
8	Excise	NI	NI	Incl in Chemistry	NI	NI	NA	NI	NI
9	Explosives	NI	NI	Incl. in Ballistics	NI	NI	NA	Nil	NI
10	Fingerprint	NI	Nil	NI	NI	NI	NA	NI	NI
11	Narco analysis	NI	NI	NI	01	NI	NA	NI	NI
12	Narcotics	Nil	NI	NI	NI	NI	Incl in Chemistry	900	NI
13	Photography	NI	NI	NI	NI	NI	NA	90	NI
14	Physics	NI	10%	NI	01	NI	NA	NI	NI
15	Polygraph	NI	NK	NI	NI	NI	NA	200	NI
16	Prohibition	NI	NI	NI	05	NI	NA	NI / 300	NI
17	Serology/DNA	NI	NI	Incl. in Biology / 5%	Incl. in Biology	NI	Incl. in Biology	383	NI
18	Toxicology	≈50	NI	03%	18	NI	Incl in Chemistry	NI	NI
19	Voice identification	NI	NI	NI	04	NI	NA	NI	NI
20	Instruments	NI	NI	NI	NI	NI	NI	NI	NI
21	R & D	NI	NI	NI	NI	NI	NI	NI	NI

NI : Not indicated

NA : Not available / applicable

NK : not known

Table 66 : Expenditure (on training, research and library) incurred by some State / UT Forensic Science Laboratories (2005-2009)

S.No.	laboratory	Training Expenditure (Rs.)		Research Expenditure (Rs.)		Library Expenditure (Rs.)	
		(2005-2009)	(2009)	(2005-2009)	(2009)	(2005-2009)	(2009)
1	FSL, Bihar	NI	NI	NI	NI	1,40,244	76,645
2	FSL, Himachal Pradesh	4,25,811	Nil	NI	NI	3,75,465	3,277
3	FSL, Madhya Pradesh	3,50,000	70,000	Nil	Nil	12,50,000	2,50,000
4	FSL , Manipur	3,24,676	72,384	3,50,000	50,000	27,653	12,931
5	FSL, Mizoram	5,00,000	1,00,000	Nil	Nil	50,000	10,000
6	FSL, Punjab	No separate funds are provided by Govt. under theses heads of Training, Research & Library					
7	FSL, Rajasthan	NI	NI	NI	NI	1,51,360	Nil
8	FSL, Tamil Nadu	10,79,000	5,10,000	NI	NI	66,04,000	13,25,000
9	FSL, Tripura	2,81,184	1,08,916	Nil	Nil	4,20,968	11,175

NI : Not indicated

Table 67 : Training attended in the past by personnel working with some State / UT Forensic Science Laboratories

S.No.	Training details	FSL Bihar	FSL Himachal Pradesh	FSL, Jammu & Kashmir	FSL Maharashtra	FSL Manipur
1	Number of attendees	21	06	19	47	09
2	Number of programmes	38	21	24	225	23
3	Number of (training - relevant) reports signed	Nil	Nil	1249	Nil	1943

S.No.	Training details	FSL Mizoram	FSL Nagaland	FSL Punjab	FSL Rajasthan	FSL Tamil Nadu
1	Number of attendees	16	11	Staff shortage, Can't spare scientist for training	33	404
2	Number of programmes	39	11		53	424
3	Number of (training - relevant) reports signed	1614	566		55	8970

Table 68 – 1 : Training requirement of some State / UT Forensic Science Laboratories

S.No.	Lab Division	FSL Andaman and Nicobar Islands		FSL Bihar		FSL Himachal Pradesh		FSL Jammu & Kashmir		FSL Madhya Pradesh		FSL Manipur		FSL Mizoram	
		Training adequate	Training required	Training adequate	Training required	Training adequate	Training required	Training adequate	Training required	Training adequate	Training required	Training adequate	Training required	Training adequate	Training required
1	Anthropology	-	-	-	✓	-	-	-	-	-	-	-	✓	-	-
2	Ballistics	-	-	-	✓	-	✓	-	-	-	✓	✓	-	✓	-
3	Biology	-	-	-	✓	-	-	✓	-	-	✓	✓	-	✓	-
4	Brainmapping	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Chemistry	-	-	-	✓	-	✓	-	✓	-	-	-	✓	✓	-
6	Computer forensics/ digital forensics	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	Documents	-	-	-	✓	-	✓	-	-	-	✓	-	✓	✓	-
8	Excise	✓	-	-	-	-	-	-	-	-	✓	-	-	-	-
9	Explosives	-	-	-	-	-	✓	-	✓	-	✓	-	-	-	-
10	Fingerprint	-	-	-	-	-	-	-	-	-	-	-	-	✓	-
11	Narcoanalysis	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Narcotics	-	-	✓	-	-	✓	✓	-	-	✓	✓	-	✓	-
13	Photography	-	-	-	-	-	✓	-	-	-	✓	-	-	✓	-
14	Physics	-	-	-	✓	-	✓	-	✓	-	✓	-	✓	-	-
15	Polygraph	-	-	-	✓	-	-	-	✓	-	-	-	-	-	-
16	Prohibition	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	Serology/DNA	-	-	-	-	-	-	✓	-	-	✓	-	-	✓	-
18	Toxicology	-	-	✓	-	-	✓	-	✓	-	✓	✓	-	✓	-
19	Voice identification	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	Instruments	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	R & D	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 68 – 2 : Training requirement of some State / UT Forensic Science Laboratories

S.No.	Lab Division	FSL Nagaland		FSL Rajasthan		FSL Tamil Nadu		FSL West Bengal	
		Training adequate	Training required	Training adequate	Training required	Training adequate	Training required	Training adequate	Training required
1	Anthropology	-	-	-	✓	✓	-	-	-
2	Ballistics	-	-	-	✓	✓	-	-	✓
3	Biology	-	-	-	✓	✓	-	-	✓
4	Brainmapping	-	-	-	-	-	-	-	-
5	Chemistry	-	-	✓	-	✓	-	-	✓
6	Computer forensics/ digital forensics	-	-	-	✓	✓	-	-	-
7	Documents	-	-	-	✓	✓	-	-	-
8	Excise	-	-	-	-	✓	-	-	-
9	Explosives	-	-	-	-	✓	-	-	-
10	Fingerprint	✓	-	-	-	-	-	-	-
11	Narcoanalysis	-	-	-	-	-	-	-	-
12	Narcotics	✓	-	-	✓	✓	-	-	✓
13	Photography	-	-	✓	-	✓	-	-	✓
14	Physics	-	-	-	✓	✓	-	-	✓
15	Polygraph	✓	-	-	-	-	-	-	-
16	Prohibition	-	-	-	✓	-	-	-	-
17	Serology/DNA	-	-	-	-	✓	-	-	-
18	Toxicology	-	-	-	✓	✓	-	-	✓
19	Voice identification	-	-	-	✓	✓	-	-	✓
20	Instruments	-	-	✓	-	✓	-	-	-
21	R & D	-	-	-	-	-	-	-	-

Table 69 : Publication / presentation by some State / UT forensic establishments (2005-2009)

S.No.	Cases reported in	FSL Andaman & Nicobar Islands	FSL Arunachal Pradesh	FSL Bihar	FSL Delhi	FSL Himachal Pradesh	FSL Jammu & Kashmir	FSL Jharkhand
1	International publications	Nil	Nil	Nil	Nil	19	Nil	Nil
2	Indian publications	Nil	Nil	Nil	Nil		Nil	Nil
3	Oral / poster presentations	Nil	Nil	Nil	Nil		Nil	Nil

S.No.	Cases reported in	FSL Madhya Pradesh	FSL Maharashtra	FSL Manipur	FSL Mizoram	FSL Nagaland	FSL Punjab	FSL Rajasthan
1	International publications	Nil	Nil	Nil	02	Nil	Nil	Nil
2	Indian publications	Nil	Nil	Nil		Nil	Nil	Nil
3	Oral / poster presentations	Nil	Nil	Nil		Nil	Nil	Nil

S.No.	Cases reported in	FSL Tamil Nadu	FSL Tripura	FSL West Bengal
1	International publications	45	Nil	Nil
2	Indian publications		Nil	Nil
3	Oral / poster presentations		Nil	Nil

9.3. Recommendations

Hitherto uncovered miscellaneous aspects of forensic sector relate to pertinent Acts / Code, forensic awareness among judiciary and police and accreditation status of laboratories. The following recommendations are made in these respects.

- (i) Steps should be taken to amend Section 45 of Indian Evidence Act, Section 293 of Criminal Procedure Code and Section 79A of Information Technology Act, as detailed in **Annexure – IV**.
- (ii) There should be measures to increase the level of awareness among forensic users (judiciary, police...), such as :-
 - (a) Awareness courses at NFA, CFSLs, judicial academies, police academies, directorates of prosecution and bar council
 - (b) Forensic participation in Zonal, State and National Police Duty Meets
 - (c) Regular mailing of (CFSLs' in-house) Newsletters to the forensic customers
 - (d) Inviting their scripts for inclusion in such Newsletters
 - (e) Inviting their informal participation in CFSLs' Monthly Journal Club Meetings, and
 - (f) Vibrant deliberations at meetings of the CFSLs' Forensic Stakeholders' Consultative Committees (FOSHCOM).

(iii) All the Central forensic establishments have been accredited by NABL; State / UT forensic establishments should also fall in line immediately.

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IMPLEMENTATION PLAN

A profile of action plan for implementing the recommendations is given below. [“Time zone” column indicates the target for completion of activities beginning by August 2, 2010 unless otherwise mentioned.] Some recommendations (Reco) require direct attention of MHA, some require action at the Directorate level, and others at the interface.

Reco. No.	Activity	Time zone
1.	Renaming Directorate of Forensic Science (DFS) as Directorate of Forensic Service (DIFOSER)	September 2010
2.	Exclusive “Forensic Service” Section in MHA	October 2010
3. (i) and (ii)	Adoption of Vision and Mission for DIFOSER	September 2010
3. (iii)	Following the road – map	As indicated in the Reco itself
4. (iv)	Creation and filling of one post of Deputy	December 2010

	Director and three posts of Assistant Director at DIFOSER headquarters	
4. (vii)	Strengthening of headquarters with supporting / ministerial HR and other logistics	January 2011
4. (viii)	Reserve List of Forensic professionals (RELIF)	March 2011
4. (ix)	-Rapid Response Forensic Authority (RAREFA) at headquarters -Forensic Stakeholders Consultative Committee (FOSHCOM) in CFSLs	June 2011 October 2010
4. (x)	-Instituting Crazy Ideas Grant (CRAIG) -Establishing National Forensic Library and FOSIDOC at headquarters	March 2012 September 2011
4. (xi)	Formation of Policy Panel (POP) and three Programme Advisory Committees (PAC)	March 2011
5.	-Enactment of the Forensic Act	January 2011
	-Constitution of the Forensic Council of India (FOCI)	March 2011
	-Regulation of forensic education by FOCI	Begin by September 2011
	-Formation of "Indian Forensic Service Improvement Board (IFOSIB)"	May 2011

6.	Dropping the nomenclature "Centres of Excellence" attributed to CFSLs	September 2010
7.	Incorporation of laboratories of GEQD into CFSLs	October 2010
8.	Creating "Prints and patterns" Division in all the CFSLs	September 2011
9. and 10.	Patronizing and improving service by Forensic Medicine set up (avoiding role conflict with Ministry of Health and Family Welfare), State / UT forensic science, finger print and chemical examination entities	March 2018
12. (i)- (iv)	Framing of policies / rules for HR recruitment, promotion, store purchase, autonomy, delegation of powers etc	September 2011
12. (vi)	Interim increase of financial powers to laboratory Directors	March 2011
14. (i)	(a) Effecting all promotions	October 2010
	(b) Filling vacant (alongwith the revival – yielding)posts at FSLs of DFS /CBI	December 2010
14. (iii)	Need based creation of additional posts	September 2011
14. (iv)	Filling vacant posts at NICFS / NFA	March 2011
14. (v)	Strengthening FS Wing of NPA	September 2011

14. (vi)	Strengthening CFPB (NCRB)	September 2011
15. (i)	Risk Insurance	April 2011
16. (i) and (ii)	-Instituting two more Meritorious Awards -Instituting two more Best paper Awards	March 2012
16. (iii)	Other facets of HR motivation	March 2012
17.	Restoration of scientific vibrancy in CFSs	August 2010
18.	Building, infrastructure, Rapid Response (Mobile) Vehicles, Libraries for CFSs	Ongoing
19.(ii)	Seven – year withdrawal & replacement cycle for equipments	March 2013
20. (i)	Formation of discipline wise Scientific Task Forces (STFs)	September 2011
20. (ii)	Certification of professionals by FOCI	September 2012
20. (iii)	Accreditation of FSLs	Ongoing
20. (iv)	Action to get regular feedback from forensic end- users	September 2010
20. (v)	Strategies to reduce pendency	March 2011
20. (vi)	Functional integration and synergy through forensic intelligence databases	December 2010

21. (iii) and (iv)	Tenability of EMR projects and (PhD) Research Fellowships at non – CFSL institutions	September 2011
21. (v)	Crazy Ideas Grant (CRAIG) and Selection Committee	March 2012
21. (vi)	Budget for Science - Meet related foreign travel	March 2012
22. (v)	Converting NICFS into National Forensic Academy (NFA)	March 2011
22. (xiii)	Keeping MSc (FS) Course in abeyance at NICFS / NFA	Academic year 2010-11
23.	Regulation of forensic education by Forensic Council of India	Begin by September 2011
24.	Practice and R & D in thrust forensic areas for homeland security; and, capacity building	Ongoing; August 2011
25. (i)	Amendments to Acts / Code	March 2012
25. (ii)	Enhancement of forensic awareness among judiciary etc	October 2010
25. (iii)	Accreditation of FSLs	Ongoing; March 2016

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- Mr. Vindresh Mishra (Senior Research Fellow, CFSL, Chandigarh)
- Mr. Rajesh Thakur (Asstt. Sub. Inspector, Punjab Police, Special Wing)
- Responders to the interaction (by e-mail, phone, letter; and, in person)

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REFERENCES

- [1]** Phone – call from the Home Secretary , GoI in the second week of January 2010
- [2]** Letter No: DFS 234 / 06 /06 – (Plan) / PM. II dated 15 -01 -2010 from the Special Secretary, MHA , GoI
- [3]** Terms of Reference vide letter No. 234 / 06 / 2006 (Plan) / DFS/ PM . II dated 08 – 02 -2010 from the Deputy Secretary, MHA, GoI (and, discussion with the Spl. Secretary and the Jt. Secretary, MHA, GoI on 08 – 02- 2010)
- [4]** Meeting with the Hon'ble Home Minister, GoI on 08-02-2010
- [5]** GoI-MHA Consultants' letter in No. P Plan FS/ Consult / 1 / 2010 dated 12 – 02 - 2010 requesting DFS, CFSLs, GEQDs, State FSLs etc to provide Plan – write up if any
- [6]** GoI- MHA Consultants' letter in No P Plan FS/Consult / 2 / 2010 dated 04 – 03 – 2010 requesting NICFS, Universities, private institutions etc to furnish details on academics, training etc.
- [7]** GoI – MHA Consultants' letter in No. P Plan FS / Consult / 3 / 2010 dated 13 – 03 - 2010 (with enclosed Questionnaire, Tables and Summary Set), requesting detailed inputs from DFS, CFSLs, GEQDs, State /UT FSLs, CFSL (CBI) and FS Wing of SVP NPA

- [8]** GoI – MHA Consultants' letter in No . P Plan FS/ Consult / 4/ 2010 dated 09 – 03 – 2010 (with enclosed Format), requesting feedback from forensic science service users (judicial academies, directorates of prosecution, bar councils, advocates associations, police academies / training colleges, DGPs, CISF, NSG, CBI, NCB, controllers of explosives, CDTS, BPR & D, banks, defense services, customs & excise, wildlife institute, ITB police, SVP NPA and NCRB)
- [9]** GoI – MHA Consultants' letter in No . P Plan FS/ Consult / 5/ 2010 dated 12/20 – 03 – 2010 requesting comments from Central and State Finger Print Bureaux
- [10]** GoI – MHA Consultants' letter in No . P Plan FS/ Consult / 6/ 2010 dated 12 – 03- 2010 requesting comments from forensic medicine experts / police surgeons
- [11]** GoI – MHA Consultants' letter in No . P Plan FS/ Consult / 7/ 2010 dated 12 – 03- 2010 requesting comments from Chemical Examiner's Laboratories
- [12]** GoI – MHA Consultants' letter in No . P Plan FS/ Consult / 8/ 2010 dated 12 – 03 – 2010 requesting comments from Serologist to Government
- [13]** GoI – MHA Consultants' letter in No . P Plan FS/ Consult / 9/ 2010 dated 12 – 03– 2010 requesting inputs from retired/senior forensic scientists and others
- [14]** GoI – MHA Consultants' letter in No . P Plan FS/ Consult / 10/ 2010 dated 15 – 03 – 2010 (with enclosure) requesting detailed inputs from DFS, MHA – GoI

- [15]** GoI – MHA Consultants' letter in No . P Plan FS/ Consult / 11/ 2010 dated 15 – 03 – 2010 (with Questionnaire enclosed) requesting specific comments / details from NICFS
- [16]** GoI – MHA Consultants' letter in No . P Plan FS/ Consult / 12/ 2010 dated 17 – 03– 2010 (with enclosed Format) , requesting feedback from Registrar General (Supreme Court) / Registrars (High Courts)
- [17]** Visit / discussion at the GEQD , Chandigarh on 25 – 03 – 2010
- [18]** Visit / discussion at the Central Detective Training School (CDTS), Chandigarh on 25 – 03 – 2010
- [19]** Visit / discussion at the CFSL, Chandigarh on 25 –03 – 2010
- [20]** Visit / discussion at the State FSL, Junga, HP on 26 – 03 – 2010
- [21]** Visit / discussion at the GEQD, Shimla on 26 – 03– 2010
- [22]** Visit / discussion at the State FSL, Madhuban, Haryana on 31 – 03 – 2010
- [23]** Visit / discussion at the Central Fingerprint Bureau, NCRB, New Delhi on 31 – 03– 2010
- [24]** Visit / discussion at the NCT FSL , New Delhi on 31- 03- 2010
- [25]** Visit / discussion at the LNJN NICFS, Delhi on 01 – 04- 2010

- [26]** Visit / discussion at the CFSL (CBI), New Delhi on 01 – 04-2010
- [27]** Discussion with and hand – outs from Dr. V.K. Kashyap (Director : Plan, MHA) in the premises of DFS, New Delhi on 02-04-2010
- [28]** Visit / discussion at the State (Regional) FSL, Agra, UP on 03 – 04 – 2010
- [29]** Visit / discussion at the Punjab State FSL, Chandigarh on 07 – 04- 2010
- [30]** Visit / interaction at the GEQD, Hyderabad on 20 – 05 – 2010
- [31]** Visit / interaction at the Andhra Pradesh State FSL, Hyderabad on 20 – 05 – 2010
- [32]** Visit / interaction at the F S Wing of the SVP National Police Academy (and at the Directorate, SVPNPA), Hyderabad on 20 – 05 – 2010
- [33]** Visit / interaction at the CFSL, Hyderabad on 21 – 05 – 2010
- [34]** Visit / interaction at the GEQD, Kolkata on 03 – 06 – 2010
- [35]** Visit / interaction at the CFSL, Kolkata on 03 – 06 – 2010
- [36]** Visit / interaction at the West Bengal State FSL, Kolkata on 03 – 06 – 2010
- [37]** Visit / interaction at the Neutron Activation Analysis (NAA) Unit (of the CFSL, Hyderabad), Bhabha Atomic Research Centre, Mumbai on 10 – 06 – 2010

- [38]** Visit / interaction at the Maharashtra State FSL, Mumbai on 10 – 06 – 2010
- [39]** Office memorandum of the MHA, GoI in No. CFIs / S & T / CFSL / 4 / 86 / Vol. II / GPA – II dated 16 – 04 – 1998, reorganizing CFSLs functioning under the BPR&D as “Centres of Excellence”, etc.
- [40]** Office order of the BPR & D, MHA, GoI in no. CFIs / S & T / CFSL / 4 / 86 / Vol. II dated 29 - 12 - 1998, to implement the MHA’s OM dt. 16 – 04 – 1998 though in a modified pattern
- [41]** Office order of the BPR & D in No. CFIs / 12 (1) / 98 dated 29 – 12 – 1998, to implement the MHA’s OM dt. 16 – 04 – 1998, though in a modified pattern
- [42]** Resolution and Order of the Ministry of Home Affairs, GoI in No. 25011 / 41 / 2001 – GPA. II / PM. II dated 31 - 12 - 2002, creating a separate Directorate of Forensic Science in New Delhi under MHA, GoI defining the Charter of Duties
- [43]** Details on Directorate of Forensic Science (DFS), MHA, GoI, as furnished by DFS in response to the Consultants’ letter in No. P Plan FS / Consult / 10 / 2010 dated 15 – 03 – 2010, and, to the subsequent e – mails of the Consultants
- [44]** Revised Work Norms of Forensic Science Laboratories and Government Examiners of Questioned Documents, Communicated by BPR & D (MHA, GoI) in Letter No. CFIs / 12 (1) / 2001 dated 20 -11 – 2002
- [45]** Report (1983) of the Expert Group of the Scientific Advisory Committee to the Cabinet (SACC) on Central forensic

institutions / Minutes of the meeting taken by Chairman, SACC on 02 – 06– 1984

- [46]** Listing of CFSL (CBI), New Delhi; CFSLs (Calcutta / Hyderabad / Chandigarh); and ICFS (all under MHA), as S & T institutions as approved by SACC, in Annexure II of the Office Memorandum No. DST / JSF / 17 (3) (1) / 83 dated 28 -12- 1983 from DST , GoI, New Delhi
- [47]** Recognition of CFSLs and GEQDs as S & T organizations and recommendation of implementation of Flexible Complementing Scheme (FCS) therein, communicated in Office Memorandum No. A- 12046 / 9 / 99 – Rectt. Dated 21 – 09– 2000 from DST (Ministry of S & T, GoI); read with their letter in No. 12046 / 9 / 99 – Rectt. dated 19 – 06- 2001
- [48]** Decision – guidelines, on Flexible Complementing Scheme (FCS) for in situ promotion of scientists in various scientific departments after examining the recommendations of the Fifth Central Pay Commission, vide Office Memorandum No. 2 / 41 / 97 – PIC dated 09 – 11 – 1998 from the Dept of Personnel & Training, Ministry of Personnel, Public Grievances & Pensions, GoI (with two Annexures)
- [49]** Annual Report (2006 – 07) (Annexure – I , p. 15 – 17) of the Scientific Advisory Council to the Prime Minister
- [50]** Impact assessment of the services of DFS laboratories; R. B. Singh (DFS, New Delhi ; 2006), as furnished by the DFS in letter No. DFS / Plan / PS / 2010 dated 13 – 04 – 2010
- [51]** FBI (USA) – Visit – Report of Dr. C. N. Bhattacharya (Director – cum – Chief Forensic Scientist), as communicated by the Jt. Secretary (PM II, MHA) via e- mail dated

10 – 05 – 2010, and referred by the Dy. Secretary (PM II, MHA) in letter No. 25020 / 4 / 2010 – PM II dated 13 – 05 – 2010

[52] DFS's Rules for GoI Fellowship Scheme for R & D work in forensic science

[53] Forensic relevance of 28 on – going DFS – funded PhD – related Fellowship research work as furnished by DFS in response to the Consultants' letter in No. PPlan FS / Consult / 10 / 2010 dated 15 – 03 – 2010

[54] Forensic relevance of 8 on – going DFS – funded Extramural Research (EMR) project works, as furnished by DFS in response to the Consultants' letter in No. PPlan FS / Consult / 10 / 2010 dated 15 – 03 – 2010

[55] Comprehensive proposal for " Capacity Building " of CFSL (CBI), New Delhi ; Bibha Rani Ray, Alok Pateria and M. S. Rao (CFSL, CBI, New Delhi ; 2009 - 10)

[56] Office Order of the DFS, MHA, GoI in No. 01 / 01 / 2007 – Adm (FS) dated 28 – 04 – 2008 (citing OM of the MHA in No. A – 12025 / 9/ 2005 – Ad. VI dated 18 – 09 – 2007), abolishing 107 posts under DFS's CFSLs and GEQDs (scientific technical, support and ministerial posts)

[57] History and development of forensic science in India; R.K. Tewari and K.V. Ravikumar (Journal of Postgraduate Medicine, 46, 303 – 308, 2000)

[58] State – of – the – Art Forensic Science: for Better Criminal Justice; V.S. Malimath (National Human Rights Commission, New Delhi ; 1999)

- [59]** Forensic Science in India: A Vision for the Twenty – first Century; B.B. Nanda and R.K. Tewari (Select Publishers, New Delhi; 2001)
- [60]** Strengthening Forensic Science in the United States: A Path Forward; Committee on Identifying the Needs of the Forensic Sciences Community, National Research Council (National Academy of Sciences, USA ; 2009)
- [61]** An Examination of Forensic Science in California (California Crime Laboratory Review Task Force, USA; 2009)
- [62]** Science in court – Editorial and Cover – front (Nature, 464, 325, 2010)
- [63]** Headcase; V. Hughes (Nature, 464, 340 – 342, 2010)
- [64]** The fine print ; L. Spinney (Nature, 464, 344 - 346, 2010)
- [65]** DNA's identity crisis; N. Gilbert (Nature 464, 347 – 348, 2010)
- [66]** Making forensic science more scientific; P. Neufeld and B. Scheck (Nature, 464, 351, 2010)
- [67]** Forensic Laboratories : Handbook for Facility Planning, Design, Construction, and Moving; Technical Working Group (National Institute of Standards and Technology, Department of Commerce; National Institute of Justice, Department of Justice, USA; 1998)
- [68]** The status of forensic medicine in India ; N. Jagadeesh (Indian Journal of Medical Ethics, 5, 154 - 156, 2008)
- [69]** Medico Legal – Health – Citizens

(http://india.gov.in/citizen/health/medico_legal.php)

- [70]** Ind Medica – forensic medicine & toxicology - Association Directory (<http://www.indmedica.com>)
- [71]** Welcome verdict but questionable rider; A.R. Lakshmanan (The Hindu - Delhi Edition; July 9, 2010; page 8) - - - regarding the Supreme Court of India ruling of May 05, 2010 on the use of narcoanalysis, brainmapping and polygraph tests
- [72]** Disaster fatality assistance / Disaster Mortuary Teams (DMORT) as described by the USA's National Association of Medical Examiners (NAME) (<http://thename.org>)
- [73]** Improving the practice and use of forensic science : a policy review ; the Justice Project, Washington D C, 2008 (<http://thejusticeproject.org>)
- [74]** Invalid forensic science testimony and wrongful convictions ; B. L. Garrett and P. J. Neufeld (Virginia Law Review, 95, 1 – 97, 2009)
- [75]** Details on GLP from National Good Laboratory Practice (GLP) Compliance Monitoring Authority (NGCMA), DST, GoI (<http://indiaglp.gov.in/docs/finalbook100.pdf>)
- [76]** Improving methods, practice and performance in forensic science, pp. 183 – 191 (In: Strengthening Forensic Science in the US :A Path Forward; National Academy of Sciences, USA; 2009)
- [77]** Method validation in forensics and the archaeological sciences; V. Hlinka, I. Muharam and V.K. Lentile (In: Archaeological Science under Microscope : Studies in Residue

and Ancient DNA Analysis in honour of Thomas H. Loy, 2008; pp.151 – 158)

<http://epress.anu.edu.au/terra-australis/ta30/pdf/11.pdf>

- [78]** Bringing science to digital forensics with standardized forensic corpora; S. Garfinkel, P.Farrell, V.Roussev and G. Dinolt (Digital Investigation (Science Direct), 6 S2 – S11, 2009)
- [79]** FBI's quality assurance standards for DNA databasing laboratories
(www.fbi.gov/hq/lab/fsc/backissu/oct2008/standards/2008_10_standards_o1a.htm#qa)
- [80]** Certification program of the Association of Firearms and Toolmark Examiners (AFTE Journal, Fall 2000)
- [81]** Certification (Forensic Toxicology Specialist) program of the American Board of Forensic Toxicology, January 2009
- [82]** Certification programs of the International Association for Identification (in Forensic Art, Bloodstain Pattern Analysis, Crime Scene, Footwear, Latent Print, Forensic Photography, and Ten Print), January 2010
- [83]** Standard setting and quality regulation in forensic science (UK Accreditation Service)
www.bis.gov.uk/assets/biscore/corporate/migratedd/publications/f/44699.pdf
- [84]** Accreditation program of the American Society of Crime Laboratory Directors (ASCLD), 2006/07/08

- [85]** Discipline wise scope of Accreditation of Central Forensic Science Laboratory, Chandigarh under NABL's ISO / IEC 17025 (on – going ; July 2010)
- [86]** Rules and procedures relating to All India (Union Civil) Services and to the services under the Central Board of Excise and Customs
- [87]** Council of Scientific & Industrial Research (CSIR) Scientists Recruitment and Assessment Promotion Rules, 2001
- [88]** Department of Biotechnology (DBT) Group 'A' Gazetted Posts (Non – Ministerial and Scientific) Recruitment Rules, 2001
- [89]** Department of Science & Technology (DST) Scientist 'B' Recruitment Rules 2000; DST Group 'A' Gazetted Posts (Non – ministerial, Scientific and Technical) Rules, 2004
- [90]** Defence Research and Development Service Rules, 1979 as amended up to 2008; role and functions of DRDO's Recruitment & Assessment Centre; and, DRDO's Purchase Management (Manual) – 2006
- [91]** Risk insurance (free medical and life insurance, with premium payment by the Government) for employees in jobs involving health-risk, recommended by the Sixth Central Pay Commission ; Resolution No 1 / 1 / 2008 – IC of the Department of Expenditure, Ministry of Finance, GoI (The Gazette of India, Extraordinary No: 304 dated 29 – 08 – 2008)
- [92]** Education and Training in Forensic Science: A Guide for Forensic Science Laboratories , Educational Institutions, and Students; Technical Working Group for Education and

Training in Forensic Science (U.S. Department of Justice / National Institute of Justice, Washington D.C.; 2004)

- [93]** Forensic Science: Implications for Higher Education 2004 – Research and Information; SEMTA Report (Science, Engineering and Manufacturing Technologies Association, UK ; 2004)
- [94]** Model standards for forensic science graduate program evaluation; G.F. Sensabaugh and R.E. Gaensslen (Journal of Forensic Sciences, 48 , 1- 5, 2003)
- [95]** Details on Lok Nayak Jayaprakash Narayan National Institute of Criminology and Forensic Science (LNJN NICFS / NICFS ; MHA, GoI), as furnished by NICFS in response to the Consultants' letters in No. PPlan FS / Consult / 2 / 2010 dated 04 – 03 – 2010 and No. PPlan FS / Consult / 11/ 2010 dated 15 – 03 – 2010
- [96]** Deliberations of the National Meet of Forensic Science Educationists (Jaipur; Nov 16-17, 2009) - *vide* Letter F.No. 25020 / 47 / 2009 - PM II dated 01-07-2010 from Under Secretary, MHA, GoI
- [97]** Union Public Service Commission's Advt. No. 5 / 2010 for recruitment to the posts of Junior Scientific Officer, Senior Scientific Officer and Assistant Director
- [98]** Central Staff Selection Commission's Advt. No. SSC / HQ / 1 / 2010, F. No. 8 / 5/ 2010 / RHQ with closing date as 26 – 04 – 2010, for recruitment to the post of Senior Scientific Assistant

- [99]** Haryana State Staff Selection Commission's Advt. No. 1 / 2010 dated 12 -03 - 2010 for recruitment to the post of Scientific Assistant
- [100]** Central Forensic Science Laboratory (DFS, MHA, GoI) Chandigarh – Notice Inviting Tenders for providing manpower with last date / time as 03 -04-2009 / 15:00 hrs, for one year contract post / position of Forensic Analyst
- [101]** Special Rules for the posts of Scientific Officer and above in the Tamil Nadu Forensic Science Service [vide Govt. of Tamil Nadu G.O. Ms. No. 764 in Home (Police – 18) Dept dated 23 -08- 2002, as amended in G.O. Ms. No. 419 in Home (police – 18) Dept dated 03 -04- 2008]
- [102]** Tamil Nadu Public Service Commission's Advt. No. 231 dated 17 -02 -2010 , for recruitment to the post of Scientific Assistant Grade – II
- [103]** Exceptional Unconventional Research Enabling Knowledge Acceleration (EUREKA) Grants of National Institute of Health (NIH), USA
- [104]** Gates Foundation Grants for Discovery / Exploration (<http://www.gatesfoundation.org>)
- [105]** Research Support Programme by the Council of Scientific and Industrial Research (CSIR) under New Idea Fund Scheme (<http://www.csir.res.in>)
- [106]** "Kite – flying" special grants at National Chemical Laboratory (NCL), Pune to support unusual or crazy ideas using CSIR's "New Idea Fund" (<http://www.ncl-india.org>)

- [107]** The Constitution of India including the ninety – fifth amendment in 2009 [Article 246, Seventh Schedule :- List I - Union List – Item 65 (a), (b) and (c)]
- [108]** The Prevention of Food Adulteration Act, 1954 and Rules 1955 as amended up to 2009
- [109]** The Drugs and Cosmetics Act, 1940 and Rules 1945 as amended up to 2009
- [110]** The Dentists Act, 1948
- [111]** The Pharmacy Act, 1948
- [112]** The Bar Council of India Rules (under the Advocates Act, 1961) as amended up to 2008
- [113]** The Indian Medical Council Act, 1956 and Rules 1957 and Regulations up to 2009
- [114]** The Code of Criminal Procedure, 1973 as amended up to 2009
- [115]** The Indian Evidence Act, 1872 as amended up to 2009
- [116]** The Information Technology Act, 2000 as amended up to 2009
- [117]** The Biological Diversity Act, 2002 (Act 18 of 2003)
- [118]** The Right to Information Act, 2005
- [119]** Homeland security and the forensic science disciplines, pp. 279 – 286 (In: Strengthening Forensic Science in the US : A Path Forward; National Academy of Sciences, USA; 2009)
- [120]** Radiation poisoning a reminder of need for better “nuclear security”, S. Varadarajan and R. Ramachandran / N – experts

remove radiation sources ; D.K. Pandey (The Hindu dated 10-04 – 2010 Delhi Edition, page 1)

[121] Challenges of radiological terrorism : preparedness for response; K. S. Pradeep Kumar (In : Manual of the Training Programme on Neutron Activation Analysis and Forensic Applications ; Feb 8 – 10, 2010 ; Mumbai)

[122] Anti – forensics : techniques, detection and countermeasures ; S. Garfinkel (In : Proceedings of the Second International Conference on i – Warfare and Security)
([http://www.noncombatant.org-trove-garfinkel-anti-forensic-techniques\[1\].pdf](http://www.noncombatant.org-trove-garfinkel-anti-forensic-techniques[1].pdf))

[123] National DNA Data Bank Advisory Committee Annual Report 2008 – 2009 ; Royal Canadian Mounted Police, Canada
(<http://www.rcmp-grc.gc.ca/dnaac-adncc/annurp/annurp-0809-eng.pdf>)

[124] Forensics 21: police-led forensic service fit for the 21st Century (including professional development & leadership development courses, training programmes, database establishments etc) ; National Policing Improvement Agency, UK (<http://www.npia.police.uk>)

[125] Information sharing and customer outreach
(http://en.wikipedia.org/wiki/information_sharing_and_customer_outreach)

[126] Information Sharing Environment : Information sharing & Fusion Centers
(<http://www.ise.gov/pages/partner-fc.aspx>)

[127] Information Sharing Environment Privacy Guidelines
([http://www.ise.gov/docs/privacy/ISE Privacy Guidelines
FAQ 20061204.pdf](http://www.ise.gov/docs/privacy/ISE_Privacy_Guidelines_FAQ_20061204.pdf))

[128] Guideline 4 – Facilitate information sharing between executive departments and agencies and foreign partners
(<http://www.ise.gov/docs/guidance/guidiline%204%20-%20sharing%20with%20foreign%20partners.pdf>)

[129] Definition of the results to be achieved in improving terrorism – related information sharing is needed to guide implementation and assess progress – Report on Information Sharing Environment to the Congressional requesters; US Government Accountability Office, June 2008
(<http://www.gao.gov/newitems/d08492.pdf>)

[130] Counterintelligence and counter – terrorism organizations; India's MAC (Multi Agency Centre) in the IB coordinates sharing of intelligence

([http://en.wikipedia.org/wiki/ Counter-intelligence_and_ counter - terrorism_organizations](http://en.wikipedia.org/wiki/Counter-intelligence_and_counter-terrorism_organizations))

[131] PM addresses Chief Ministers' Conference on Internal Security (Feb. 7 , 2010 ; New Delhi)
([http://pibmumbai.gov.in/scripts/detail.asp?releaseId=E201
OPR223](http://pibmumbai.gov.in/scripts/detail.asp?releaseId=E201OPR223))

[132] National Intelligence Grid (NatGrid) and the forthcoming National Counter Terrorism Council (NCTC) as described by Harish Gupta; In: Chidambaram has his way as National Intelligence Grid gets PM's okay (Daily News & Analysis : May 12, 2010) (<http://www.dnaindia.com>)

[133] Conference on Science & Technology for Homeland Security – 2010 (MHA (GoI) & FICCI) ; scheduled for July 29-30, 2010 ; New Delhi

[134] USA's "Paul Coverdell National Forensic Science Improvement Act 2000", an Act (Public Law 106 – 561, Dec. 21, 2000) by amending the Omnibus Crime Control and Safe Streets Act of 1968 ; Part BB – Paul Coverdell Forensic Science Improvement Grants

(http://frwebgate.access.gpo.gov/cgi-in/getdoc.cgi?dbname=106_long_public_laws&docid=f:pub1561.106.pdf)

[135] Information Memorandum 2002 for National Forensic Sciences Improvement Act Grants ; Director, National Institute of Justice, USA

(<http://www.nijrs.gov/pdffiles1/nij/fy02-nfsia.pdf>)

[136] Review of the office of Justice Programs' Paul Coverdell Forensic Science Improvement Grants Program, January 2008 ; Office of the Inspector General : Evaluation and Inspections Division, US Department of Justice

(<http://www.justice.gov/oig/report/OJP/e0801/final.pdf>)

[137] Notice to Grant applicants for Paul Coverdell Forensic Science Improvement Grants (CFSI) – FY 2010 ; Governor's Office of Crime Control and Prevention, Maryland, USA

(<http://www.goccp.maryland.gov/grants/nofa-details.php?id=74>)

[138] Announcement seeking applications for funding under the FY 2010 Paul Coverdell Forensic Science Improvement Grants

Program; Office of Justice Programs, National Institute of Justice, US Department of Justice
(<http://www.nijrs.gov/pdffiles1/nij/s1000921.pdf>)

- [139]** Interim Report on Perspective Plan for Indian Forensics ; GoI – MHA Consultants (New Delhi ; April 2010)
- [140]** Letter No : F. No. 25020 / 59/ 2009 – PM – II dated 25 – 06 – 2010 from the Deputy Secretary, MHA, GoI, requesting to attend a Meeting with the Home Minister
- [141]** Meeting with the Hon'ble Home Minister, GoI on 29 – 06 – 2010 for deliberations on the Interim Report of the Consultants regarding Perspective Plan for Indian Forensics (based on the Note submitted by MHA – PM II Section to the Minister)
- [142]** Note on the decisions arrived at during discussion with the Hon'ble Home Minister, GoI on 29 – 06 – 2010; *Vide* e-mail of 16 - 07 – 2010 from the Joint Secretary (PM-II, MHA)
- [143]** Bar Council of India (Directorate of Legal Education, New Delhi – 110 002) Expression of Interest in opportunities of partnership with forensic science service, in letter No. BCI / DLE / 431/ 2010 dated 31 – 03– 2010 from Shri Rahul Singh (Professor of Law & Associate Director: DLE, BCI)
- [144]** GoI- MHA Consultants' response letter in No. P Plan FS / Consult / 13 /2010 dated 09 – 04 – 2010 to Prof. Rahul Singh, DLE (BCI) with copy to Dr. Rajvanshi (Addl. Director : NICFS, Delhi)

[145] NICFS's availability to Bar Council of India for help in academic work, *Vide* Letter No : 13 / 09 / 09 – LNJJN NICFS dated 15 – 07 - 2010

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No.P Plan FS/Consult/2/2010/

Dated : 04/03/2010

Dear Sir/Madam,

Sub : Perspective Plan for Indian Forensics (2010) - **Details on academics/training**

Ref : Letter No. DFS/234/06/06-(Plan)/PM-II dated 15/01/2010, from Ms. Anita Chaudhary, Special Secretary, MHA, GOI, New Delhi – 110 001

Season's Greetings.

2. Well, as you may be happily aware, the Hon'ble Home Minister, Government of India at a press conference on Feb 01, 2010 had announced that 2010 is the Year of Forensic Science. As such, the MHA – Government of India has appointed us (Dr. Gopal Ji Misra and Dr. C. Damodaran) as Consultants (vide reference cited above), to prepare a Perspective Plan for Forensic Science in the country, to usher in global competitiveness/credibility in strategy and service-delivery enabled by revamping and modernizing technology, human resource and infrastructure.
3. This unique project of Perspective Plan-preparation is a time-bound mission-mode responsibility for us; and, is possible, only with your vibrant cooperation/contribution.
4. Since your organization has been actively engaged in conducting regular courses in forensic science (teaching programmes and/or training programmes), we request you to send the following so as to reach us before 17/03/2010 (repeat 17/03/2010) :-

2..

- a. List of courses
 - b. Regulations and Syllabus for each course
 - c. Names, qualifications, experience and research publications of regular and guest faculty
 - d. Description of infrastructure:- class rooms, laboratories, equipments, library and hostel
 - e. How are the students/trainees exposed to real time forensic case work handling/examination ?
 - f. Details of placement of alumni
5. Please send the details in soft- and/or hard-copy formats. Thanks in advance.

Regards/Best wishes
Sincerely

(DR. GOPAL JI MISRA)

(DR. C.DAMODARAN)

To

The Heads of Academic/Training Institutions in Forensic Science, in India.

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No. P Plan FS / Consult / 3/ 2010

Dated : 13 / 03 / 2010

Dear Sir / Madam,

Sub : Perspective Plan for Indian Forensics (2010) – **Questionnaire and Tables etc. – Sent** – Details requested – Regarding

- Ref. i) Letter No. DFS/234/06/06- (Plan) / PM-II dated 15/01/2010, from Special Secretary, MHA, GoI, New Delhi – 110 001
- ii) Our letter in P Plan FS/ Consult/ 1/ 2010 dated 12.02.2010
- iii) Our letter in P Plan FS/ Consult/ 2/ 2010 dated 04.03.2010

In fast-forwarding our Perspective Plan – preparation efforts, and in continuation of references cited above, we now request you to send us details – response in Questionnaire / Tables etc. attached herewith.

2) Kindly ensure that your response – views (wherever applicable / appropriate) reflect those of a cross-section of your scientists / staff at senior, mid-career and junior levels.

3) Please send your details (soft- and / or hard copy) so as **to reach us before 29.03.2010 (repeat 29.03.2010)**

4) One Questionnaire in Microsoft Word format having 160 (multiple – choice and other type) questions is sent herewith. (A4 size sheets may be used for print-out)

5) Seven Tables in Microsoft Excel format (namely : Tables : 1, 2, 3, 3a, 4, 7, and 8) are sent herewith. ("legal" size sheets may be used for print-out).

Contd..

- 6) One SUMMARY – SET having 22 box type questions (the first one in Microsoft Excel format and, the remaining in the Microsoft Word format) is sent herewith. (A4 size sheets may be used for print-out)
- 7) In addition, please generate your own Table – formats for Table-5 and for Table-6.

Table-5 : Qualification vis-à-vis posting

Table-6 : Mobile laboratory – equipments / vehicle
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In Table-5, Please provide list of persons who do not possess the required qualification for particular unit, but have been posted in that unit on ad-hoc basis (give reasons, if any)

In Table-6, Please provide list of equipments and vehicle-type available at your organisation's Mobile FSLs, and indicate additional items that are desirable

- 8) In addition, please provide (in separate sheets) details on the following:-
 - a. Pendency as per laboratory records (on 31-12-2009)
 - b. Pendency (at the lab) as per police records (if available) (on 31-12-2009)
 - c. Pendency of completed reports (but materials have not been taken delivery by the police)(on 31-12-2009)
 - d. Your suggestion for reducing pendency of cases (in not more than six "bullet-point" lines)
- 9) Kindly take on this load in the interest of forensics and posterity; and send details for paras 4), 5), 6), 7) and 8) above, so as **to reach us before 29.03.2010 (repeat 29.03.2010).**

Regards / Best wishes
Sincerely

(DR. GOPAL JI MISRA)

(DR. C. DAMODARAN)

- Encl.: i) One Questionnaire with 160 (multiple choice & other type) questions
ii) Seven Tables (namely : Tables 1, 2, 3, 3a, 4, 7 and 8)
iii) One SUMMARY-SET with 22 questions

NB : In the event of your response not reaching us by 29.03.2010, we will be constrained to presume that you have nothing to provide.

To,

QUESTIONNAIRE

Please encircle ○ or tick ✓ one or more among 'A', 'B',....., as appropriate.

1. Your laboratory is under the administrative control of

A	Police department
B	Home department
C	Health department
D	Central Bureau of Investigation
	Any other: (please write/type within this box)
	What is your preference of administrative control for the laboratory? (please write/type within this box)

2. Your laboratory is called

A	Forensic Science Laboratory
B	Forensic Science Department
C	Forensic Sciences Department
	Any other name: (please write/type within this box)
	What is your preference to call your laboratory? (please write/type within this box)

3. A unit dealing with a particular type of evidence in your laboratory is called

A	Unit
B	Division
C	Wing
D	Section
	Any other name: (please write/type within this box)
	What is your preference to call a unit in the laboratory? (please write/type within this box)

4. At present, the units related to 'Biology' work in your laboratory are

Contd....

A	Biology
B	Serology
C	DNA Typing
	Any other: (please write/type within this box)
	What is your preference of units in 'biology group'? (please write/type within this box)

5. At present, the units related to 'Physics' work in your laboratory are

A	Physics
B	Ballistics
C	Cyber crimes
	Any other: (please write/type within this box)
	What is your preference of units in 'physics group'? (please write/type within this box)

6. At present, the units related to 'Chemistry' work in your laboratory are

A	Chemistry
B	Toxicology
C	Narcotics
	Any other: (please write/type within this box)
	What is your preference of units in 'chemistry group'? (please write/type within this box)

7. At present, the other units in your laboratory are

A	Computer forensics/ Digital forensics
B	Photography
C	Document
	Any other: (please write/type within this box)
	What is your preference of units in this group? (please write/type within this box)

Contd....

8. The building infrastructure is

A	Adequate
B	Inadequate
C	not built for a laboratory
D	desired on a type designed pattern for all the States
	Any other: (please write/type within this box)
	What is your preference of the pattern to follow? (please write/type within this box)

9. The 'state of the art' laboratory is desired uniformly in all States of India since it

A	ensures scientific ambience
B	paves the way for quality assurance
C	provides security for the evidence
D	promotes a sense of equality among fellow analysts
	Any other: (please write/type within this box)
	What is your preference of the 'state of the art' type to follow? (please write/type within this box)

10. The building for Regional laboratories is

A	Adequate
B	Inadequate
C	not built on laboratory design
D	desired on a type designed pattern for all the States
	Any other: (please write/type within this box)
	What is your preference of the pattern to follow? (please write/type within this box)

11. The building/vehicle for mobile laboratories is

A	Adequate
B	Inadequate
C	not built on laboratory design
D	desired on a type designed pattern for all the States
	Any other: (please write/type within this box)

Contd....

	What is your preference of the pattern to follow? (please write/type within this box)
--	---

12. Regional laboratories in your laboratory cater to the needs of

A	more than 3 districts
B	3 districts
C	2 districts
D	districts without any criteria
	Any other: (please write/type within this box)
	What is your preference on the number of districts? (please write/type within this box)

13. The head of the regional laboratory is designated as

A	Additional Director
B	Deputy Director
C	Assistant Director
D	Joint Director
	Any other: (please write/type within this box)
	What is your preference on the cadre of the head? (please write/type within this box)

14. The evidence types analyzed in the regional labs include

A	Biological
B	Chemical
C	Documents
D	Physical
	Any other: (please write/type within this box)
	What is your preference of evidence type for regional level analysis? (please write/type within this box)

Contd....

15. Regarding the unit heads for the evidence types analyzed in the regional labs

A	Each type of unit must have a head
B	The cadre of the head must be equal to that in the main laboratory
C	All types of units can be headed by a single head
D	A head in-charge for the mobile laboratory is desired at the regional lab
	Any other: (please write/type within this box)
	What is your preference of head for regional level analysis? (please write/type within this box)

16. Regarding the equipments in your laboratory, you prefer it to be on par with

A	Other State FSLs
B	Central FSLs
C	Laboratories abroad like FBI
D	Your own
	Any other: (please write/type within this box)
	What is your preference of model? (Give reasons) (please write/type within this box)

17. Regarding the need for equipments as infrastructure

A	They are adequate
B	More equipments are needed for day-to-day analysis
C	Advanced equipments are needed for research
D	Lack of equipment does not impede regular analysis
	Any other: (please write/type within this box)
	What is your justification on the need for equipment? (please write/type within this box)

18. Regarding the operational conditions of the available equipments

A	All are functional
B	Many are under repair
C	Each has more than one trained person to operate
D	Spares are not available
	Any other: (please write/type within this box)

Contd....

	What is your suggestion for utility & maintenance of equipments? (please write/type within this box)
--	--

19. Fields in which evidences were forwarded from your laboratory to another laboratory (or) could not be examined due to lack of equipments,

A	Explosive
B	Serology
C	DNA Typing
D	Computer forensics/ Digital forensics
	Any other: (please write/type within this box)
	What is your priority to purchase equipments? (please write/type within this box)

20. Fields in which evidences were forwarded from your laboratory to another laboratory (or) could not be examined due to lack of skilled analyst (please provide the number of instances)

A	Explosive
B	Serology
C	DNA Typing
D	Computer forensics/ Digital forensics
	Any other: (please write/type within this box)
	What is your priority to develop skills? (please write/type within this box)

21. Types of analysis that were pointed out in the courts (defense counsels, prosecutors and judges) as those that could not be carried out in your laboratory due to non availability of equipments

A	Biological
B	Toxicological
C	Cyber related
D	Human identification related
	Any other: (please write/type within this box)

Contd....

	What is your preference of order to remedy? (please write/type within this box)
--	---

22. Types of other laboratories to which evidences were forwarded from your laboratory for analysis.

A	State FSLs
B	Central FSLs
C	Other Central/ State institutions
D	Foreign institutions
	Any other: (please write/type within this box)
	What is your opinion on the utility of outside lab? (please write/type within this box)

23. Types of other laboratories from which evidences were received into your laboratory for analysis

A	State FSLs
B	Central FSLs
C	Other Central/ State institutions
D	Foreign institutions
	Any other: (please write/type within this box)
	What is your opinion on the utility by outside lab? (please write/type within this box)

24. Due to non availability of equipments

A	analysis asked by the Investigating Officer had to be deferred
B	analysis you desired for confirmation could not be completed
C	opinion had to be given in an incomplete manner
D	it had to be stated as partial analysis during court testimony
	Any other: (please write/type within this box)
	What is your view on the consequences of lack of equipments? (please write/type within this box)

Contd....

25. New units that you desire are

A	Computer forensics/ Digital forensics
B	Forensic anthropology
C	Documents
D	Narco analysis/Lie detection
E	Fingerprint
	Any other: (please write/type within this box)
	What is your reason for desiring new units? (please write/type within this box)

26. Additional evidence types you desire as useful for investigation are

A	Entomological
B	Anthropological
C	Image analysis
D	Trace evidence analysis
	Any other: (please write/type within this box)
	What is your reason for desiring additional evidence analysis? (please write/type within this box)

27. Technologies you desire as useful for investigation include

A	Communication re-tracing
B	Cryptanalysis
C	Deciphering photo-mosaics
D	Handling bio-piracy & bioterrorism
	Any other: (please write/type within this box)
	What is your reason for desiring new technology? (please write/type within this box)

28. Regarding a new technique/analysis that developed in your laboratory

A	It was need based, as found in multiple cases
B	It was need based, as found in a single case
C	It was need based, as found in a sensational case
D	It was because of the availability of funds and equipments
	Any other reason: (please write/type within this box)

Contd....

	What is your preference to promote emerging areas? (please write/type within this box)

29. 'Emerging areas' developed in your laboratory because

A	an analyst had acquired the needed qualification
B	an analyst had acquired the needed training
C	equipments have been purchased
D	academic researchers required the area for research
	Any other: (please write/type within this box)
	What is your strategy to promote emerging areas? (please write/type within this box)

30. 'Emerging areas' that have been in demand include

A	Computer and cellular telephony forensics
B	DNA forensics
C	Forensic image processing
D	Forensic acoustics
E	Forensic osteology and odontology
F	Environmental and wild life forensics
G	Forensic networking and information highways
	Any other: (please write/type within this box)
	Why "emerging areas" need to be developed in India? (please write/type within this box)

31. Regarding linking of unidentified remains with missing individuals

A	Data are available
B	No attempt has been made on this aspect
C	State level project is desirable
D	National level project is desirable
	Any other: (please write/type within this box)
	What are the constraints so far in identifying the unclaimed dead in India? (please write/type within this box)

Contd....

32. The grounds for introducing 'CODIS' in the USA (practised in the States and integrated at the national level) include

A	Lack of facilities to relate criminal at large
B	Lack of identity cards as an additional reason for unidentified remains
C	More rape cases involve same suspect
D	There are more acquittals in rape cases
	Any other: (please write/type within this box)
	Can 'CODIS' be a model for the emerging areas to be introduced in India? (please write/type within this box)

33. For the 'emerging areas', man power sourcing can be

A	recruiting afresh
B	training from among the serving candidates
C	borrowing from universities/other institutions
D	leasing from outside companies
	Any other: (please write/type within this box)
	What is your preference of man power sourcing for the emerging areas ? (please write/type within this box)

34. Popularizing 'emerging areas' in the Society is dependant on

A	use by the investigating officer
B	utility during court testimony
C	utility for guiding the investigation
D	popularity through media
	Any other: (please write/type within this box)
	What is your preference to popularize? (please write/type within this box)

35. Number of journals (hard copies) subscribed in your laboratory (please indicate the number against each type of journal listed below)

A	International – ISI database
B	International – non ISI database
C	National – ISI database
D	National – non ISI database
	Any other: (please write/type within this box)

Contd....

	What is your order of preference to subscribe? (please write/type within this box)

36. Web links (soft copies) subscribed in your laboratory (please list the names of the links – example: Springer; ISI web of knowledge; John Wiley; Ovid; Science Direct etc.)

A	
B	
C	
D	
	Any other: (please write/type within this box)
	What is your order of preference to subscribe? (please write/type within this box)

37. Areas in which research articles have been published from your laboratory

A	Ballistics
B	Biology
C	Case work
D	Chemistry
E	Crime scene management
F	Documents
G	Photography
H	Polygraphy
I	Serology/DNA
J	Toxicology
	Any other: (please write/type within this box)
	What is your strategy to develop research? (please write/type within this box)

38. Types of papers that were published from your laboratory (international) - please give full reference (Title, authors, journal-name, volume number, page numbers) in separate sheets for 2005-2009

A	original articles
B	case reports
C	reviews
D	technical reports
	Any other: (please write/type within this box)

Contd....

	What is your strategy to publish papers/articles etc in international journals? (please write/type within this box)

39. Types of papers/articles that were published from your laboratory (national journals/books/monographs) - please give full reference in separate sheets for 2005-2009

A	original articles
B	case reports
C	reviews
D	technical reports
	Any other: (please write/type within this box)
	What is your strategy to publish papers/articles in Indian journals? (please write/type within this box)

40. Regarding a repository of papers/articles published from your laboratory

A	It is available but not updated
B	It is not available
C	It is desired and can be maintained in R&D unit
D	It is desired and can be maintained in the library
	Any other: (please write/type within this box)
	What is the need for a repository? (please write/type within this box)

41. Regarding research output from your laboratory

A	It can be used for evaluating performance
B	It can't be used for evaluating performance
C	It can be used for evaluating utility of specific project
D	Application oriented research must be recognized suitably
	Any other: (please write/type within this box)
	What is your opinion of recognition for good research? (please write/type within this box)

Contd....

42. Regarding the incentive and recognition for those staff publishing from your laboratory

A	There is none
B	It is counted for promotion
C	Monitory incentive can be considered
D	Discipline-based annual national Awards may be increased in number and in quantum (Minimum Rs. 1 lakh for each discipline)
	Any other: (please write/type within this box)
	What is your preference to recognize research? (please write/type within this box)

43. Impediments for publishing from your laboratory include

A	lack of original case work
B	lack of incentive or recognition
C	lack of skill in scientific writing
D	lack of aptitude for research
	Any other: (please write/type within this box)
	What is your plan to remove impediments? (please write/type within this box)

44. The type of work in your R&D unit is

A	academic research
B	handling SOC/case wise difficult analysis
C	project based research for futuristic needs
D	project based research for present investigatory need
	Any other: (please write/type within this box)
	What is your order of priority? (please write/type within this box)

45. The type of research collaboration in your laboratory is with

A	universities
B	central government institutions
C	state government institutions
D	None
	Any other: (please write/type within this box)

Contd....

	What is your priority? (please write/type within this box)
--	--

46. Regarding inviting learned professors from universities to your laboratory, the purpose is for a

A	Speech
B	scientific conference
C	specific research
D	quality evaluation
	Any other: (please write/type within this box)
	What is your priority? (please write/type within this box)

47. Regarding research leading to PhD by the staff of your laboratory

A	The supervisor is outside the laboratory
B	The supervisor is within the laboratory
C	The choice of field is need based
D	The title is discussed with the unit or laboratory head
	Any other: (please write/type within this box)
	What is your view on research by the staff? (please write/type within this box)

48. Regarding research leading to PhD by the staff of your laboratory

A	The qualification is recognized as additional for promotion
B	The field is often unrelated to forensic science
C	The field is often related to forensic science
D	Authorities desire research activity
	Any other: (please write/type within this box)
	What is your view on the area of research by the staff? (please write/type within this box)

Contd....

49. Forensic science professionals are

A	opinion offerers revealing truth on innocence or guilt
B	enablers in maintaining law and order
C	pillars in ensuring criminal , civil and regulatory justice
D	Court/ Commission witness
	Any other: (please write/type within this box)
	What is your preference on the role of forensic science professionals? (please write/type within this box)

50. From the court point of view, reports from forensic science professionals are required to be

A	definite
B	absolute
C	qualified
D	corroborative
	Any other: (please write/type within this box)
	What is your preference about the above requirement? (please write/type within this box)

51. The current expectations of the Society from forensic science professionals are

A	academic research
B	solution to criminal, civil etc cases
C	increasing corroborative evidence in court trials
D	lead-giving and preventive forensics
E	emergency forensics
	Any other: (please write/type within this box)
	What is your view on Society's expectation from forensic science professionals? (please write/type within this box)

52. Forensic science laboratories render/can render assistance in matters relating to

A	mass disasters
B	living individuals suffering due to poisoning by unknown substances

Contd....

C	Pollution/contamination
D	Biodiversity and bio-prospecting
	Any other: (please write/type within this box)
	What is your preference to assist? (please write/type within this box)

53. Regarding the involvement of your laboratory with the local universities

A	It is for academic interaction
B	It is on the basis of invitation during conferences
C	It is on the basis of MoU or MoA for specific research/use of facility
D	There is no interaction
	Any other: (please write/type within this box)
	What is your preference of such interaction? (please write/type within this box)

54. Regarding in-service training

A	It is available (specify area)
B	There is no such training (specify area)
C	A laboratory that is leading in case work and research in the field can conduct in-service training
D	Periodic in-service training can be made mandatory
	Any other: (please write/type within this box)
	What is your view regarding in-service training? (please write/type within this box)

55. Regarding qualification of the staff for different types of analysis in your laboratory

A	It is streamlined
B	It is streamlined but is not followed due to lack of suitable candidates
C	It is not streamlined since courts do not stress
D	It is streamlined but is not followed due to administrative reasons
	Any other: (please write/type within this box)

Contd....

	What is your view on adhering to stipulated qualification for the staff? (please write/type within this box)

56. Regarding training of the new staff for different types of analysis in your laboratory

A	Criteria are available (please state the areas)
B	It is left to the unit head
C	It is not streamlined since courts do not stress
D	It is streamlined but is not supported by documentary proof
	Any other: (please write/type within this box)
	What is your view on the training requirement of the new staff? (please write/type within this box)

57. Regarding supervision of analytical activities in your laboratory

A	The Head of the laboratory conducts periodic appraisal and records it
B	The Head of the laboratory conducts periodic appraisal without recording
C	There is no periodic appraisal
D	The Head is not qualified in that area and hence does not inspect
	Any other: (please write/type within this box)
	What is your view on the appraisal of work in units? (please write/type within this box)

58. Regarding supervision of analytical activities in your laboratory

A	There is periodic inspection and it is recorded
B	There is no periodic inspection but such one is desired
C	The inspecting authority must be qualified in the area
D	It is desired to have Joint or Additional Head of staff for each discipline for conducting appraisal of quality of the analysis

Contd....

	Any other: (please write/type within this box)
	What is your view on the supervision of work in units? (please write/type within this box)

59. Regarding the qualification of the supervisory staff carrying out inspection

A	He must have the corresponding academic qualification
B	He must have analytical experience in the corresponding area
C	He must have field experience for inspecting crime scene related work
D	He must have experience in offering court testimony
	Any other: (please write/type within this box)
	What is your view on the qualification of the supervisory staff? (please write/type within this box)

60. Regarding the current practice of national interaction among forensic scientists in India.

A	Sufficient
B	Insufficient since it is limited to meeting of the heads
C	Must pave the way for interaction on discipline basis
D	It must be an annual meeting with recorded scientific proceedings
	Any other: (please write/type within this box)
	What is your view on improving interaction between scientists from related fields? (please write/type within this box)

61. Regarding separate existence of GEQDs at Central/ State level.

A	They reflect the British history-vestige
B	They serve better
C	They remain the way they were started
D	They should not be separate; instead get integrated comprehensively into forensic laboratory setup
	Any other: (please write/type within this box)
	What is the reason for your stand? (please write/type within this box)

Contd....

62. Regarding a scientific professional body (Academy/ Society) for Indian forensics

A	Dormant ones may be revived
B	<i>De novo</i> Indian Society of Forensic Science may be started
C	Volunteering forensic scientists may be enthused for the purpose, with start-up fund and annual grants from Gol through nodal agency
D	There is no need for such a body
	Any other: (please write/type within this box)
	What is your view on the role(s) of such a body? (please write/type within this box)

63. Regarding a peer-reviewed Indian journal for forensic science, with potential for global reach/high impact

A	Dormant ones may be revised
B	Fresh start may be made by the Gol's nodal agency, as its publication
C	Reputed multinational publisher(s) may be enthused to bring out, by grants from Gol
D	There is no need for such a journal
	Any other: (please write/type within this box)
	What is your view on the purpose and quality of such a journal? (please write/type within this box)

64. Regarding a regulatory body (say, Council) for Indian forensics

A	Needed similar to the Medical Council of India (MCI)
B	It may be called Forensic Science Council of India
C	It will be a check on misuse of forensics
D	There is no need for a regulatory body
	Any other: (please write/type within this box)
	What is your view on the status and role(s) of such a body? (please write/type within this box)

65. Regarding non-governmental forensic institutions in India

A	They may supplement and complement Govt. labs' service and offer healthy competition
B	They may operate after accreditation
C	They may be eligible for R&D funding as public private partnership (PPP)
D	There is no need

Contd....

	Any other: (please write/type within this box)
	What is your view on entertaining/dissuading such a concept? (please write/type within this box)

66. Regarding brain mapping and narco-analysis

A	They involve human subjects, psychologists and physicians
B	They need hospital ambience and emergency preparedness
C	They are invasive
D	They should not be part of forensic laboratory setup
	Any other: (please write/type within this box)
	What is the reason for your stand? (please write/type within this box)

67. Regarding polygraph (lie detector)

A	This involves human subjects and forensic psychologists (and may involve physicians)
B	This should be part of forensic laboratory setup
C	This does not merit being in a forensic laboratory setup
	Any other: (please write/type within this box)
	What is the reason for your stand? (please write/type within this box)

68. Regarding fingerprint examination

A	It is often used in cases of theft, murder etc.
B	It can remain separate outside forensic lab umbrella
C	It should be part of forensic laboratory setup
	Any other: (please write/type within this box)
	What is the reason for your stand? (please write/type within this box)

69. Regarding adequacy (or otherwise) of forensic science laboratory-infrastructure etc.

A	Now and then, public interest litigation(PIL) is filed
B	Often court passes orders and/or strictures and/or directions.
C	Media throws spot-light
	Any other: (please write/type within this box)
	Enumerate couple of remedies (please write/type within this box)

Contd....

70. Regarding GoI-MHA-DFS's research fellowship (for Ph.D work) and Research Project Grants

A	They may be tenable at FSLs only
B	They may be tenable at FSLs as well as at other research institutions (University, etc....)
C	They may be tenable at any research institution provided forensic related work is undertaken
	Any other: (please write/type within this box)
	Do you suggest that DFS fellowship should be at par with CSIR fellowship in all terms? (Please write/ type with in this box)

71. The practice of forensic science networking and information exchange in India is

A	not in existence
B	insufficient since it is limited to meeting of the heads of the laboratories
C	to be established
D	not needed
	Any other: (please write/type within this box)
	What is your view on networking and 24x7 forensic information service? (please write/type within this box)

72. Regarding good laboratory practice in your laboratory

A	It exists as a document for the entire laboratory
B	It exists as a document at unit (division) level (example: biology)
C	It exists as a document at a few units only
D	It exists as a document for specific technique
	Any other: (please write/type within this box)
	What is your view on documenting good laboratory practices? (please write/type within this box)

73. Regarding good laboratory practices in your laboratory, it is desirable that

A	Each unit follows the GLP of the discipline it belongs
B	GLP can be adapted from reputed laboratories such as FBI
C	GLP must include the ethics corresponding to the science practiced

Contd.....

D	GLP must be similar to all the laboratories in India
	Any other: (please write/type within this box)
	What is your view on acquiring and disseminating good laboratory practices? (please write/type within this box)

74. Regarding the procedure for forwarding evidence related to your unit in your laboratory

A	There is a standard documented instruction (enclose a copy of the instruction)
B	The documented instruction has been updated last during ...(specify month and year)
C	The documented instruction has been circulated to the laboratory staff in the field (specify last date of circulation)
D	The documented instruction has been circulated to the investigation officers (specify last date of circulation)
E	There is no standard documented instruction
	Any other: (please write/type within this box)
	What is your view on documenting forwarding instructions? (please write/type within this box)

75. Regarding the procedure for forwarding evidence related to your unit in your laboratory

A	Defective packing procedure has affected results
B	Defective packing procedures are noted in the case reports
C	Instructions to rectify such defective packing procedures are issued on a case by case basis (enclose copy of the instruction issued last)
D	Instruction to rectify such defective packing procedures are circulated to all the investigating officers (enclose copy of the circular issued last)
	Any other: (please write/type within this box)
	What is your view on circulating defective packing procedures for correction? (please write/type within this box)

76. Regarding the methods available for you to verify the manner the evidence was present in the scene of crime

A	There is no way
B	You prefer to know how the evidence was discovered in the scene

Contd.....

C	Knowledge on the manner of evidence recovery enables interpretation
D	Interpretation is not done by you
	Any other: (please write/type within this box)
	What is your view on knowing how the evidence was discovered in the scene? (please write/type within this box)

77. Regarding the criticism that forensic science professionals are the only specialists who have left, framing the questions, to the non-professional viz. the investigation officer

A	It is true that professionals in the medical field frame the questions themselves
B	Leaving the responsibility of framing the questions to the investigation officer leads to routine analysis that are of less forensic significance
C	In the absence of powers to 'defer' analysis, forensic science professionals carry out analysis that are least useful
D	It is true that framing questions must be on the basis of hypothesis and must be done by a SOC forensic investigator (forensic crime scene investigator)
	Any other: (please write/type within this box)
	What is your view on remedying the criticism relating to framing questions for analysis? (please write/type within this box)

78. Regarding the utility of forensic scientist for evidence collection and framing hypothesis leading to generating the required analysis

A	The SOC forensic investigators (forensic crime scene investigators) are framing questions for analysis
B	The copy of the crime scene report by the SOC forensic investigator is enclosed to the investigation officer's report
C	Photographs taken by the SOC forensic investigator are sent to the laboratory
D	The SOC forensic investigator interacts with the laboratory staff
	Any other: (please write/type within this box)
	What is your view on SOC forensic investigator framing the questions for analysis? (please write/type within this box)

79. Regarding the training for the SOC forensic investigator in your laboratory

A	There is a manual
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Contd.....

B	There is training using instructive materials (enclose copies)
C	There is no formal training
D	An initial training and an in-service training are desirable
	Any other: (please write/type within this box)
	What is your view on the training for the SOC forensic investigator? (please write/type within this box)

80. Regarding the supervision of the SOC forensic investigator by the laboratory unit head

A	There are regular reviews (enclose copy of minutes of last two reviews)
B	There are regular inspections (enclose copy of notes for last two inspections)
C	The reports of the SOC forensic investigators are submitted to the reviewing officer (enclose copy of two reports)
D	Circulars on better utility are issued (enclose copies of last two circulars)
	Any other: (please write/type within this box)
	What is your view on the supervision for the SOC forensic investigator by the laboratory unit head? (please write/type within this box)

81. Regarding the supervision of the SOC forensic investigator by the head of the police district

A	There are regular reviews (enclose copy of minutes of last two reviews)
B	There are regular inspections (enclose copy of notes for last two inspections)
C	The reports of the SOC forensic investigators are submitted to the reviewing officer (enclose copy of last two reports)
D	Circulars on better utility are issued (enclose copies of last two circulars)
	Any other: (please write/type within this box)
	What is your view on the supervision for the SOC forensic investigator by the head of police district? (please write/type within this box)

82. Regarding the supervision of the SOC forensic investigator by the head of the regional laboratory

A	It ensures better scientific input
B	It ensures better utility by the investigation officers
C	It ensures better review of the investigation process
D	It ensures better popularization among the investigation process
	Any other: (please write/type within this box)

Contd.....

	What is your view on the authority to supervise the SOC forensic investigator? (please write/type within this box)
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83. Regarding the supervision of the SOC forensic investigator by the head of the police district

A	It ensures better scientific input
B	It ensures better utility by the investigation officers
C	It ensures better review of the investigation process
D	It ensures better popularization among the investigation process
	Any other: (please write/type within this box)
	What is your view on the authority to supervise the SOC forensic investigator? (please write/type within this box)

84. Regarding the responsibilities of the SOC forensic investigator in your laboratory

A	He/she is responsible for recognizing the evidence
B	He/she is responsible for recording the manner the evidence was found
C	There are circulars of instruction (enclose copies of last two instructions)
D	He/she is responsible for proving the presence of the evidence in the scene of crime thereby eliminating allegation on 'planting'
	Any other: (please write/type within this box)
	What is your view on the roles of the SOC forensic investigator? (please write/type within this box)

85. Regarding the responsibilities of the SOC forensic investigator in proving the presence of the evidence in the scene of crime

A	He/she is not responsible for proving the presence of evidence
B	Proving the presence of the evidence in the scene of crime is investigation officer's responsibility
C	He/she is responsible for assisting in identifying and collecting the evidence
D	Proving the presence of the evidence at the scene of crime does not concern analysis in the laboratory
	Any other: (please write/type within this box)
	What is your view on the roles of the SOC forensic investigator in proving the presence of evidence in the scene of crime? (please write/type within this box)

Contd.....

86. Regarding the responsibilities of the SOC forensic investigator in reconstructing the scene of crime

A	He/she is responsible for reconstructing the scene of crime
B	Reconstructing the scene of crime is investigation officer's responsibility
C	Reconstructing the scene of crime is the responsibility of both
D	Reconstructing the scene of crime is the responsibility of the eyewitnesses
	Any other: (please write/type within this box)
	What is your view on the roles of the SOC forensic investigator in reconstructing the scene of crime? (please write/type within this box)

87. Regarding crime reconstruction

A	It is done by the investigation officer
B	It is done by the autopsy surgeon
C	It is done by eye witnesses
D	It is done by SOC forensic investigator
	Any other: (please write/type within this box)
	What is your view on the authority to reconstruct the scene of crime? (please write/type within this box)

88. Regarding crime reconstruction

A	Police have sought assistance by a team from the laboratory (enclose copies of last two reports)
B	Police have sought assistance by a senior official from the laboratory
C	It is done by visiting the crime scene
D	Other authorities (judge, commission head, govt., etc) have sought reconstruction
	Any other: (please write/type within this box)
	What is your view about the authority to request to reconstruct the scene of crime? (please write/type within this box)

89. The additional techniques/methodologies applicable to collection of evidence from crime scene that qualify as 'state of the art' on international standard and desired by you

A(please specify)
B(please specify)

Contd.....

C(please specify)
D(please specify)
	Any other: (please write/type within this box)
	What constraints you face in reaching the 'state of the art' status? (please write/type within this box)

90. Regarding the evidence collection and analysis processes in your laboratory

A	Evidence collection processes are unsatisfactory
B	Evidence analysis processes are satisfactory
C	Evidence analysis processes need to be updated by you
D	Problems in the evidence collection processes can't be remedied
	Any other: (please write/type within this box)
	What is your view on improving evidence collection processes? (please write/type within this box)

91. The evidence collection responsibility is that of the investigation officer

A	leads to legally authorised collection
B	leads to improper collection
C	leads to improper packing/ preservation
D	does not provide description of manner the evidence was seen at the scene of crime
	Any other: (please write/type within this box)
	What is your view on entrusting the evidence collection responsibility to the SOC forensic investigator? (please write/type within this box)

92. Entrusting the evidence collection responsibility to the investigation officer

A	leads to failure to incorporate recent advancements in collection procedure/ technique
B	leads to failure to recognize relevant evidence
C	leads to forwarding evidence without corresponding control samples
D	leads to improper utilization of laboratory analytical service
	Any other: (please write/type within this box)
	What is your view on the evidence collection responsibility of the investigation officer? (please write/type within this box)

Contd.....

93. Scientific record of the manner in which evidence was found at the scene

A	enables interpreting the value of the evidence
B	counters allegation on 'planting' evidence
C	enables to give correct testimony even after long gap of time
D	enables forwarding the record (photograph or sketch), indicating the manner, to the lab
	Any other: (please write/type within this box)
	What is your view on obtaining the record of the manner the evidence was found (at SOC) before analyzing the evidence? (please write/type within this box)

94. Integration of the working of different forensic laboratories in India

A	Can bring synergy in functioning
B	Can be achieved by establishing repository for technical information(post-judgement)
C	Can be tried through interactive voice response system and through on-line/hot-line discussion
D	Can be brought about by annual minute-able, discipline-wise brainstorming Workshops
	Any other: (please write/type within this box)
	Why should there be such an integration? (please write/type within this box)

95. For synergy among Indian forensics, as expected by the Society, forensic scientists and establishments

A	should shed their (founded/ unfounded) egoism
B	should happily entertain knowledge and criticism from the clan
C	should spontaneously disseminate/ share their scientific stock with the clan
D	should contribute time, mind and efforts towards integrating network
	Any other: (please write/type within this box)
	What role do you want to play in such an exercise? (please write/type within this box)

96. Regarding the knowledge imparted to M.Sc forensic science candidate in core subjects

Contd.....

A	It is less than corresponding master (core subject) courses
B	It is equal to corresponding master (core subject) courses
C	It is higher than the corresponding master (core subject) courses
D	It can't be compared
	Any other: (please write/type within this box)
	What is your preference with reference to the knowledge required for MSc (FS) candidates? (please write/type within this box)

97. Regarding the knowledge desirable for M.Sc forensic science pass-outs, it must be

A	less than corresponding master (core subject) courses
B	equal to corresponding master (core subject) courses
C	higher than the corresponding master (core subject) courses
D	not comparable
	Any other: (please write/type within this box)
	What is your preference with reference to the knowledge desirable for M.Sc forensic science pass-outs? (please write/type within this box)

98. Regarding attracting master candidates in core sciences towards forensic science profession

A	A regular paper on corresponding forensic application such as forensic chemistry for chemistry core or forensic biology for biology (Zoology or Botany) can be included in the masters second year
B	A dissertation on forensic application can be included
C	Students can be encouraged to choose projects on forensic related titles
D	Students can be taken on tour to forensic science laboratories
	Any other: (please write/type within this box)
	What is your preference with reference to attracting master candidate in core sciences towards forensic science profession? (please write/type within this box)

99. Regarding the role of NICFS (Delhi) as an educational institution

A	It can encourage research leading to Ph.D degree in forensic science
B	It can encourage research in applied areas of forensic science
C	It can foster research projects of national level interest
D	It can look after in-service training responsibilities
	Any other: (please write/type within this box)
	What is your preference regarding the future role of NICFS? (please write/type within this box)

Contd.....

100. The initial popularity of forensic science among the public can be attributed to the contribution of

A	Sir Arthur Conan Doyle
B	M.J.B. Orfila
C	Edmond Locard
D	Paul Kirk
	Any other: (please write/type within this box)
	What is your opinion with reference to popularity of forensic science among the public? (please write/type within this box)

101. The present popularity of forensic science among the students can be attributed to

A	Crime Scene Investigation(CSI) series and the like in the media
B	Edmond Locard
C	Paul Kirk
D	Sir Arthur Conan Doyle
	Any other: (please write/type within this box)
	What is your opinion on the present popularity of forensic science among the students? (please write/type within this box)

102. Regarding the element of reality in CSI series etc.

A	They are all real cases
B	They reflect real analytical procedures
C	They are built up stories
D	They seek to solve cases within hours for attracting audience
	Any other: (please write/type within this box)
	What is your opinion regarding the element of reality in CSI series? (please write/type within this box)

103. The attraction of students towards forensic science courses is based on

A	Factual demands
B	Infatuation due to CSI series etc.
C	Attractive advertisements from universities and other educational institutions
D	Advertisements from forensic science laboratories
E	Availability of admission for forensic science courses only
	Any other: (please write/type within this box)
	What is your opinion on the attraction of students towards forensic science

Contd.....

	courses? (please write/type within this box)
--	--

104. The urge among students to choose a subject for study is influenced by

A	Popularity of the subject
B	Employment opportunity for that subject
C	Pecuniary benefit relating to practicing that subject
D	Eagerness for knowledge sake
	Any other: (please write/type within this box)
	What is your opinion on the urge among students to choose a subject for study? (please write/type within this box)

105. Forensic science laboratories recruit

A	only forensic science post graduates
B	only core science post graduates
C	either forensic science or core science post graduates
D	preferably core science post graduates
	Any other: (please write/type within this box)
	What is your preference of recruitment in FSLs? (please write/type within this box)

106. Regarding the scope for employment for MSc (FS) candidates in forensic science laboratories

A	There has been no study in India
B	It is generally limited
C	It depends on the vacancy arising after retirement
D	There is no scope
	Any other: (please write/type within this box)
	What is your opinion regarding the scope for employment for MSc (FS) candidates? (please write/type within this box)

107. Regarding the career of forensic science pass outs in India

A	There has been no study
B	Most of them are employed in forensic science laboratories
C	They are seldom employed in forensic science laboratories
D	Most are carrying out private practice
	Any other: (please write/type within this box)
	What is your opinion regarding the career of forensic science pass outs in India? (please write/type within this box)

Contd.....

108. Regarding the career of forensic science pass outs in India

A	They can compete with their core science counterparts for career as scientist in national laboratories
B	They can seek employment as teachers in schools
C	Self employment as private practice
D	They can seek employment as lecturers in universities teaching forensic science
	Any other: (please write/type within this box)
	What is your opinion regarding the prospects of forensic science pass outs in India?? (please write/type within this box)

109. Regarding expansion of forensic science laboratories, the demand comes from

A	increasing case inflow
B	decentralization of the laboratory
C	increase in the number of unemployed forensic science graduates
D	formation of new units or divisions in tune with recent trends
	Any other: (please write/type within this box)
	What is your opinion with reference to the demand for expansion of forensic science laboratories? (please write/type within this box)

110. The factors inducing government and private universities to start forensic science course include

A	The urge among the students to apply
B	Knowledge on the demand of the post graduates for employment
C	Availability of faculty having professional and educational qualifications
D	Availability of infrastructure for advanced research
	Any other: (please write/type within this box)
	What is your opinion on the factors inducing universities to start forensic science course? (please write/type within this box)

111. The motives of government and private universities to start a course in forensic science include

A	Monetary benefits
B	Spirit of competition with international universities
C	Apparent employment opportunities
D	Propagation of knowledge
	Any other: (please write/type within this box)

Contd.....

	What is your opinion on the motives of government and private universities to start a course in forensic science? (please write/type within this box)
--	---

112. Regarding the fate of the forensic science pass outs

A	Universities have conducted studies
B	Governments have conducted studies
C	Forensic science laboratories have conducted studies
D	No one has studied their fate
	Any other: (please write/type within this box)
	What is your opinion regarding the fate of the forensic science pass outs? (please write/type within this box)

113. Regarding the training imparted to fresh recruits in forensic science laboratories

A	M.Sc forensic science post graduates do not require training
B	Core science post graduates do not require training
C	M.Sc forensic science post graduates require training
D	Core science post graduates require training
	Any other: (please write/type within this box)
	What is your opinion regarding the training needed for fresh recruits in forensic science laboratories? (please write/type within this box)

114. Give flow chart of your establishment's (Administrative) organizational structure.

115. Give number of posts sanctioned in the structure.

116. Give number of vacant posts in the structure.

117. Give flow chart of your establishment's (Scientific) organizational structure.

118. Give number of posts sanctioned in the structure.

119. Give number of vacant posts in the structure.

120. Give flow chart for your establishment's (scientific unit / division wise) organizational structure.

121. Give number of posts sanctioned in the structure.

Contd.....

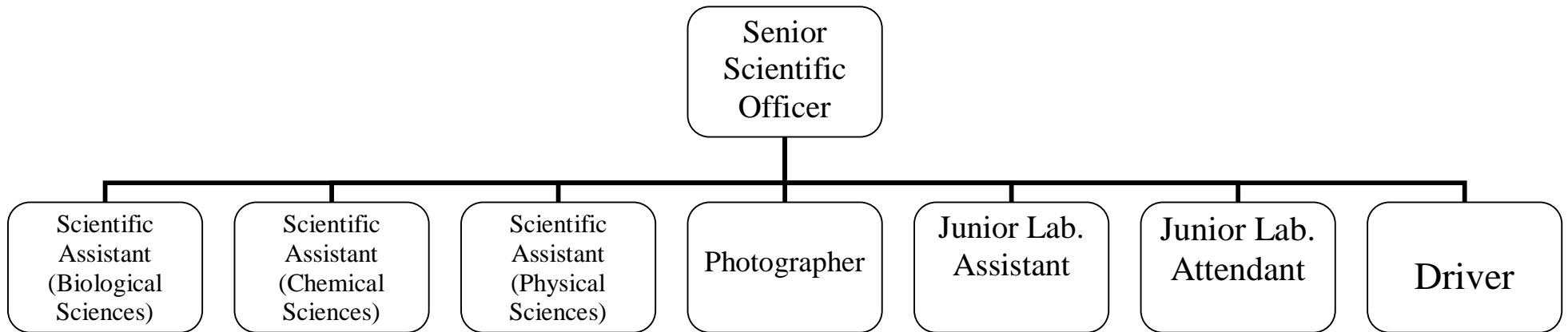
122. Give number of vacant posts in the structure.

123. Will you prefer the following chart - models for your establishment?

MODEL- CHARTS ARE APPENDED HEREUNDER

Contd.....

Model Chart for organizational structure of Mobile Forensic Science Laboratory



Contd.....

124. Indicate in the model-charts, number of posts required by you at various levels.
Or else, give here your own model-charts and indicate therein the number of posts required.
[In any case, reflect those numbers appropriately in Tables - 1, 2 and 3]
125. Enumerate number of units required as per work load in each division at your organization.
126. Mention constraints in getting vacant posts filled in your organization.
127. Mention constraints in getting sanction for extra staff required in your organization.
128. Suggest some remedies with respect to the preceding two problems.
129. Mention any other option for delivering the desired results more effectively.
130. Identify the gaps existing in between posts affecting normal promotional avenues in your organization.
131. Suggest changes (in bullet points) to bridge such gaps.
132. Your organization needs / does not need changes in terms of: - (a) recruitment; (b) pay scale; (c) promotion procedure; (d) career progression scheme; (e) service conditions; and (f) human resource motivation.
133. If there is need, explain 'why', and also offer your suggestion to bring in positive change.
134. Are you in favour of scientific institution - models like DRDO and ISRO?
135. For effective utility of field forensic investigator at the crime scene level, legal provisions are desirable in Cr. P. C. so that the IOs may

A	request field forensic service during the course of investigation
B	request field forensic service in death investigations
C	file crime scene forensic report in the court of law wherever required
	Any other: (please write/type within this box)
	What is your preference in the above regard? (please write/type within this box)

Contd.....

136. Regarding opinion of experts (vide Indian Evidence Act)

A	Section 45 defining expert in Indian Evidence Act does not cover in specific words all forensic experts signing the reports
B	Section 45 A does not cover electronic (cyber/computer/digital) evidence forensic scientists
C	Forensic science and forensic experts should be added to the existing disciplines and experts in section 45 and section 45 A
	Any other: (please write/type within this box)
	Do you think that sections 45 and 45 A do not require any amendment? (please write/type within this box)

137. Use of forensic expert report by the court

A	All forensic experts signing reports are not explicitly covered under 293 Cr. P.C.
B	GEQDs, Dy.GEQDs and AGEQDs are also not covered
C	All forensic experts of CFSLs (including Document experts) and of State/UT FSLs issuing reports should be included under 293 Cr. P.C.
	Any other: (please write/type within this box)
	Do you think Section 293 Cr. P.C. does not require any amendment? (please write/type within this box)

138. Regarding the Information Technology Act (2000)

A	Forensic I.T. work is not covered in this Act
B	Forensic I.T. experts are also not covered specifically in section 79 A of this Act
C	Electronic evidence – related forensic experts should be explicitly included under section 79 A of this Act.
	Any other: (please write/type within this box)
	Do you think that Sec. 79 A of I.T. Act does not require any amendment? (please write/type within this box)

139. Regarding the Biological Diversity Act (2002)

A	Biodiversity related work / offence (wildlife, bioprospecting, biosurvey ,biopiracy etc) falls under the purview of forensic science
B	A separate division in Forensic Science Laboratory is needed for this work.

Contd.....

C	Forensic work and forensic experts should be covered under this Act relating to its Sections 3,4,6,7, and 24 r/w Sec. 55,56,57 and 58
D	Resolution of Intellectual Property Rights (IPR) – disputes is enabled by forensic work / experts.
	Any other: (please write/type within this box)
	Give reason for separate division requirement (please write/type within this box)

140. Regarding the Right to Information (RTI) Act (2005)

A	Requests for information forwarded from the office of the Information Commissioner are regularly received/replied by your organization
B	Information under RTI Act is often sought from your organization pertaining to case work
C	Individuals often request your organization for information under RTI Act, pertaining to aspects other than case work
	Any other: (please write/type within this box)
	Should information pertaining to scientific activity of forensic science laboratories / institutions be exempted from the purview of RTI Act ? (please write/type within this box)

141. At present scientific investigation is considered accomplished when

A	portable items such as blood stained earth and control earth are sent to FSL
B	stains swabbed from immovable objects along with control samples are sent to FSL
C	observations on portable items and immovable items are recorded and interpreted at the crime scene
D	crime scene reconstruction is suggested
	Any other: (please write/type within this box)
	What is your preference in the above regard? (please write/type within this box)

142. The utility of forensic science at the crime scene level is to

A	pin point the accused
B	provide lead in the investigation
C	reconstruct the crime
D	fulfill the administrative formalities

Contd.....

	Any other: (please write/type within this box)
	What is your preference in the above regard? (please write/type within this box)

143. Among the cases that are convicted, forensic science utility contributes to

A	less than 10 %
B	10 to 25 %
C	25 to 50 %
D	more than 50 %
	Any other: (please write/type within this box)
	What would you like it to be? (please write/type within this box)

144. Regarding arriving at the truth

A	Police officer relies on witness statement
B	Prosecutor relies on police officer's report
C	Judge relies on arguments by the opposing counsels
D	Field forensic investigator relies on physical evidence
	Any other: (please write/type within this box)
	What is your preference in the above regard? (please write/type within this box)

145. Regarding forensic science awareness among Police; it is

A	excellent
B	very good
C	good
D	poor
	Any other: (please write/type within this box)
	Give one reason for your choice (please write/type within this box)

146. Mention four constraints that dilute forensic science awareness among Police (within the respective boxes)

A	
B	
C	
D	

Contd.....

147. Suggest four ways to improve forensic science awareness among Police (within the respective boxes)

A	
B	
C	
D	

148. Regarding forensic science awareness among Judiciary; it is

A	excellent
B	very good
C	good
D	poor
	Any other: (please write/type within this box)
	Give one reason of your choice (please write/type within this box)

149. Mention four constraints that dilute forensic science awareness among Judiciary (within the respective boxes)

A	
B	
C	
D	

150. Suggest four ways to improve forensic science awareness among Judiciary (within the respective boxes)

A	
B	
C	
D	

151. Regarding forensic science awareness among Prosecutors & other lawyers; It is

A	excellent
B	very good
C	good
D	poor
	Any other: (please write/type within this box)
	Give one reason for your choice (please write/type within this box)

Contd.....

152. Mention four constraints that dilute forensic science awareness among Prosecutors and other lawyers (within the respective boxes)

A	
B	
C	
D	

153. Suggest four ways to improve forensic science awareness among Prosecutors & other lawyers (within the respective boxes)

A	
B	
C	
D	

154. Regarding forensic science awareness among CBI / NIB / Customs /Banks/Army etc; it is

A	excellent
B	very good
C	good
D	poor
	Any other: (please write/type within this box)
	Give one reason for your choice (please write/type within this box)

155. Mention four constraints that dilute forensic science awareness among CBI / NIB / Customs /Banks/Army etc (within the respective boxes)

A	
B	
C	
D	

156. Suggest four ways to improve forensic science awareness among CBI / NIB / Customs /Banks/Army etc (within the respective boxes)

A	
B	
C	
D	

Contd.....

157. Is your organization accredited?

158. If not, give reason if any

159. If accredited, give nut-shell note on;

- a) International/ National.....?
- b) Organization as a whole / Division(s).....?
- c) Other pertinent information

160. Impact of accreditation on your organization's enhanced requirement with respect to

- a) human resource
- b) infrastructure

(Please also ensure that your answer gets reflected appropriately in Tables 1,2 and 3 attached herewith).

Contd.....

SUMMARY - SET

<p><i>1. Please give five specific points for each of the following, in the context of crimes and external / internal threats to homeland security, involving cyberspace, bombs, biological & chemical agents, currency and communication</i></p>	
<p>Technology (equipments/ facilities etc) augmentation</p>	
<p>Training requirements (inland/ abroad)</p>	
<p>Focussed R&D thrust areas</p>	
<p>Data repository for pooling & sharing</p>	
<p>National net-working for 24x7 forensic help-line</p>	
<p>Swift action emergency forensic teams</p>	
<p>Prophylactic/ proactive / preventive forensics</p>	

2. In terms of employability at and performance in F.S.L., compare [by ticking the appropriate box in a five grade scale : namely, P (Poor), A (Average), G (Good), Vg (Very good) and E (Excellent)]

	P	A	G	Vg	E
i) Person with B.Sc. (Forensic Science), and M.Sc. (Forensic Science)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii) Person with B. E. / B. Tech. (core subject), and M.Sc. (Forensic Science) / PG Diploma in Forensic Science	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii) Person with B.Sc. (core subject), and M.Sc. (Forensic Science)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iv) Person with M.Sc. / M.E. / M.Tech. (core subject)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
v) Person with M.Sc. (core subject), and M.Sc. (Forensic Science) / PG Diploma in Forensic Science	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
vi) Person with M.E. / M.Tech (core subject), and M.Sc. (Forensic Science) / PG Diploma in Forensic Science	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Should there be a Forensic Science Council of India (like the Medical Council of India) to regulate education, ethics etc.?

(Please tick \surd one)

[Yes] [No]

4. Should there be national uniformity in the regulations, syllabi, etc for all diploma, degree and PG courses of Forensic Science?

[Yes] [No]

5. Should there be national uniformity in forensic science service – delivery (from scene of crime/ occurrence through analysis report/ opinion to expert testimony) for proving innocence/ guilt in criminal, civil and regulatory justice systems ?

[Yes] [No]

6. Is time ripe for an all India service

[Yes] [No]

Contd.....

pattern for forensic science ?

7. Would you like a model like DRDO ?

[Yes] [No]

8. Or, would you recommend Indian Forensic Science Service on par with other Union Civil Services (IFS, IAS, IPS....etc.)?

[Yes] [No]

9. Can the Directorate of Forensic Science (GoI, MHA) be elevated to Department of Forensic Science under MHA?

[Yes] [No]

10. The CFSL(CBI) at Delhi may be brought under the proposed Dep't of Forensic Science

[Yes] [No]

11. The Central Fingerprint Bureau (CFPB) component of the NCRB may be brought into the above proposed CFSL (Delhi).

[Yes] [No]

12. The GEQD set-up at Shimla may be incorporated and enlarged into a full fledged CFSL

[Yes] [No]

13. The GEQD set-up at Kolkata and Hyderabad may be incorporated into the respective CFSLs.

[Yes] [No]

14. The Forensic Science Wing at the SVP National Police Academy (Hyderabad) may be extricated and groomed into National Forensic Science Academy (in the lines of other National Academies for All India Civil services, Defense forces...)

[Yes] [No]

15. The forensic science component of NICFS (Delhi) may be shed down.

[Yes] [No]

16. In a rapid time bound manner, all the forensic establishments in India (including the FSLs, CELs, FP Bureaux of UTs / States) may be brought under the Dep't of Forensic Science (MHA-GoI)

[Yes] [No]

Contd.....

17. All competent forensic establishments (and their scientists) may be enthused to undertake R & D work ; and, the concept of discipline - based “Centres of Excellence” for CFSLs may be dropped. [Yes] [No]

18. In the changing scenario, there may be one nodal CFSL for each of :-

- a) Proficiency testing
 - b) Standard Operating Procedures
 - c) Standard Reference Materials
 - d) Accreditation
 - e) Certification and re-certification
- [Yes] [No]

19. Deputation - mode filling of scientific posts may be dispensed with [Yes] [No]

20. More and better Awards and other incentives are needed for enhancing HR morale [Yes] [No]

21. Intra-unit Weekly Group Discussions, Journal Club Meetings etc. are needed for optimal scientific ambience [Yes] [No]

22. Bench-marks for scientific auditing/ accountability/ performance appraisal of forensic scientists and Forensic Science Laboratories need to be identified and implemented [Yes] [No]

Table - 1: Infrastructure - evidence type - qualification and training																
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
S.No.	Evidence type	Analysis type	Name of unit in which it is presently analyzed (please write/type below - if there is no facility, indicate as "none")	Name of the unit in which you desire it to be analysed (please write/type below)	Equipments that are available presently	Equipments that are required additionally (give reasons) (indicate fund required in INR)	Methodology for analysis: Following the current manual	Methodology for analysis: Following new guidelines in journals or other sources	Methodology for analysis: Following guidelines that have been presented in conferences	Methodology for analysis: Following guidelines that are indigenous to the lab but not reported	Methodology: not available	Space requirement (carpet area in sq. ft.)	Qualification of the present staff	Qualification that you desire as suitable	Training for the present staff: adequate ; lacking	Training that you desire as suitable with location where it is available
1	Fire arms, ammunition, fired/misfired cartridges; bullets; pellets, wads; gunshot residues; clothing etc.	Functionality, factory/country made, linkage, identification														
2	Stains/swab of body fluid/bio specimen (blood, semen, vaginal secretion, saliva, urine, faeces etc) on different matrices	Stain pattern, detection, confirmation, individualisation														
3	Hairs, nails, bones (intact/pieces/burnt) with/without antemortem x-ray	Finding damage, cut, pulled etc ; tissue - trace, origin, individualisation														
4	Soil/earth, fiber, wood, plant products/pollen	Comparison, origin, tissue traces														

5	Cloth, tools	Tear/cut identification, linkage and comparison															
6	Diatom	For diagnosing drowning															
7	Skull, with/without photograph or antemortem x-ray; pelvis	Sex, age, facial reconstruction (2D/3D/computerised); superimposition /individualisation															
8	Photographs or surveillance camera images	Comparison with previous photographs (photo to photo comparison)															
9	Witness memory based portrait building	Photo-fit (conventional or software based)															
10	Lip & ear print	Individualisation															
11	Foot, footwear and innersole prints, tyre marks, skid marks	Individualisation ; type/model and speed of vehicle															
12	Currency/envelope, clothing/ handwash	Flourescent dyes, identification of phenolphthalein and its degradation products															

13	Items from vitriolage cases	Detection of acid, alkali														
14	Items from cases of arson, self immolation, dowry deaths (inflammable products, petroleum products etc)	Identification of residual products														
15	Building/bridge material, cement etc	Examination for conformity to standards/ specifications														
16	Petroleum and cosmetic products	Examination for conformity to standards/ specifications														
17	Fast moving consumer goods (food, beverages, soap, fan, motors, etc)	Examination for trade mark violation														
18	Paints	Chemical composition, comparison in hit and run cases														
19	Coin and currency notes	Examination for counterfeit														
20	Idols or their portions, jewels, zari etc	Metal composition														
21	Documents (intact, torn, charred etc); writing on immovable surface	Comparison of writing, signatures, deciphering contents, erasure, alteration etc; analysis of paper, ink, writing material, age														

22	Typed, Printed (Electrostatic/laser /dot matrix) etc. Documents; impressions and seals	Comparison for common origin														
23	Explosives, components and exploded residues; incendiaries; pyrotechnique material, circuitry material	Identification of components of explosive device; analysis and linkage of exploded residues; evaluation of source and tagging, reconstruction of post- blast scene and IED.														
24	Plant products (bhang, ganja, charas, opium, alkaloids etc.); Psychotropic substances; material (lab ware, syringes, packets etc.)	Analysis for illicit production and identification and quantification of narcotics & psychotropic substances														
25	Stamp paper, revenue stamps	Counterfeit examination														
26	Camera, film, photo, negatives	Photo, photo to photo comparison and linkage with camera														
27	Broken objects	For physical match														

28	Erased numbers	Identifying the original numbers																	
29	Tool marks	Comparison for common origin																	
30	Electrical meters and security seals	Evidence of tampering																	
31	Paint flakes/ smear; glass pieces and fractured glass	Comparison for common origin and finding direction of force																	
32	Battery and related automobile items	Establishing accidental/ automobile fire																	
33	Instruments like phone etc	Working condition																	
34	Boilers , cylinders etc.	Analysis on bursts																	
35	Damaged electrical appliance, charred wires, switch boards, fuse carriers, etc	Electrical cause of fire																	
36	Bottles/sachets/packets/plastic canes etc, containing liquor	Identification of alcoholic liquors and spurious substances																	
37	Fresh samples/stains of blood, semen, saliva, tissue, bones, foetus etc.	DNA typing, individualisation and paternity solution																	
38	Human/animal viscera, blood, urine, vomitus, stomach wash etc	Detection of poison/ drugs/ alcohol, and quantification																	
39	Uterus as a whole and rectal tissues	Detecting local abortifacient																	

40	Plastic bags, ropes, cords, wires etc	Comparison for origin														
41	CD, Cassettes etc.	Voice print analysis														
42	Hardware/software	Cyber crime/digital forensics														
43	Visible and latent prints	Finger print examination														
44	Bite marks, filled teeth, dental x-ray, denture	Odontological examination														
45	Human subject (suspect/witness)	Polygraph														
46	Human subject (suspect/witness)	Brain mapping														
47	Human subject (suspect/witness)	Narco analysis														
48	Other evidences (Please mention)	Relevant/innovative analysis (please mention)														

Table - 2: Infrastructure - work load and end user utility

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
S.No.	Name of the unit in the lab	Number of cases reported during the past five years (2005-2009)	Current pendency	Agency seeking clearance of pendency (Example: Investigating Officer; Head of the Department; Government; Any other; none)	Reason for seeking clearance of pendency (Example: for investigation; for court trial; administrative; any other)	Number of analyzed cases in which report and analyzed articles have not been taken delivery of	Current staff strength	Additional staff required (give reasons)	Number of analysts involved in each case	Number of signatories in each report	Cadre of the supervisory analyst signing the report	Any change you desire ?	Utility appraisal: Number of cases in which laboratory finding was 'inconclusive'	Utility appraisal: Number of cases in which laboratory finding differed from the history given by the investigating officer	Utility appraisal: Number of cases in which the finding that 'differed' was followed up by the investigator	Utility appraisal: Number of cases in which the prosecutor had pre-trial discussion with the analyst	Utility appraisal: Number of cases in which the analyst testified in courts	Utility appraisal: Number of cases in which the judgment copies have been received in the laboratory	Utility appraisal: Number of cases in which the findings have been published
1	Anthropology																		
2	Ballistics																		
3	Biology																		
4	Brain Mapping																		
5	Chemistry																		
6	Computer Forensics/Digital Forensics																		
7	Documents																		
8	Excise																		
9	Explosives																		
10	Narco analysis																		
11	Narcotics																		
12	Photography																		
13	Physics																		
14	Polygraph																		

15	Prohibition																		
16	Serology/DNA																		
17	Toxicology																		
18	Voice Identification																		
19	Instruments																		
20	R & D																		

Table - 3: Staff pattern							
A	B	C	D	E	F	G	H
S.No.	Cadre: A, B etc.	Designation (present)	Scale of pay	Number of posts	Place of deployment (Example: HQ Lab, Regional labs, Mobile labs, District labs etc.)	Re-designation desired, if any	Reason for re-designation
1		Director					
2		Addl. Director					
3		Jt. Director					
4		Dy. Director					
5		Asst Director					
6		Sr. Sci. Officer					
7		Sci. Officer					
8		Jr. Sci. Officer					
9		Librarian					
10		Asstt Librarian					
11		Sr. Sci. Assistant					
12		Sci. Assistant					
13		Jr. Sci. Assistant					
14		Photographer					
15		Sr. Lab. Assistant					
16		Lab. Assistant					
17		Jr. Lab. Assistant					
18		Sr. Lab. Attendant					
19		Lab. Attendant					
20		Jr. Lab Attendant					
Admn. Staff							
21		Section Officer					
22		Assistants					

23		Stenographer Grade - I					
24		Stenographer Grade - II					
25		Stenographer Grade - III					
26		U.D.C. (Upper Division Clerk)					
27		L.D.C. (Lower Division Clerk)					
28		Computer Operater					
29		Driver					
30		Daftari					
31		Mali (Gardener)					
32		Farrash					
33		Peon					
34		Sweeper					

Table -3a: Expenditure (in INR) on training, research and library

A	B	C	D	E	F	G
S.No.	Expenditure on training (2005-2009)	Expenditure on training (2009)	Expenditure on research (2005-2009)	Expenditure on research (2009)	Expenditure on library (2005-2009)	Expenditure on library (2009)
1						
2						
3						
4						
5						
6						

Table - 4: Training and its utility

A	B	C	D	E	F	G	H	I	J	K	L	M	N
S.No.	Name of the staff	Name of the first training with dates	Number of years of experience in the area corresponding to the first training	Number of reports signed in the area corresponding to the first training	Name of the second training with dates	Number of years of experience in the area corresponding to the second training	Number of reports signed in the area corresponding to the second training	Name of the third training with dates	Number of years of experience in the area corresponding to the third training	Number of reports signed in the area corresponding to the third training	Please add additional columns if more than three trainings have been undergone by the same staff	Present unit where the staff is working	Give comment on the relevance of training(s) to the present job requirement
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													

Table- 7 : SOC study, reconstruction and usefulness						
A	B	C	D	E	F	G
Sl. No.	Year	No. of cases of SOC study by lab team	Designation of the Head of the SOC team	Designation of other officials in the team	Percentage of cases in which the SOC finding was useful for investigation	Remarks
1	2005					
2	2006					
3	2007					
4	2008					
5	2009					

Table- 8 : Time frame for analysis and reporting

A	B	C			D
S.No.	Name of the unit in the lab	Turn-around time required (number of days, approximately)			Remarks
		Classical/routine analysis	New problem analysis	Innovation (in process, procedure,device)-involved analysis	
1	Anthropology				
2	Ballistics				
3	Biology				
4	Brain Mapping				
5	Chemistry				
6	Computer Forensics/Digital Forensics				
7	Documents				
8	Excise				
9	Explosives				
10	Narco analysis				
11	Narcotics				
12	Photography				
13	Physics				
14	Polygraph				
15	Prohibition				
16	Serology/DNA				
17	Toxicology				
18	Voice Identification				
19	Instruments				
20	R & D				
21	Any other (please mention)				

Dr. GOPAL JI MISRA
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Email : pplanfs2010@gmail.com

No. P Plan FS / Consult / 4 / 2010

Dated : 09 / 03 / 2010

Dear Sir / Madam,

Sub : Perspective Plan for Indian Forensics (2010) – **Feedback from forensic science service users** – Requested - Regarding

Ref : Letter No. DFS/234/06/06-(Plan)/PM-II dated 15/01/2010, from
Special Secretary, MHA, GOI, New Delhi – 110 001

Season's Greetings.

2. Well, as you may be happily aware, the Hon'ble Home Minister, Government of India at a press conference on Feb 01, 2010 had announced that 2010 is the Year of Forensic Science. As such, the MHA – Government of India has appointed us (Dr. Gopal Ji Misra and Dr. C. Damodaran) as Consultants (vide reference cited above), to prepare a Perspective Plan for Forensic Science in the country, to usher in global competitiveness/credibility in strategy and service-delivery enabled by revamping and modernizing technology, human resource and infrastructure.
3. This unique project of Perspective Plan-preparation is a time-bound mission-mode responsibility for us; and, is possible, only with your vibrant cooperation/contribution.

Contd....

4. In this context we request you and your organization **(as end-user of forensic science service, from scene of crime / occurrence through analysis – report - testimony to the pronouncement of judgment / orders)** to spare precious time and efforts, and send us feedback as per the format **attached**.
5. Kindly arrange to take on this load (of giving feedback) in the interest of Society and posterity; and, we will be thankful to receive your response before 25 / 03 /2010.

Regards / Best wishes

Sincerely

(Dr. GOPAL JI MISRA)

(Dr. C. DAMODARAN)

Encl: Format for Feedback

To :

FORMAT FOR FEEDBACK ON FORENSIC SCIENCE

Please tick (✓) in the appropriate box in the five grade scale; namely : A (Average), G (Good), Vg (Very good), E (Excellent) and O (Outstanding)

I. Assessment of forensic scientists and forensic science laboratories

S.No.	FEATURE	SCALE				
		A	G	Vg	E	O
i.	Response - time					
ii.	Scientific competency					
iii.	Opining / reporting quality					
iv.	Opining / reporting speed					
v.	Corroborative utility					
vi.	Probative utility					
vii.	Lead – giving utility					
viii.	Prophylactic utility					
ix.	Innocence – proving utility					
x.	Expert testimony – clarity					
xi.	Professional interaction					
xii.	Ethical conduct					
xiii.	Overall forensic science service – delivery					
xiv.	Infrastructure (building, space & vehicles)					
xv.	Infrastructure (equipments)					
xvi.	Infrastructure (library)					
xvii.	Human resource (number of scientists & staff)					
xviii.	Human resource (qualification & expertise)					
xix.	Human resource (training)					
xx.	Organizational structure					

II. Description of occasions if any, wherein forensic science service has gone against justice delivery (in few sentences)

III. Indication of forensic science awareness among its end-user (namely, your) officers and personnel

A
 G
 Vg
 E
 O

IV. Suggestions for improvement (requested in about nine "bullet – points")

Dr. GOPAL JI MISRA
CONSULTANT

Dr. C. DAMODARAN
CONSULTANT

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Attachment - D

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No. P Plan FS / Consult / 5 / 2010

Dated : 12 / 03 / 2010

Dear Sir / Madam,

Sub : Perspective Plan for Indian Forensics (2010) – **Comments from Fingerprint Bureau** – Requested – Regarding.

Ref : Letter No. DFS/234/06/06-(Plan)/PM-II dated 15/01/2010, from
Special Secretary, MHA, GOI, New Delhi – 110 001

Season's Greetings.

6. Well, as you may be happily aware, the Hon'ble Home Minister, Government of India at a press conference on Feb 01, 2010 had announced that 2010 is the Year of Forensic Science. As such, the MHA – Government of India has appointed us (Dr. Gopal Ji Misra and Dr. C. Damodaran) as Consultants (vide reference cited above), to prepare a Perspective Plan for Forensic Science in the country, to usher in global competitiveness/credibility in strategy and service-delivery enabled by revamping and modernizing technology, human resource and infrastructure.
7. This unique project of Perspective Plan-preparation is a time-bound mission-mode responsibility for us; and, is possible, only with your vibrant cooperation/contribution.

Contd....

8. In this context, we now request you to offer comments on the following.
 - a. In case your Bureau is not an integral part of a Forensic Science Laboratory :-
 1. are you happy with the FSLs and forensic scientists in their professional interaction with your Bureau and your experts ?
 2. if your answer is 'NO', please suggest ways and means to improve interaction (in not more than five "bullet-points", please)
 - b. In case you feel that Fingerprint examination should be integral part of a Forensic Science Laboratory :-
 - give reason as to 'WHY ?' (in not more than five "bullet-points", please)
 - c. In case you are already within the umbrella of FSL :-
 - are you happy with your professional performance ? Yes / No
 - if your answer is 'NO', please suggest ways and means to improve your performance (in not more than five "bullet-points", please)
5. We will thankfully appreciate receiving your response before 24- 03 -2010. Your input will be in the interest of better forensic science & related service delivery to the Society.

Regards / Best wishes

Sincerely

(Dr. GOPAL JI MISRA)

(Dr. C. DAMODARAN)

NB: You may please feel free to make copies of this and send to your Fingerprint colleagues across India, for their response to us; thanks.

To :

Dr. GOPAL JI MISRA
CONSULTANT

Dr. C. DAMODARAN
CONSULTANT

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No. P Plan FS / Consult / 6 / 2010

Dated : 12 / 03 / 2010

Dear Sir / Madam,

Sub : Perspective Plan for Indian Forensics (2010) – **Comments from Forensic Medicine Experts / Police Surgeons** – Requested - Regarding

Ref : Letter No. DFS/234/06/06-(Plan)/PM-II dated 15/01/2010, from
Special Secretary, MHA, GOI, New Delhi – 110 001

Season's Greetings.

2. Well, as you may be happily aware, the Hon'ble Home Minister, Government of India at a press conference on Feb 01, 2010 had announced that 2010 is the Year of Forensic Science. As such, the MHA – Government of India has appointed us (Dr. Gopal Ji Misra and Dr. C. Damodaran) as Consultants (vide reference cited above), to prepare a Perspective Plan for Forensic Science in the country, to usher in global competitiveness/credibility in strategy and service-delivery enabled by revamping and modernizing technology, human resource and infrastructure.
3. This unique project of Perspective Plan-preparation is a time-bound mission-mode responsibility for us; and, is possible, only with your vibrant cooperation/contribution.

Contd....

4. In this context, we now request you to offer comments on the following.
Should the practice at Forensic Science Laboratories and at Forensic Medicine Departments continue to be separate? Yes / No
 1. if 'Yes', give reasons (as "bullet-points", please)
 2. if 'No', suggest alternate(s), and justify every alternate (as "bullet-points", please)

5. We will thankfully appreciate receiving your response before 24- 03 -2010. Your input will be in the interest of better forensic science & related service delivery to the Society.

Regards / Best wishes

Sincerely

(Dr. GOPAL JI MISRA)

(Dr. C. DAMODARAN)

NB : You may please feel free to make copies of this and send to your Forensic Medicine colleagues across India, for their response to us; thanks.

To :

Dr. GOPAL JI MISRA
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No. P Plan FS / Consult / 7 / 2010

Dated : 12 / 03 / 2010

Dear Sir / Madam,

Sub : Perspective Plan for Indian Forensics (2010) – **Comments from Chemical Examiner's Laboratories** – Requested - Regarding

Ref : Letter No. DFS/234/06/06-(Plan)/PM-II dated 15/01/2010, from
Special Secretary, MHA, GOI, New Delhi – 110 001

Season's Greetings.

2. Well, as you may be happily aware, the Hon'ble Home Minister, Government of India at a press conference on Feb 01, 2010 had announced that 2010 is the Year of Forensic Science. As such, the MHA – Government of India has appointed us (Dr. Gopal Ji Misra and Dr. C. Damodaran) as Consultants (vide reference cited above), to prepare a Perspective Plan for Forensic Science in the country, to usher in global competitiveness/credibility in strategy and service-delivery enabled by revamping and modernizing technology, human resource and infrastructure.
3. This unique project of Perspective Plan-preparation is a time-bound mission-mode responsibility for us; and, is possible, only with your vibrant cooperation/contribution.
4. In this context, we now request you to offer comments on the following.
 - a) In case your laboratory is not an integral part of a Forensic Science Laboratory :-

Contd....

- are you happy with the FSLs and forensic scientists in their professional interaction with your lab and your scientists ? Yes / No
 - if your answer is 'NO', please suggest ways and means to improve interaction (in not more than five "bullet-points", please)
- b) In case you feel that CEL should be integral part of a FSL :-
3. give reasons as to 'Why ?' (in not more than five "bullet-points", please)
5. We will thankfully appreciate receiving your response before 24- 03 -2010. Your input will be in the interest of better forensic science & related service delivery to the society.

Regards / Best wishes

Sincerely

(Dr. GOPAL JI MISRA)

(Dr. C. DAMODARAN)

NB : You may please feel free to make copies of this and send to your CEL colleagues across India, for their response to us; thanks.

To :

Dr. GOPAL JI MISRA
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No. P Plan FS / Consult / 8 / 2010

Dear Sir / Madam,

Dated : 12 / 03 / 2010

Sub : Perspective Plan for Indian Forensics (2010) – **Comments from Serologist to Government** – Requested - Regarding

Ref : Letter No. DFS/234/06/06-(Plan)/PM-II dated 15/01/2010, from
Special Secretary, MHA, GOI, New Delhi – 110 001

Season's Greetings.

2. Well, as you may be happily aware, the Hon'ble Home Minister, Government of India at a press conference on Feb 01, 2010 had announced that 2010 is the Year of Forensic Science. As such, the MHA – Government of India has appointed us (Dr. Gopal Ji Misra and Dr. C. Damodaran) as Consultants (vide reference cited above), to prepare a Perspective Plan for Forensic Science in the country, to usher in global competitiveness/credibility in strategy and service-delivery enabled by revamping and modernizing technology, human resource and infrastructure.
3. This unique project of Perspective Plan-preparation is a time-bound mission-mode responsibility for us; and, is possible, only with your vibrant cooperation/contribution.
4. For a century your organization has been engaged in and contributing to forensic science service delivery. In a changed scenario (as well as in the context of the above-cited Sub / Ref), we now request you to offer comments on the following.

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- a) Your institute is not an integral part of a Forensic Science Laboratory; under the circumstances :-
- are you happy with the FSLs and forensic scientists in their professional interaction with your institute and your scientists? Yes / No
 - if your answer is 'NO', please suggest ways and means to improve interaction (in not more than five "bullet-points", please)
- b) In case you feel that such Serology Institutes should be integral part of a FSL :-
4. give reasons as to 'Why ?' (in not more than five "bullet-points", please)
5. We will thankfully appreciate receiving your response before 24- 03 -2010. Your input will be in the interest of better forensic science & related service delivery to the Society.

Regards / Best wishes

Sincerely

(Dr. GOPAL JI MISRA)

(Dr. C. DAMODARAN)

NB : You may please feel free to make copies of this and send to other Serology Institutes if any (such as yours) across India, for their response to us; thanks.

To :

Dr. GOPAL JI MISRA
CONSULTANT

Dr. C. DAMODARAN
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No. P Plan FS / Consult / 9 / 2010

Dated : 12 / 03 / 2010

Dear Sir / Madam,

Sub : Perspective Plan for Indian Forensics (2010) – **Inputs from Retired/senior forensic scientists and others**– Requested - Regarding

Ref : Letter No. DFS/234/06/06-(Plan)/PM-II dated 15/01/2010, from
Special Secretary, MHA, GOI, New Delhi – 110 001

Season's Greetings.

2. Well, as you may be happily aware, the Hon'ble Home Minister, Government of India at a press conference on Feb 01, 2010 had announced that 2010 is the Year of Forensic Science. As such, the MHA – Government of India has appointed us (Dr. Gopal Ji Misra and Dr. C. Damodaran) as Consultants (vide reference cited above), to prepare a Perspective Plan for Forensic Science in the country, to usher in global competitiveness/credibility in strategy and service-delivery enabled by revamping and modernizing technology, human resource and infrastructure.
3. This unique project of Perspective Plan-preparation is a time-bound mission-mode responsibility for us; and, is possible, only with your vibrant cooperation/contribution.
4. In this context, we now request you to offer your views, preferably as "bullet-points", incorporating pragmatically useful, implementable, sustainable, assessable and cost-effective highlights.

Attachment - H

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Sl.No.	FEATURE	MALADY, if any	REMEDY	DISCERNIBLE SERVICE DELIVERY
(1)	(2)	(3)	(4)	(5)
1.	Infrastructure (building & space)			
2.	Infrastructure (vehicles)			
3.	Infrastructure (equipments & technology gaps)			
4.	Infrastructure (library)			
5.	Infrastructure (other aspects)			
6.	Human resource (scientists) (number)			
7.	Human resource (scientists) (qualification)			
8.	Human resource (scientists) [training : SOC to court testimony]			
9.	Human resource (scientists) (pay, recruitment & promotion)			
10.	Human resource (administrative staff) (number)			
11.	Human resource (admin. staff)(training for FSL set-up)			
12.	R&D			
13.	Proficiency testing			
14.	Accreditation			

Contd...

15.	Certification and re-certification			
16.	Ethical conduct			
17.	Bench-marks for performance appraisal (for scientists/organizations)			
18.	Scientific audit and accountability			
19.	National forensic net-working for synergy			
20.	24 x 7 forensic information service (help-line)			
21.	Swift action emergency forensic team			
22.	Prophylactic/proactive/preventive forensics			
23.	Structure and role(s) of DFS(GOI)			
24.	Forensic science education (UG/PG/Ph.D)			
25.	Structure and role(s) of NICFS			

5. We will thankfully appreciate receiving your response before 24- 03 -2010. Your input will be in the interest of better forensic science & related service delivery to the Society.

Regards / Best wishes

Sincerely

(Dr. GOPAL JI MISRA)

(Dr. C. DAMODARAN)

NB : You may please feel free to make copies of this and send to your friends / colleagues across India, for their response to us; thanks.

To :
Dr. GOPAL JI MISRA
CONSULTANT

Dr. C. DAMODARAN
CONSULTANT

Flat No. 11, Officer's Flat
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No. P Plan FS / Consult / 10 / 2010

Dated : 15 / 03 / 2010

Dear Sir / Madam,

Sub : Perspective Plan for Indian Forensics (2010) - **Details about the Directorate of Forensic Science (DFS), MHA : GoI** – Requested – Regarding.

- Ref : 1) Letter No : DFS/234/06/06-(Plan)/PM-II dated 15/01/2010, from Ms. Anita Chaudhary, Special Secretary, MHA, GOI, New Delhi – 110 001
- 2) Our letter No : P Plan FS / Consult / 1 / 2010 dated 12–2–2010 sent to you and others
- 3) Our letter No : P Plan FS / Consult / 3 / 2010 dated 13–3–2010 enclosing Questionnaire etc. (sent already to CFSLs, GEQDs, FSLs of UTs / States, CFSL – CBI & SVPNPA)

Season's Greetings.

- 2 Well, as you may be happily aware, the Hon'ble Home Minister, Government of India at a press conference on Feb 01, 2010 had announced that 2010 is the Year of Forensic Science. As such, the MHA – Government of India has appointed us (Dr. Gopal Ji Misra and Dr. C. Damodaran) as Consultants (vide reference 1) cited above), to prepare a Perspective Plan for Forensic Science in the country, to usher in global competitiveness/credibility in strategy and service-delivery enabled by revamping and modernizing technology, human resource and infrastructure.

Contd...

3. This unique project of Perspective Plan-preparation is a time-bound mission-mode responsibility for us; and, is possible, only with your vibrant cooperation/contribution.
4. In this context, we send herewith a full set of Ref.3 cited above. Kindly study the same and respond to us as deemed fit.
5. In addition, please furnish the forensic relevance of each of the on-going(DFS-funded) Ph.D-related fellowship research and extramural research projects. (Please use just two or three sentences only, for each).
6. In addition, please send details (in separate sheets) for the following :-
 - I. Give the organization chart and explain briefly the administrative structure in your organization (organization here means DFS (Delhi) and its CFLs and GEQDs)
 - II. State briefly about autonomy status in your organization.
 - III. What is the system of internal communication in your organization?
 - IV. Briefly describe the various factors that enhance or mar the work - environment in your organization.
 - V. Describe the system for assigning responsibility and assessing accountability in your organization.
 - VI. Explain briefly the status of delegation of authority vis-à-vis productivity in your organization.
 - VII. State briefly the present relationship among seniors, colleagues and subordinates horizontally and vertically that enhances or mars the environment and service delivery.
 - VIII. Give a set of "bullet points" as your suggestions / recommendations towards optimizing the structure etc issues raised in the preceding seven questions.

Contd...

(You may also propose alternate organizational charts for the existing **Directorate** of F.S. as well as for hypothetical *Department* of F.S. under MHA.)

7. It will be kind of you to send all the information (vide paras 4, 5 and 6 above) so as to reach us before 31 - 3 - 2010.

Regards / Best wishes

Sincerely

(Dr. GOPAL JI MISRA)

(Dr. C.DAMODARAN)

Encl : Ref. 3 (full set)

To

The Chief Forensic Scientist
Directorate of Forensic Science
(MHA- GoI)
Block : 9, Floor : 8
CGO Complex, Lodhi Road
NEW DELHI – 110003

Dr. GOPAL JI MISRA
CONSULTANT

Dr. C. DAMODARAN
CONSULTANT



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Email : pplanfs2010@gmail.com

No. P Plan FS / Consult / 11 / 2010

Dated : 15 / 03 / 2010

Dear Sir,

Sub : Perspective Plan for Indian Forensics (2010) – **Specific comments / details from NICFS, Delhi** – Requested - Regarding

Ref : Our letter in No: P Plan FS / Consult / 2 / 2010 dated 4-3- 2010

We do hope that your kind response to the Ref. cited above is being made ready.

2. Meanwhile, it is now requested of you to offer your answer – details / comments to the enclosed Questionnaire (having 24 questions). Kindly arrange your response to reach us before 31-3-2010.

Regards

Sincerely yours

(Dr. GOPAL JI MISRA)

(Dr. C.DAMODARAN)

Encl : Questionnaire (with 24 questions)

To

The Director
National Institute of Criminology and Forensic Science
Outer Ring Road
ROHINI, Sector -III
DELHI – 110 085

1. Regarding forensic science program in your institution, please state whether it has focussed

- A goals / objectives
- B educational policy reflecting uniqueness
- C reviewing and monitoring mechanism
- Any other: (please write/type within this box)

What is your preference in formulating mission, goals and objectives for the program? (please write/type within this box)

2. Regarding the organizational setting for the forensic science program in your institution, please state whether it has

- A been recognized by accrediting bodies
- B a chart indicating the program's relationship with other components
- C exclusive budget allocation
- D faculty participation in governance
- Any other: (please write/type within this box)

What is your preference of the organizational setting? (please write/type within this box)

3. Regarding teaching and research in the forensic science program in your institution, please state whether it has

- A facility for interdisciplinary cooperation
- B policy for commitment to ethical dealings
- C policy regarding conflict of interest
- D policy for collaboration
- Any other: (please write/type within this box)

What is your preference regarding teaching and research? (please write/type within this box)

4. Regarding the head for the forensic science program in your institution, please state whether he has

- A sustained record of scholarship in forensic science education
 - B quality research in appropriate topics
 - C experience and knowledge of the forensic science laboratory system
 - D provision for periodic review of his performance
- Any other: (please write/type within this box)

What is your preference for evaluating program head? (please write/type within this box)

5. Regarding the research by the head for the forensic science program in your institution, please state whether it

- A is related to core science
 - B is related to forensic science
 - C has been published in forensic science journals (give details)
- Any other: (please write/type within this box)

What is your preference on the type of research capability of the program head? (please write/type within this box)

6. Regarding the qualification of the head for the forensic science program in your institution, please state whether it

- A is masters in core science
 - B is PhD in core science
 - C is masters in forensic science
 - D is PhD in forensic science
- Any other: (please write/type within this box)

What is your preference on the qualification of the program head? (please write/type within this box)

7. Regarding the professional experience of the head for the forensic science program in your institution, please state

- A the number of years in academic field alone (.....years)
 - B the number of years in forensic science alone (.....years)
 - C the number of years in academic field and forensic science (..... years)
 - D the number of years in other areas (specify) (.....years)
- Any other: (please write/type within this box)

What is your preference on the desired professional experience of the program head? (please write/type within this box)

8. Regarding faculty recruitment policy in your institution, there is

- A a policy for recruitment
 - B a policy for retention
 - C a policy for promotion
 - D a policy for tenure
- Any other: (please write/type within this box)

What is your preference of recruitment policy? (please write/type within this box)

9. Regarding the resources for the forensic science program in your institution, there is

- A a stable budgetary base from your institution
 - B scope for external funding other than government
 - C scope for community resources
 - D scope for funding through students' fees
- Any other: (please write/type within this box)

What is your preference of resources? (please write/type within this box)

10. Regarding the curriculum for forensic science in your institution, there is scope for learning

- A the basics of forensic science
 - B professional value and ethics
 - C skill through experience
 - D skills of applied value to the national need
- Any other: (please write/type within this box)

What is your preference of for the curriculum for forensic science? (please write/type within this box)

11. Regarding the evaluation of students' performance in the forensic science program of your institution, it is done by the

- A staff of your institution
 - B staff of other institution
 - C peer reviewers within the country
 - D peer reviewers outside the country
- Any other: (please write/type within this box)

What is your preference of evaluation of students' performance? (please write/type within this box)

12. Regarding infrastructure for research in your institution, there is

- A separate laboratory for each of chemistry, biology and physics branches (specify the area)
 - B enough computer facility in each laboratory (specify the number of computers)
 - C subscription for accessing hard and soft copies of journals (specify the number of journals, hard and soft separately)
 - D enough technical staff (specify the number)
- Any other: (please write/type within this box)

What is your preference of infrastructure for research? (please write/type within this box)

13. Regarding the research in your institution, there is enough	
A	funding (specify the annual allotment)
B	instruments (provide the list of instruments division wise)
C	qualified supervisors (mention the number)
D	output (provide the list of publications)
Any other: (please write/type within this box)	
What is your preference of research? (please write/type within this box)	
14. Regarding the subject matter of research in your institution, it is related to	
A	core science
B	forensic science
C	problem areas in forensics identified in international level
D	problem areas in forensics identified at the national level
Any other: (please write/type within this box)	
What is your preference of subject matter of research? (please write/type within this box)	
15. Regarding the applied value of research in forensic science in your institution, there is	
A	collaboration with forensic science laboratories
B	problem identification based on internationally recognized needs
C	problem identification based on local crime scene experience
D	problem identification based on local analytical experience
Any other: (please write/type within this box)	
What is your preference of applied value of research? (please write/type within this box)	

16. Regarding the success of research in forensic science in your institution, it is measured by

- A publications in ISI data base journals (provide details)
 - B publications in non ISI data base international journals (provide details)
 - C publications in national journals (provide details)
 - D Conference proceedings (provide details)
- Any other: (please write/type within this box)

What is your preference to measure the success of research? (please write/type within this box)

17. Regarding the service offered by the forensic science program of your institution to the community, there is

- A involvement in consultation (provide details)
 - B scope for sustainment (provide details)
 - C scope for multi institutional involvement (provide details)
 - D involvement of students (provide details)
- Any other: (please write/type within this box)

What is your preference in service - offer? (please write/type within this box)

18. Regarding the faculty of the forensic science program in your institution

- A Their tenure status is transparent
 - B Their CVs are accessible
 - C Their qualification and the university from which they earned the degree are spelt out
 - D The fields of professional experience are clearly indicated
- Any other: (please write/type within this box)

What is your preference of the faculty? (please write/type within this box)

19. Regarding the student enrolment in forensic science program in your institution, there is transparency in

- A fee structure (provide details)
- B eligibility qualification (provide details)
- C scope for counselling (provide details)
- Any other: (please write/type within this box)

What is your preference of enrolment system? (please write/type within this box)

20. Regarding the support for the students in forensic science program in your institution, there is

- A provision for scholarship
- B scope for work study
- C scope for research / teaching assistantship
- D hostel facility
- Any other: (please write/type within this box)

What is your preference of support? (please write/type within this box)

21. Regarding the academic advising system for the students in forensic science program in your institution, there is

- A specified mentor for each student
- B provision for guiding in career pathways
- C provision for professional advice
- D provision for counseling
- Any other: (please write/type within this box)

What is your preference of academic advising system? (please write/type within this box)

22. Regarding the system for disciplinary action on the students in forensic science program in your institution, there is a

- A system for assessing students' satisfaction
 - B system for handling students' complaint
 - C system for warning students
 - D system for dismissal and reinstatement
- Any other: (please write/type within this box)

What is your preference of disciplinary system? (please write/type within this box)

23. Regarding the evaluation and planning of the forensic science program in your institution, there is

- A provision for regular self evaluation (provide details)
 - B provision for identifying problem areas (provide details)
 - C provision for formulation of corrective action (provide details)
 - D internal institutional review (provide details)
- Any other: (please write/type within this box)

What is your preference of evaluation and planning? (please write/type within this box)

24. Please react briefly to the following GENERAL COMMENT ON M.Sc. (Forensic Science) SYLLABUS

"The first year syllabus of Master's degree corresponding to the major subject of the student's Bachelor degree, should be fully covered in the syllabus of M.Sc. (Forensic Science)"

.....

Dr. GOPAL JI MISRA
CONSULTANT

Dr. C. DAMODARAN
CONSULTANT

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No. P Plan FS / Consult /12 / 2010

Dear Sir / Madam,



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Dated : 17 / 03 / 2010

Sub : Perspective Plan for Indian Forensics (2010) – **Courts – Registrar General / Registrar** - Feedback from users of forensic science service, in the Format – Requested - Regarding

Ref : Letter No. DFS/234/06/06-(Plan)/PM-II dated 15/01/2010, from
Special Secretary, MHA, GOI, New Delhi – 110 001

Season's Greetings.

2. Well, as you may be happily aware, the Hon'ble Home Minister, Government of India at a press conference on Feb 01, 2010 had announced that 2010 is the Year of Forensic Science. As such, the MHA – Government of India has appointed us (Dr. Gopal Ji Misra and Dr. C. Damodaran) as Consultants (vide reference cited above), to prepare a Perspective Plan for Forensic Science in the country, to usher in global competitiveness/credibility in strategy and service-delivery enabled by revamping and modernizing technology, human resource and infrastructure.
3. This unique project of Perspective Plan-preparation is a time-bound mission-mode responsibility for us; and, is possible, only with your vibrant cooperation/contribution.

Contd....

4. In this context, we request you to arrange action, as deemed fit, to provide feedback on forensic science service delivery (in the Format, enclosed).
5. We will be highly thankful to receive your response by 31 / 03 /2010.

Regards / Best wishes

Sincerely

(Dr. GOPAL JI MISRA)

(Dr. C. DAMODAR AN)

Encl : Format for Feedback

To :

FORMAT FOR FEEDBACK ON FORENSIC SCIENCE

Please tick (✓) in the appropriate box in the five grade scale; namely : A (Average), G (Good), Vg (Very good), E (Excellent) and O (Outstanding)

I. Assessment of forensic scientists and forensic science laboratories

S.No.	FEATURE	SCALE				
		A	G	Vg	E	O
i.	Response - time					
ii.	Scientific competency					
iii.	Opining / reporting quality					
iv.	Opining / reporting speed					
v.	Corroborative utility					
vi.	Probative utility					
vii.	Lead – giving utility					
viii.	Prophylactic utility					
ix.	Innocence – proving utility					
x.	Expert testimony – clarity					
xi.	Professional interaction					
xii.	Ethical conduct					
xiii.	Overall forensic science service – delivery					
xiv.	Infrastructure (building, space & vehicles)					
xv.	Infrastructure (equipments)					
xvi.	Infrastructure (library)					
xvii.	Human resource (number of scientists & staff)					
xviii.	Human resource (qualification & expertise)					
xix.	Human resource (training)					
xx.	Organizational structure					

II. Description of occasions if any, wherein forensic science service has gone against justice delivery (in few sentences)

III. Indication of forensic science awareness among its end-user (namely, your officers and personnel

A
 G
 Vg
 E
 O

IV. Suggestions for improvement (requested in about nine "bullet – points")

Dr. GOPAL JI MISRA
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Dr. C. DAMODARAN
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No.P Plan FS/Consult/2/2010/

Dated : 04/03/2010

Dear Sir/Madam,

Sub : Perspective Plan for Indian Forensics (2010) - **Details on academics/training**

Ref : Letter No. DFS/234/06/06-(Plan)/PM-II dated 15/01/2010, from Ms. Anita Chaudhary, Special Secretary, MHA, GOI, New Delhi – 110 001

Season's Greetings.

2. Well, as you may be happily aware, the Hon'ble Home Minister, Government of India at a press conference on Feb 01, 2010 had announced that 2010 is the Year of Forensic Science. As such, the MHA – Government of India has appointed us (Dr. Gopal Ji Misra and Dr. C. Damodaran) as Consultants (vide reference cited above), to prepare a Perspective Plan for Forensic Science in the country, to usher in global competitiveness/credibility in strategy and service-delivery enabled by revamping and modernizing technology, human resource and infrastructure.
3. This unique project of Perspective Plan-preparation is a time-bound mission-mode responsibility for us; and, is possible, only with your vibrant cooperation/contribution.
4. Since your organization has been actively engaged in conducting regular courses in forensic science (teaching programmes and/or training programmes), we request you to send the following so as to reach us before 17/03/2010 (repeat 17/03/2010) :-

2..

- a. List of courses
 - b. Regulations and Syllabus for each course
 - c. Names, qualifications, experience and research publications of regular and guest faculty
 - d. Description of infrastructure:- class rooms, laboratories, equipments, library and hostel
 - e. How are the students/trainees exposed to real time forensic case work handling/examination ?
 - f. Details of placement of alumni
5. Please send the details in soft- and/or hard-copy formats. Thanks in advance.

Regards/Best wishes
Sincerely

(DR. GOPAL JI MISRA)

(DR. C.DAMODARAN)

To

The Heads of Academic/Training Institutions in Forensic Science, in India.

Dr. GOPAL JI MISRA
CONSULTANT

Dr. C. DAMODARAN
CONSULTANT



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No. P Plan FS / Consult / 3/ 2010

Dated : 13 / 03 / 2010

Dear Sir / Madam,

Sub : Perspective Plan for Indian Forensics (2010) – **Questionnaire and Tables etc. – Sent** – Details requested – Regarding

- Ref. i) Letter No. DFS/234/06/06- (Plan) / PM-II dated 15/01/2010, from Special Secretary, MHA, GoI, New Delhi – 110 001
- ii) Our letter in P Plan FS/ Consult/ 1/ 2010 dated 12.02.2010
- iii) Our letter in P Plan FS/ Consult/ 2/ 2010 dated 04.03.2010

In fast-forwarding our Perspective Plan – preparation efforts, and in continuation of references cited above, we now request you to send us details – response in Questionnaire / Tables etc. attached herewith.

2) Kindly ensure that your response – views (wherever applicable / appropriate) reflect those of a cross-section of your scientists / staff at senior, mid-career and junior levels.

3) Please send your details (soft- and / or hard copy) so as **to reach us before 29.03.2010 (repeat 29.03.2010)**

4) One Questionnaire in Microsoft Word format having 160 (multiple – choice and other type) questions is sent herewith. (A4 size sheets may be used for print-out)

5) Seven Tables in Microsoft Excel format (namely : Tables : 1, 2, 3, 3a, 4, 7, and 8) are sent herewith. ("legal" size sheets may be used for print-out).

Contd..

- 6) One SUMMARY – SET having 22 box type questions (the first one in Microsoft Excel format and, the remaining in the Microsoft Word format) is sent herewith. (A4 size sheets may be used for print-out)
- 7) In addition, please generate your own Table – formats for Table-5 and for Table-6.

Table-5 : Qualification vis-à-vis posting

Table-6 : Mobile laboratory – equipments / vehicle
--

In Table-5, Please provide list of persons who do not possess the required qualification for particular unit, but have been posted in that unit on ad-hoc basis (give reasons, if any)

In Table-6, Please provide list of equipments and vehicle-type available at your organisation's Mobile FSLs, and indicate additional items that are desirable

- 8) In addition, please provide (in separate sheets) details on the following:-
 - a. Pendency as per laboratory records (on 31-12-2009)
 - b. Pendency (at the lab) as per police records (if available) (on 31-12-2009)
 - c. Pendency of completed reports (but materials have not been taken delivery by the police)(on 31-12-2009)
 - d. Your suggestion for reducing pendency of cases (in not more than six "bullet-point" lines)
- 9) Kindly take on this load in the interest of forensics and posterity; and send details for paras 4), 5), 6), 7) and 8) above, so as **to reach us before 29.03.2010 (repeat 29.03.2010).**

Regards / Best wishes
Sincerely

(DR. GOPAL JI MISRA)

(DR. C. DAMODARAN)

- Encl.: i) One Questionnaire with 160 (multiple choice & other type) questions
ii) Seven Tables (namely : Tables 1, 2, 3, 3a, 4, 7 and 8)
iii) One SUMMARY-SET with 22 questions

NB : In the event of your response not reaching us by 29.03.2010, we will be constrained to presume that you have nothing to provide.

To,

QUESTIONNAIRE

Please encircle ○ or tick ✓ one or more among 'A', 'B',....., as appropriate.

1. Your laboratory is under the administrative control of

A	Police department
B	Home department
C	Health department
D	Central Bureau of Investigation
	Any other: (please write/type within this box)
	What is your preference of administrative control for the laboratory? (please write/type within this box)

2. Your laboratory is called

A	Forensic Science Laboratory
B	Forensic Science Department
C	Forensic Sciences Department
	Any other name: (please write/type within this box)
	What is your preference to call your laboratory? (please write/type within this box)

3. A unit dealing with a particular type of evidence in your laboratory is called

A	Unit
B	Division
C	Wing
D	Section
	Any other name: (please write/type within this box)
	What is your preference to call a unit in the laboratory? (please write/type within this box)

4. At present, the units related to 'Biology' work in your laboratory are

Contd....

A	Biology
B	Serology
C	DNA Typing
	Any other: (please write/type within this box)
	What is your preference of units in 'biology group'? (please write/type within this box)

5. At present, the units related to 'Physics' work in your laboratory are

A	Physics
B	Ballistics
C	Cyber crimes
	Any other: (please write/type within this box)
	What is your preference of units in 'physics group'? (please write/type within this box)

6. At present, the units related to 'Chemistry' work in your laboratory are

A	Chemistry
B	Toxicology
C	Narcotics
	Any other: (please write/type within this box)
	What is your preference of units in 'chemistry group'? (please write/type within this box)

7. At present, the other units in your laboratory are

A	Computer forensics/ Digital forensics
B	Photography
C	Document
	Any other: (please write/type within this box)
	What is your preference of units in this group? (please write/type within this box)

Contd....

8. The building infrastructure is

A	Adequate
B	Inadequate
C	not built for a laboratory
D	desired on a type designed pattern for all the States
	Any other: (please write/type within this box)
	What is your preference of the pattern to follow? (please write/type within this box)

9. The 'state of the art' laboratory is desired uniformly in all States of India since it

A	ensures scientific ambience
B	paves the way for quality assurance
C	provides security for the evidence
D	promotes a sense of equality among fellow analysts
	Any other: (please write/type within this box)
	What is your preference of the 'state of the art' type to follow? (please write/type within this box)

10. The building for Regional laboratories is

A	Adequate
B	Inadequate
C	not built on laboratory design
D	desired on a type designed pattern for all the States
	Any other: (please write/type within this box)
	What is your preference of the pattern to follow? (please write/type within this box)

11. The building/vehicle for mobile laboratories is

A	Adequate
B	Inadequate
C	not built on laboratory design
D	desired on a type designed pattern for all the States
	Any other: (please write/type within this box)

Contd....

	What is your preference of the pattern to follow? (please write/type within this box)
--	---

12. Regional laboratories in your laboratory cater to the needs of

A	more than 3 districts
B	3 districts
C	2 districts
D	districts without any criteria
	Any other: (please write/type within this box)
	What is your preference on the number of districts? (please write/type within this box)

13. The head of the regional laboratory is designated as

A	Additional Director
B	Deputy Director
C	Assistant Director
D	Joint Director
	Any other: (please write/type within this box)
	What is your preference on the cadre of the head? (please write/type within this box)

14. The evidence types analyzed in the regional labs include

A	Biological
B	Chemical
C	Documents
D	Physical
	Any other: (please write/type within this box)
	What is your preference of evidence type for regional level analysis? (please write/type within this box)

Contd....

15. Regarding the unit heads for the evidence types analyzed in the regional labs

A	Each type of unit must have a head
B	The cadre of the head must be equal to that in the main laboratory
C	All types of units can be headed by a single head
D	A head in-charge for the mobile laboratory is desired at the regional lab
	Any other: (please write/type within this box)
	What is your preference of head for regional level analysis? (please write/type within this box)

16. Regarding the equipments in your laboratory, you prefer it to be on par with

A	Other State FSLs
B	Central FSLs
C	Laboratories abroad like FBI
D	Your own
	Any other: (please write/type within this box)
	What is your preference of model? (Give reasons) (please write/type within this box)

17. Regarding the need for equipments as infrastructure

A	They are adequate
B	More equipments are needed for day-to-day analysis
C	Advanced equipments are needed for research
D	Lack of equipment does not impede regular analysis
	Any other: (please write/type within this box)
	What is your justification on the need for equipment? (please write/type within this box)

18. Regarding the operational conditions of the available equipments

A	All are functional
B	Many are under repair
C	Each has more than one trained person to operate
D	Spares are not available
	Any other: (please write/type within this box)

Contd....

	What is your suggestion for utility & maintenance of equipments? (please write/type within this box)
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19. Fields in which evidences were forwarded from your laboratory to another laboratory (or) could not be examined due to lack of equipments,

A	Explosive
B	Serology
C	DNA Typing
D	Computer forensics/ Digital forensics
	Any other: (please write/type within this box)
	What is your priority to purchase equipments? (please write/type within this box)

20. Fields in which evidences were forwarded from your laboratory to another laboratory (or) could not be examined due to lack of skilled analyst (please provide the number of instances)

A	Explosive
B	Serology
C	DNA Typing
D	Computer forensics/ Digital forensics
	Any other: (please write/type within this box)
	What is your priority to develop skills? (please write/type within this box)

21. Types of analysis that were pointed out in the courts (defense counsels, prosecutors and judges) as those that could not be carried out in your laboratory due to non availability of equipments

A	Biological
B	Toxicological
C	Cyber related
D	Human identification related
	Any other: (please write/type within this box)

Contd....

	What is your preference of order to remedy? (please write/type within this box)
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22. Types of other laboratories to which evidences were forwarded from your laboratory for analysis.

A	State FSLs
B	Central FSLs
C	Other Central/ State institutions
D	Foreign institutions
	Any other: (please write/type within this box)
	What is your opinion on the utility of outside lab? (please write/type within this box)

23. Types of other laboratories from which evidences were received into your laboratory for analysis

A	State FSLs
B	Central FSLs
C	Other Central/ State institutions
D	Foreign institutions
	Any other: (please write/type within this box)
	What is your opinion on the utility by outside lab? (please write/type within this box)

24. Due to non availability of equipments

A	analysis asked by the Investigating Officer had to be deferred
B	analysis you desired for confirmation could not be completed
C	opinion had to be given in an incomplete manner
D	it had to be stated as partial analysis during court testimony
	Any other: (please write/type within this box)
	What is your view on the consequences of lack of equipments? (please write/type within this box)

Contd....

25. New units that you desire are

A	Computer forensics/ Digital forensics
B	Forensic anthropology
C	Documents
D	Narco analysis/Lie detection
E	Fingerprint
	Any other: (please write/type within this box)
	What is your reason for desiring new units? (please write/type within this box)

26. Additional evidence types you desire as useful for investigation are

A	Entomological
B	Anthropological
C	Image analysis
D	Trace evidence analysis
	Any other: (please write/type within this box)
	What is your reason for desiring additional evidence analysis? (please write/type within this box)

27. Technologies you desire as useful for investigation include

A	Communication re-tracing
B	Cryptanalysis
C	Deciphering photo-mosaics
D	Handling bio-piracy & bioterrorism
	Any other: (please write/type within this box)
	What is your reason for desiring new technology? (please write/type within this box)

28. Regarding a new technique/analysis that developed in your laboratory

A	It was need based, as found in multiple cases
B	It was need based, as found in a single case
C	It was need based, as found in a sensational case
D	It was because of the availability of funds and equipments
	Any other reason: (please write/type within this box)

Contd....

	What is your preference to promote emerging areas? (please write/type within this box)

29. 'Emerging areas' developed in your laboratory because

A	an analyst had acquired the needed qualification
B	an analyst had acquired the needed training
C	equipments have been purchased
D	academic researchers required the area for research
	Any other: (please write/type within this box)
	What is your strategy to promote emerging areas? (please write/type within this box)

30. 'Emerging areas' that have been in demand include

A	Computer and cellular telephony forensics
B	DNA forensics
C	Forensic image processing
D	Forensic acoustics
E	Forensic osteology and odontology
F	Environmental and wild life forensics
G	Forensic networking and information highways
	Any other: (please write/type within this box)
	Why "emerging areas" need to be developed in India? (please write/type within this box)

31. Regarding linking of unidentified remains with missing individuals

A	Data are available
B	No attempt has been made on this aspect
C	State level project is desirable
D	National level project is desirable
	Any other: (please write/type within this box)
	What are the constraints so far in identifying the unclaimed dead in India? (please write/type within this box)

Contd....

32. The grounds for introducing 'CODIS' in the USA (practised in the States and integrated at the national level) include

A	Lack of facilities to relate criminal at large
B	Lack of identity cards as an additional reason for unidentified remains
C	More rape cases involve same suspect
D	There are more acquittals in rape cases
	Any other: (please write/type within this box)
	Can 'CODIS' be a model for the emerging areas to be introduced in India? (please write/type within this box)

33. For the 'emerging areas', man power sourcing can be

A	recruiting afresh
B	training from among the serving candidates
C	borrowing from universities/other institutions
D	leasing from outside companies
	Any other: (please write/type within this box)
	What is your preference of man power sourcing for the emerging areas ? (please write/type within this box)

34. Popularizing 'emerging areas' in the Society is dependant on

A	use by the investigating officer
B	utility during court testimony
C	utility for guiding the investigation
D	popularity through media
	Any other: (please write/type within this box)
	What is your preference to popularize? (please write/type within this box)

35. Number of journals (hard copies) subscribed in your laboratory (please indicate the number against each type of journal listed below)

A	International – ISI database
B	International – non ISI database
C	National – ISI database
D	National – non ISI database
	Any other: (please write/type within this box)

Contd....

	What is your order of preference to subscribe? (please write/type within this box)

36. Web links (soft copies) subscribed in your laboratory (please list the names of the links – example: Springer; ISI web of knowledge; John Wiley; Ovid; Science Direct etc.)

A	
B	
C	
D	
	Any other: (please write/type within this box)
	What is your order of preference to subscribe? (please write/type within this box)

37. Areas in which research articles have been published from your laboratory

A	Ballistics
B	Biology
C	Case work
D	Chemistry
E	Crime scene management
F	Documents
G	Photography
H	Polygraphy
I	Serology/DNA
J	Toxicology
	Any other: (please write/type within this box)
	What is your strategy to develop research? (please write/type within this box)

38. Types of papers that were published from your laboratory (international) - please give full reference (Title, authors, journal-name, volume number, page numbers) in separate sheets for 2005-2009

A	original articles
B	case reports
C	reviews
D	technical reports
	Any other: (please write/type within this box)

Contd....

	What is your strategy to publish papers/articles etc in international journals? (please write/type within this box)

39. Types of papers/articles that were published from your laboratory (national journals/books/monographs) - please give full reference in separate sheets for 2005-2009

A	original articles
B	case reports
C	reviews
D	technical reports
	Any other: (please write/type within this box)
	What is your strategy to publish papers/articles in Indian journals? (please write/type within this box)

40. Regarding a repository of papers/articles published from your laboratory

A	It is available but not updated
B	It is not available
C	It is desired and can be maintained in R&D unit
D	It is desired and can be maintained in the library
	Any other: (please write/type within this box)
	What is the need for a repository? (please write/type within this box)

41. Regarding research output from your laboratory

A	It can be used for evaluating performance
B	It can't be used for evaluating performance
C	It can be used for evaluating utility of specific project
D	Application oriented research must be recognized suitably
	Any other: (please write/type within this box)
	What is your opinion of recognition for good research? (please write/type within this box)

Contd....

42. Regarding the incentive and recognition for those staff publishing from your laboratory

A	There is none
B	It is counted for promotion
C	Monitory incentive can be considered
D	Discipline-based annual national Awards may be increased in number and in quantum (Minimum Rs. 1 lakh for each discipline)
	Any other: (please write/type within this box)
	What is your preference to recognize research? (please write/type within this box)

43. Impediments for publishing from your laboratory include

A	lack of original case work
B	lack of incentive or recognition
C	lack of skill in scientific writing
D	lack of aptitude for research
	Any other: (please write/type within this box)
	What is your plan to remove impediments? (please write/type within this box)

44. The type of work in your R&D unit is

A	academic research
B	handling SOC/case wise difficult analysis
C	project based research for futuristic needs
D	project based research for present investigatory need
	Any other: (please write/type within this box)
	What is your order of priority? (please write/type within this box)

45. The type of research collaboration in your laboratory is with

A	universities
B	central government institutions
C	state government institutions
D	None
	Any other: (please write/type within this box)

Contd....

	What is your priority? (please write/type within this box)
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46. Regarding inviting learned professors from universities to your laboratory, the purpose is for a

A	Speech
B	scientific conference
C	specific research
D	quality evaluation
	Any other: (please write/type within this box)
	What is your priority? (please write/type within this box)

47. Regarding research leading to PhD by the staff of your laboratory

A	The supervisor is outside the laboratory
B	The supervisor is within the laboratory
C	The choice of field is need based
D	The title is discussed with the unit or laboratory head
	Any other: (please write/type within this box)
	What is your view on research by the staff? (please write/type within this box)

48. Regarding research leading to PhD by the staff of your laboratory

A	The qualification is recognized as additional for promotion
B	The field is often unrelated to forensic science
C	The field is often related to forensic science
D	Authorities desire research activity
	Any other: (please write/type within this box)
	What is your view on the area of research by the staff? (please write/type within this box)

Contd....

49. Forensic science professionals are

A	opinion offerers revealing truth on innocence or guilt
B	enablers in maintaining law and order
C	pillars in ensuring criminal , civil and regulatory justice
D	Court/ Commission witness
	Any other: (please write/type within this box)
	What is your preference on the role of forensic science professionals? (please write/type within this box)

50. From the court point of view, reports from forensic science professionals are required to be

A	definite
B	absolute
C	qualified
D	corroborative
	Any other: (please write/type within this box)
	What is your preference about the above requirement? (please write/type within this box)

51. The current expectations of the Society from forensic science professionals are

A	academic research
B	solution to criminal, civil etc cases
C	increasing corroborative evidence in court trials
D	lead-giving and preventive forensics
E	emergency forensics
	Any other: (please write/type within this box)
	What is your view on Society's expectation from forensic science professionals? (please write/type within this box)

52. Forensic science laboratories render/can render assistance in matters relating to

A	mass disasters
B	living individuals suffering due to poisoning by unknown substances

Contd....

C	Pollution/contamination
D	Biodiversity and bio-prospecting
	Any other: (please write/type within this box)
	What is your preference to assist? (please write/type within this box)

53. Regarding the involvement of your laboratory with the local universities

A	It is for academic interaction
B	It is on the basis of invitation during conferences
C	It is on the basis of MoU or MoA for specific research/use of facility
D	There is no interaction
	Any other: (please write/type within this box)
	What is your preference of such interaction? (please write/type within this box)

54. Regarding in-service training

A	It is available (specify area)
B	There is no such training (specify area)
C	A laboratory that is leading in case work and research in the field can conduct in-service training
D	Periodic in-service training can be made mandatory
	Any other: (please write/type within this box)
	What is your view regarding in-service training? (please write/type within this box)

55. Regarding qualification of the staff for different types of analysis in your laboratory

A	It is streamlined
B	It is streamlined but is not followed due to lack of suitable candidates
C	It is not streamlined since courts do not stress
D	It is streamlined but is not followed due to administrative reasons
	Any other: (please write/type within this box)

Contd....

	What is your view on adhering to stipulated qualification for the staff? (please write/type within this box)

56. Regarding training of the new staff for different types of analysis in your laboratory

A	Criteria are available (please state the areas)
B	It is left to the unit head
C	It is not streamlined since courts do not stress
D	It is streamlined but is not supported by documentary proof
	Any other: (please write/type within this box)
	What is your view on the training requirement of the new staff? (please write/type within this box)

57. Regarding supervision of analytical activities in your laboratory

A	The Head of the laboratory conducts periodic appraisal and records it
B	The Head of the laboratory conducts periodic appraisal without recording
C	There is no periodic appraisal
D	The Head is not qualified in that area and hence does not inspect
	Any other: (please write/type within this box)
	What is your view on the appraisal of work in units? (please write/type within this box)

58. Regarding supervision of analytical activities in your laboratory

A	There is periodic inspection and it is recorded
B	There is no periodic inspection but such one is desired
C	The inspecting authority must be qualified in the area
D	It is desired to have Joint or Additional Head of staff for each discipline for conducting appraisal of quality of the analysis

Contd....

	Any other: (please write/type within this box)
	What is your view on the supervision of work in units? (please write/type within this box)

59. Regarding the qualification of the supervisory staff carrying out inspection

A	He must have the corresponding academic qualification
B	He must have analytical experience in the corresponding area
C	He must have field experience for inspecting crime scene related work
D	He must have experience in offering court testimony
	Any other: (please write/type within this box)
	What is your view on the qualification of the supervisory staff? (please write/type within this box)

60. Regarding the current practice of national interaction among forensic scientists in India.

A	Sufficient
B	Insufficient since it is limited to meeting of the heads
C	Must pave the way for interaction on discipline basis
D	It must be an annual meeting with recorded scientific proceedings
	Any other: (please write/type within this box)
	What is your view on improving interaction between scientists from related fields? (please write/type within this box)

61. Regarding separate existence of GEQDs at Central/ State level.

A	They reflect the British history-vestige
B	They serve better
C	They remain the way they were started
D	They should not be separate; instead get integrated comprehensively into forensic laboratory setup
	Any other: (please write/type within this box)
	What is the reason for your stand? (please write/type within this box)

Contd....

62. Regarding a scientific professional body (Academy/ Society) for Indian forensics

A	Dormant ones may be revived
B	<i>De novo</i> Indian Society of Forensic Science may be started
C	Volunteering forensic scientists may be enthused for the purpose, with start-up fund and annual grants from Gol through nodal agency
D	There is no need for such a body
	Any other: (please write/type within this box)
	What is your view on the role(s) of such a body? (please write/type within this box)

63. Regarding a peer-reviewed Indian journal for forensic science, with potential for global reach/high impact

A	Dormant ones may be revised
B	Fresh start may be made by the Gol's nodal agency, as its publication
C	Reputed multinational publisher(s) may be enthused to bring out, by grants from Gol
D	There is no need for such a journal
	Any other: (please write/type within this box)
	What is your view on the purpose and quality of such a journal? (please write/type within this box)

64. Regarding a regulatory body (say, Council) for Indian forensics

A	Needed similar to the Medical Council of India (MCI)
B	It may be called Forensic Science Council of India
C	It will be a check on misuse of forensics
D	There is no need for a regulatory body
	Any other: (please write/type within this box)
	What is your view on the status and role(s) of such a body? (please write/type within this box)

65. Regarding non-governmental forensic institutions in India

A	They may supplement and complement Govt. labs' service and offer healthy competition
B	They may operate after accreditation
C	They may be eligible for R&D funding as public private partnership (PPP)
D	There is no need

Contd....

	Any other: (please write/type within this box)
	What is your view on entertaining/dissuading such a concept? (please write/type within this box)

66. Regarding brain mapping and narco-analysis

A	They involve human subjects, psychologists and physicians
B	They need hospital ambience and emergency preparedness
C	They are invasive
D	They should not be part of forensic laboratory setup
	Any other: (please write/type within this box)
	What is the reason for your stand? (please write/type within this box)

67. Regarding polygraph (lie detector)

A	This involves human subjects and forensic psychologists (and may involve physicians)
B	This should be part of forensic laboratory setup
C	This does not merit being in a forensic laboratory setup
	Any other: (please write/type within this box)
	What is the reason for your stand? (please write/type within this box)

68. Regarding fingerprint examination

A	It is often used in cases of theft, murder etc.
B	It can remain separate outside forensic lab umbrella
C	It should be part of forensic laboratory setup
	Any other: (please write/type within this box)
	What is the reason for your stand? (please write/type within this box)

69. Regarding adequacy (or otherwise) of forensic science laboratory-infrastructure etc.

A	Now and then, public interest litigation(PIL) is filed
B	Often court passes orders and/or strictures and/or directions.
C	Media throws spot-light
	Any other: (please write/type within this box)
	Enumerate couple of remedies (please write/type within this box)

Contd....

70. Regarding GoI-MHA-DFS's research fellowship (for Ph.D work) and Research Project Grants

A	They may be tenable at FSLs only
B	They may be tenable at FSLs as well as at other research institutions (University, etc....)
C	They may be tenable at any research institution provided forensic related work is undertaken
	Any other: (please write/type within this box)
	Do you suggest that DFS fellowship should be at par with CSIR fellowship in all terms? (Please write/ type with in this box)

71. The practice of forensic science networking and information exchange in India is

A	not in existence
B	insufficient since it is limited to meeting of the heads of the laboratories
C	to be established
D	not needed
	Any other: (please write/type within this box)
	What is your view on networking and 24x7 forensic information service? (please write/type within this box)

72. Regarding good laboratory practice in your laboratory

A	It exists as a document for the entire laboratory
B	It exists as a document at unit (division) level (example: biology)
C	It exists as a document at a few units only
D	It exists as a document for specific technique
	Any other: (please write/type within this box)
	What is your view on documenting good laboratory practices? (please write/type within this box)

73. Regarding good laboratory practices in your laboratory, it is desirable that

A	Each unit follows the GLP of the discipline it belongs
B	GLP can be adapted from reputed laboratories such as FBI
C	GLP must include the ethics corresponding to the science practiced

Contd.....

D	GLP must be similar to all the laboratories in India
	Any other: (please write/type within this box)
	What is your view on acquiring and disseminating good laboratory practices? (please write/type within this box)

74. Regarding the procedure for forwarding evidence related to your unit in your laboratory

A	There is a standard documented instruction (enclose a copy of the instruction)
B	The documented instruction has been updated last during ...(specify month and year)
C	The documented instruction has been circulated to the laboratory staff in the field (specify last date of circulation)
D	The documented instruction has been circulated to the investigation officers (specify last date of circulation)
E	There is no standard documented instruction
	Any other: (please write/type within this box)
	What is your view on documenting forwarding instructions? (please write/type within this box)

75. Regarding the procedure for forwarding evidence related to your unit in your laboratory

A	Defective packing procedure has affected results
B	Defective packing procedures are noted in the case reports
C	Instructions to rectify such defective packing procedures are issued on a case by case basis (enclose copy of the instruction issued last)
D	Instruction to rectify such defective packing procedures are circulated to all the investigating officers (enclose copy of the circular issued last)
	Any other: (please write/type within this box)
	What is your view on circulating defective packing procedures for correction? (please write/type within this box)

76. Regarding the methods available for you to verify the manner the evidence was present in the scene of crime

A	There is no way
B	You prefer to know how the evidence was discovered in the scene

Contd.....

C	Knowledge on the manner of evidence recovery enables interpretation
D	Interpretation is not done by you
	Any other: (please write/type within this box)
	What is your view on knowing how the evidence was discovered in the scene? (please write/type within this box)

77. Regarding the criticism that forensic science professionals are the only specialists who have left, framing the questions, to the non-professional viz. the investigation officer

A	It is true that professionals in the medical field frame the questions themselves
B	Leaving the responsibility of framing the questions to the investigation officer leads to routine analysis that are of less forensic significance
C	In the absence of powers to 'defer' analysis, forensic science professionals carry out analysis that are least useful
D	It is true that framing questions must be on the basis of hypothesis and must be done by a SOC forensic investigator (forensic crime scene investigator)
	Any other: (please write/type within this box)
	What is your view on remedying the criticism relating to framing questions for analysis? (please write/type within this box)

78. Regarding the utility of forensic scientist for evidence collection and framing hypothesis leading to generating the required analysis

A	The SOC forensic investigators (forensic crime scene investigators) are framing questions for analysis
B	The copy of the crime scene report by the SOC forensic investigator is enclosed to the investigation officer's report
C	Photographs taken by the SOC forensic investigator are sent to the laboratory
D	The SOC forensic investigator interacts with the laboratory staff
	Any other: (please write/type within this box)
	What is your view on SOC forensic investigator framing the questions for analysis? (please write/type within this box)

79. Regarding the training for the SOC forensic investigator in your laboratory

A	There is a manual
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Contd.....

B	There is training using instructive materials (enclose copies)
C	There is no formal training
D	An initial training and an in-service training are desirable
	Any other: (please write/type within this box)
	What is your view on the training for the SOC forensic investigator? (please write/type within this box)

80. Regarding the supervision of the SOC forensic investigator by the laboratory unit head

A	There are regular reviews (enclose copy of minutes of last two reviews)
B	There are regular inspections (enclose copy of notes for last two inspections)
C	The reports of the SOC forensic investigators are submitted to the reviewing officer (enclose copy of two reports)
D	Circulars on better utility are issued (enclose copies of last two circulars)
	Any other: (please write/type within this box)
	What is your view on the supervision for the SOC forensic investigator by the laboratory unit head? (please write/type within this box)

81. Regarding the supervision of the SOC forensic investigator by the head of the police district

A	There are regular reviews (enclose copy of minutes of last two reviews)
B	There are regular inspections (enclose copy of notes for last two inspections)
C	The reports of the SOC forensic investigators are submitted to the reviewing officer (enclose copy of last two reports)
D	Circulars on better utility are issued (enclose copies of last two circulars)
	Any other: (please write/type within this box)
	What is your view on the supervision for the SOC forensic investigator by the head of police district? (please write/type within this box)

82. Regarding the supervision of the SOC forensic investigator by the head of the regional laboratory

A	It ensures better scientific input
B	It ensures better utility by the investigation officers
C	It ensures better review of the investigation process
D	It ensures better popularization among the investigation process
	Any other: (please write/type within this box)

Contd.....

	What is your view on the authority to supervise the SOC forensic investigator? (please write/type within this box)
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83. Regarding the supervision of the SOC forensic investigator by the head of the police district

A	It ensures better scientific input
B	It ensures better utility by the investigation officers
C	It ensures better review of the investigation process
D	It ensures better popularization among the investigation process
	Any other: (please write/type within this box)
	What is your view on the authority to supervise the SOC forensic investigator? (please write/type within this box)

84. Regarding the responsibilities of the SOC forensic investigator in your laboratory

A	He/she is responsible for recognizing the evidence
B	He/she is responsible for recording the manner the evidence was found
C	There are circulars of instruction (enclose copies of last two instructions)
D	He/she is responsible for proving the presence of the evidence in the scene of crime thereby eliminating allegation on 'planting'
	Any other: (please write/type within this box)
	What is your view on the roles of the SOC forensic investigator? (please write/type within this box)

85. Regarding the responsibilities of the SOC forensic investigator in proving the presence of the evidence in the scene of crime

A	He/she is not responsible for proving the presence of evidence
B	Proving the presence of the evidence in the scene of crime is investigation officer's responsibility
C	He/she is responsible for assisting in identifying and collecting the evidence
D	Proving the presence of the evidence at the scene of crime does not concern analysis in the laboratory
	Any other: (please write/type within this box)
	What is your view on the roles of the SOC forensic investigator in proving the presence of evidence in the scene of crime? (please write/type within this box)

Contd.....

86. Regarding the responsibilities of the SOC forensic investigator in reconstructing the scene of crime

A	He/she is responsible for reconstructing the scene of crime
B	Reconstructing the scene of crime is investigation officer's responsibility
C	Reconstructing the scene of crime is the responsibility of both
D	Reconstructing the scene of crime is the responsibility of the eyewitnesses
	Any other: (please write/type within this box)
	What is your view on the roles of the SOC forensic investigator in reconstructing the scene of crime? (please write/type within this box)

87. Regarding crime reconstruction

A	It is done by the investigation officer
B	It is done by the autopsy surgeon
C	It is done by eye witnesses
D	It is done by SOC forensic investigator
	Any other: (please write/type within this box)
	What is your view on the authority to reconstruct the scene of crime? (please write/type within this box)

88. Regarding crime reconstruction

A	Police have sought assistance by a team from the laboratory (enclose copies of last two reports)
B	Police have sought assistance by a senior official from the laboratory
C	It is done by visiting the crime scene
D	Other authorities (judge, commission head, govt., etc) have sought reconstruction
	Any other: (please write/type within this box)
	What is your view about the authority to request to reconstruct the scene of crime? (please write/type within this box)

89. The additional techniques/methodologies applicable to collection of evidence from crime scene that qualify as 'state of the art' on international standard and desired by you

A(please specify)
B(please specify)

Contd.....

C(please specify)
D(please specify)
	Any other: (please write/type within this box)
	What constraints you face in reaching the 'state of the art' status? (please write/type within this box)

90. Regarding the evidence collection and analysis processes in your laboratory

A	Evidence collection processes are unsatisfactory
B	Evidence analysis processes are satisfactory
C	Evidence analysis processes need to be updated by you
D	Problems in the evidence collection processes can't be remedied
	Any other: (please write/type within this box)
	What is your view on improving evidence collection processes? (please write/type within this box)

91. The evidence collection responsibility is that of the investigation officer

A	leads to legally authorised collection
B	leads to improper collection
C	leads to improper packing/ preservation
D	does not provide description of manner the evidence was seen at the scene of crime
	Any other: (please write/type within this box)
	What is your view on entrusting the evidence collection responsibility to the SOC forensic investigator? (please write/type within this box)

92. Entrusting the evidence collection responsibility to the investigation officer

A	leads to failure to incorporate recent advancements in collection procedure/ technique
B	leads to failure to recognize relevant evidence
C	leads to forwarding evidence without corresponding control samples
D	leads to improper utilization of laboratory analytical service
	Any other: (please write/type within this box)
	What is your view on the evidence collection responsibility of the investigation officer? (please write/type within this box)

Contd.....

93. Scientific record of the manner in which evidence was found at the scene

A	enables interpreting the value of the evidence
B	counters allegation on 'planting' evidence
C	enables to give correct testimony even after long gap of time
D	enables forwarding the record (photograph or sketch), indicating the manner, to the lab
	Any other: (please write/type within this box)
	What is your view on obtaining the record of the manner the evidence was found (at SOC) before analyzing the evidence? (please write/type within this box)

94. Integration of the working of different forensic laboratories in India

A	Can bring synergy in functioning
B	Can be achieved by establishing repository for technical information(post-judgement)
C	Can be tried through interactive voice response system and through on-line/hot-line discussion
D	Can be brought about by annual minute-able, discipline-wise brainstorming Workshops
	Any other: (please write/type within this box)
	Why should there be such an integration? (please write/type within this box)

95. For synergy among Indian forensics, as expected by the Society, forensic scientists and establishments

A	should shed their (founded/ unfounded) egoism
B	should happily entertain knowledge and criticism from the clan
C	should spontaneously disseminate/ share their scientific stock with the clan
D	should contribute time, mind and efforts towards integrating network
	Any other: (please write/type within this box)
	What role do you want to play in such an exercise? (please write/type within this box)

96. Regarding the knowledge imparted to M.Sc forensic science candidate in core subjects

Contd.....

A	It is less than corresponding master (core subject) courses
B	It is equal to corresponding master (core subject) courses
C	It is higher than the corresponding master (core subject) courses
D	It can't be compared
	Any other: (please write/type within this box)
	What is your preference with reference to the knowledge required for MSc (FS) candidates? (please write/type within this box)

97. Regarding the knowledge desirable for M.Sc forensic science pass-outs, it must be

A	less than corresponding master (core subject) courses
B	equal to corresponding master (core subject) courses
C	higher than the corresponding master (core subject) courses
D	not comparable
	Any other: (please write/type within this box)
	What is your preference with reference to the knowledge desirable for M.Sc forensic science pass-outs? (please write/type within this box)

98. Regarding attracting master candidates in core sciences towards forensic science profession

A	A regular paper on corresponding forensic application such as forensic chemistry for chemistry core or forensic biology for biology (Zoology or Botany) can be included in the masters second year
B	A dissertation on forensic application can be included
C	Students can be encouraged to choose projects on forensic related titles
D	Students can be taken on tour to forensic science laboratories
	Any other: (please write/type within this box)
	What is your preference with reference to attracting master candidate in core sciences towards forensic science profession? (please write/type within this box)

99. Regarding the role of NICFS (Delhi) as an educational institution

A	It can encourage research leading to Ph.D degree in forensic science
B	It can encourage research in applied areas of forensic science
C	It can foster research projects of national level interest
D	It can look after in-service training responsibilities
	Any other: (please write/type within this box)
	What is your preference regarding the future role of NICFS? (please write/type within this box)

Contd.....

100. The initial popularity of forensic science among the public can be attributed to the contribution of

A	Sir Arthur Conan Doyle
B	M.J.B. Orfila
C	Edmond Locard
D	Paul Kirk
	Any other: (please write/type within this box)
	What is your opinion with reference to popularity of forensic science among the public? (please write/type within this box)

101. The present popularity of forensic science among the students can be attributed to

A	Crime Scene Investigation(CSI) series and the like in the media
B	Edmond Locard
C	Paul Kirk
D	Sir Arthur Conan Doyle
	Any other: (please write/type within this box)
	What is your opinion on the present popularity of forensic science among the students? (please write/type within this box)

102. Regarding the element of reality in CSI series etc.

A	They are all real cases
B	They reflect real analytical procedures
C	They are built up stories
D	They seek to solve cases within hours for attracting audience
	Any other: (please write/type within this box)
	What is your opinion regarding the element of reality in CSI series? (please write/type within this box)

103. The attraction of students towards forensic science courses is based on

A	Factual demands
B	Infatuation due to CSI series etc.
C	Attractive advertisements from universities and other educational institutions
D	Advertisements from forensic science laboratories
E	Availability of admission for forensic science courses only
	Any other: (please write/type within this box)
	What is your opinion on the attraction of students towards forensic science

Contd.....

	courses? (please write/type within this box)
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104. The urge among students to choose a subject for study is influenced by

A	Popularity of the subject
B	Employment opportunity for that subject
C	Pecuniary benefit relating to practicing that subject
D	Eagerness for knowledge sake
	Any other: (please write/type within this box)
	What is your opinion on the urge among students to choose a subject for study? (please write/type within this box)

105. Forensic science laboratories recruit

A	only forensic science post graduates
B	only core science post graduates
C	either forensic science or core science post graduates
D	preferably core science post graduates
	Any other: (please write/type within this box)
	What is your preference of recruitment in FSLs? (please write/type within this box)

106. Regarding the scope for employment for MSc (FS) candidates in forensic science laboratories

A	There has been no study in India
B	It is generally limited
C	It depends on the vacancy arising after retirement
D	There is no scope
	Any other: (please write/type within this box)
	What is your opinion regarding the scope for employment for MSc (FS) candidates? (please write/type within this box)

107. Regarding the career of forensic science pass outs in India

A	There has been no study
B	Most of them are employed in forensic science laboratories
C	They are seldom employed in forensic science laboratories
D	Most are carrying out private practice
	Any other: (please write/type within this box)
	What is your opinion regarding the career of forensic science pass outs in India? (please write/type within this box)

Contd.....

108. Regarding the career of forensic science pass outs in India

A	They can compete with their core science counterparts for career as scientist in national laboratories
B	They can seek employment as teachers in schools
C	Self employment as private practice
D	They can seek employment as lecturers in universities teaching forensic science
	Any other: (please write/type within this box)
	What is your opinion regarding the prospects of forensic science pass outs in India?? (please write/type within this box)

109. Regarding expansion of forensic science laboratories, the demand comes from

A	increasing case inflow
B	decentralization of the laboratory
C	increase in the number of unemployed forensic science graduates
D	formation of new units or divisions in tune with recent trends
	Any other: (please write/type within this box)
	What is your opinion with reference to the demand for expansion of forensic science laboratories? (please write/type within this box)

110. The factors inducing government and private universities to start forensic science course include

A	The urge among the students to apply
B	Knowledge on the demand of the post graduates for employment
C	Availability of faculty having professional and educational qualifications
D	Availability of infrastructure for advanced research
	Any other: (please write/type within this box)
	What is your opinion on the factors inducing universities to start forensic science course? (please write/type within this box)

111. The motives of government and private universities to start a course in forensic science include

A	Monetary benefits
B	Spirit of competition with international universities
C	Apparent employment opportunities
D	Propagation of knowledge
	Any other: (please write/type within this box)

Contd.....

	What is your opinion on the motives of government and private universities to start a course in forensic science? (please write/type within this box)
--	---

112. Regarding the fate of the forensic science pass outs

A	Universities have conducted studies
B	Governments have conducted studies
C	Forensic science laboratories have conducted studies
D	No one has studied their fate
	Any other: (please write/type within this box)
	What is your opinion regarding the fate of the forensic science pass outs? (please write/type within this box)

113. Regarding the training imparted to fresh recruits in forensic science laboratories

A	M.Sc forensic science post graduates do not require training
B	Core science post graduates do not require training
C	M.Sc forensic science post graduates require training
D	Core science post graduates require training
	Any other: (please write/type within this box)
	What is your opinion regarding the training needed for fresh recruits in forensic science laboratories? (please write/type within this box)

114. Give flow chart of your establishment's (Administrative) organizational structure.

115. Give number of posts sanctioned in the structure.

116. Give number of vacant posts in the structure.

117. Give flow chart of your establishment's (Scientific) organizational structure.

118. Give number of posts sanctioned in the structure.

119. Give number of vacant posts in the structure.

120. Give flow chart for your establishment's (scientific unit / division wise) organizational structure.

121. Give number of posts sanctioned in the structure.

Contd.....

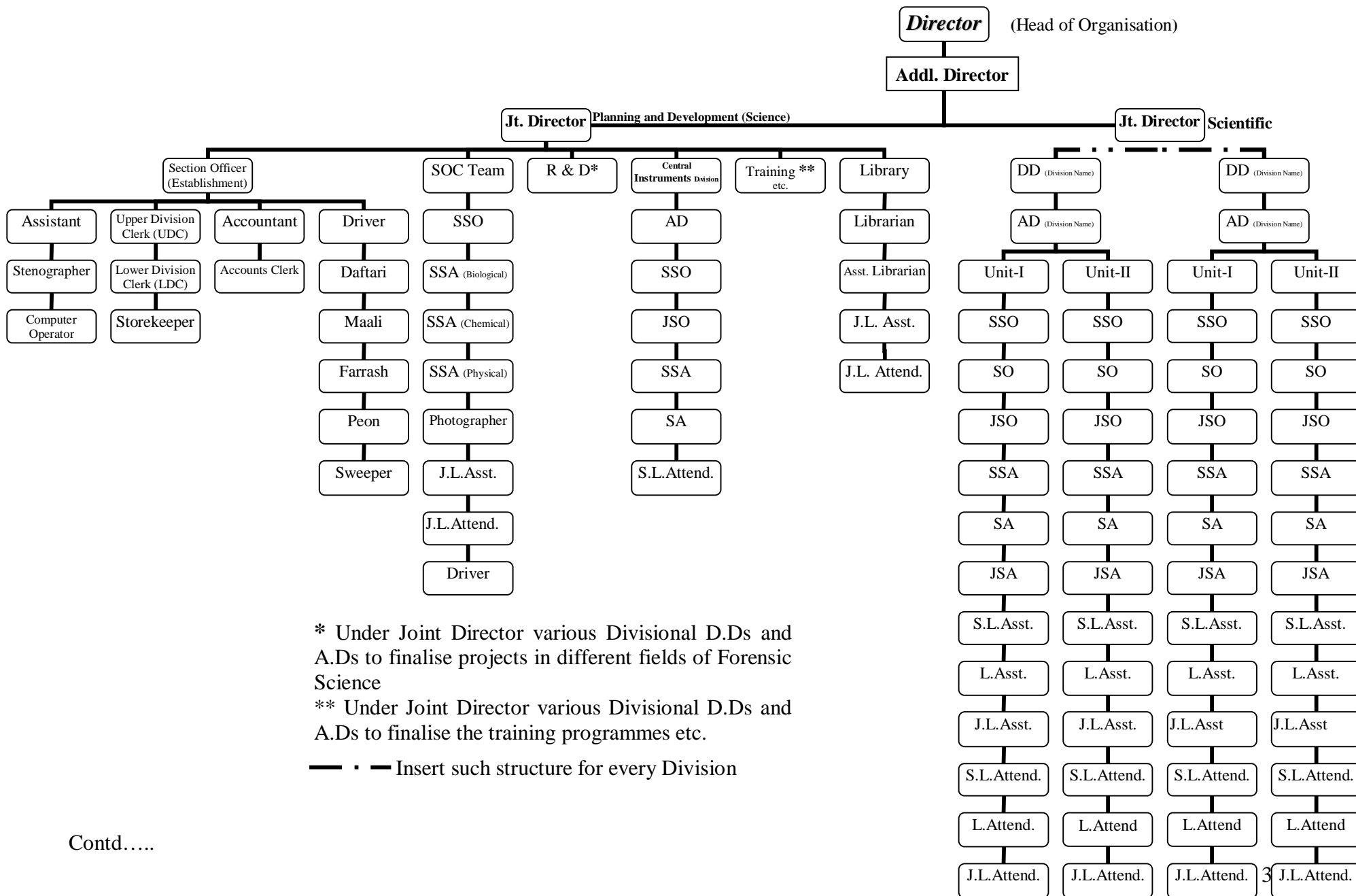
122. Give number of vacant posts in the structure.

123. Will you prefer the following chart - models for your establishment?

MODEL- CHARTS ARE APPENDED HEREUNDER

Contd.....

Model Chart for organizational structure of Main Forensic Science Laboratory



* Under Joint Director various Divisional D.Ds and A.Ds to finalise projects in different fields of Forensic Science

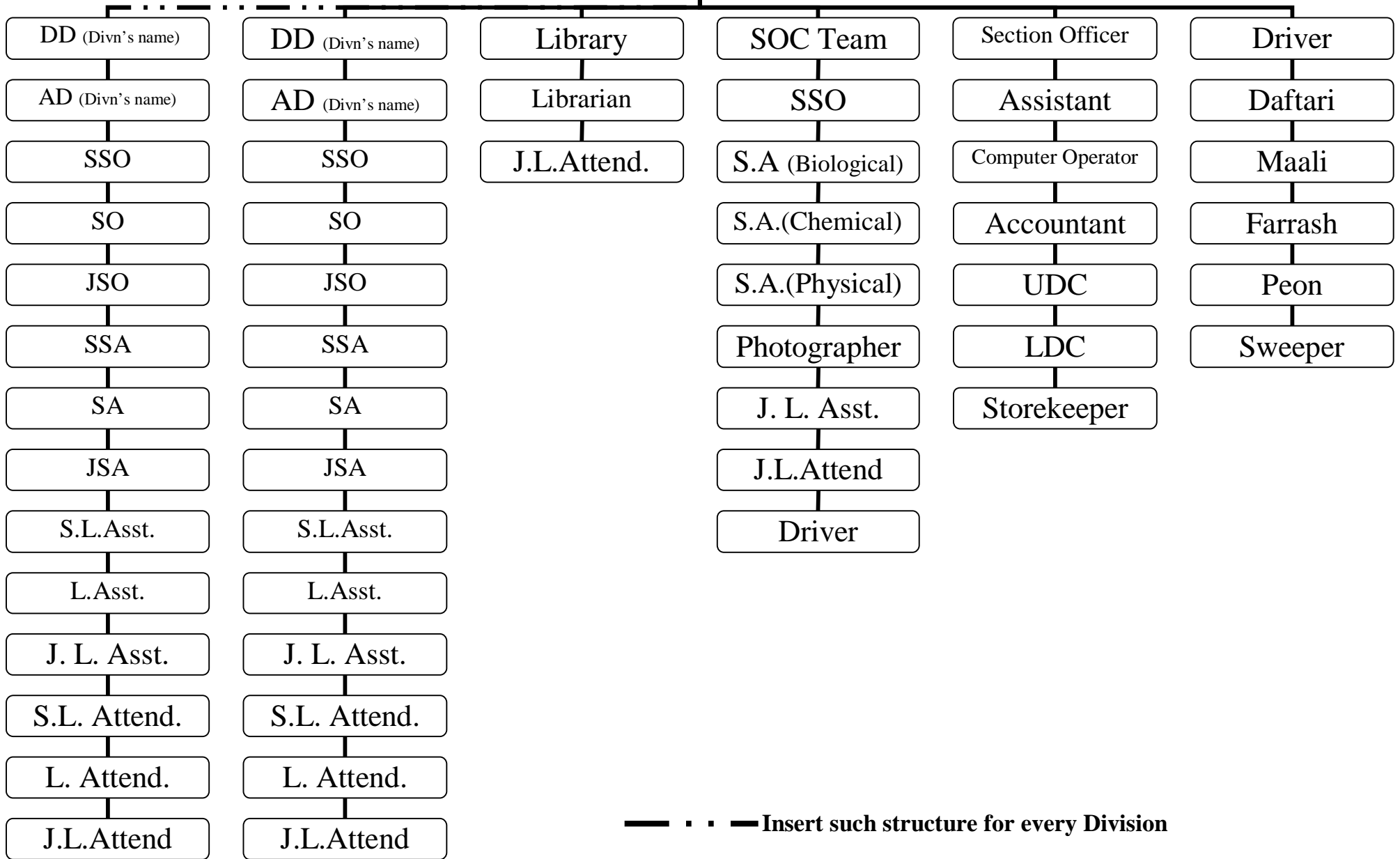
** Under Joint Director various Divisional D.Ds and A.Ds to finalise the training programmes etc.

--- · --- Insert such structure for every Division

Contd.....

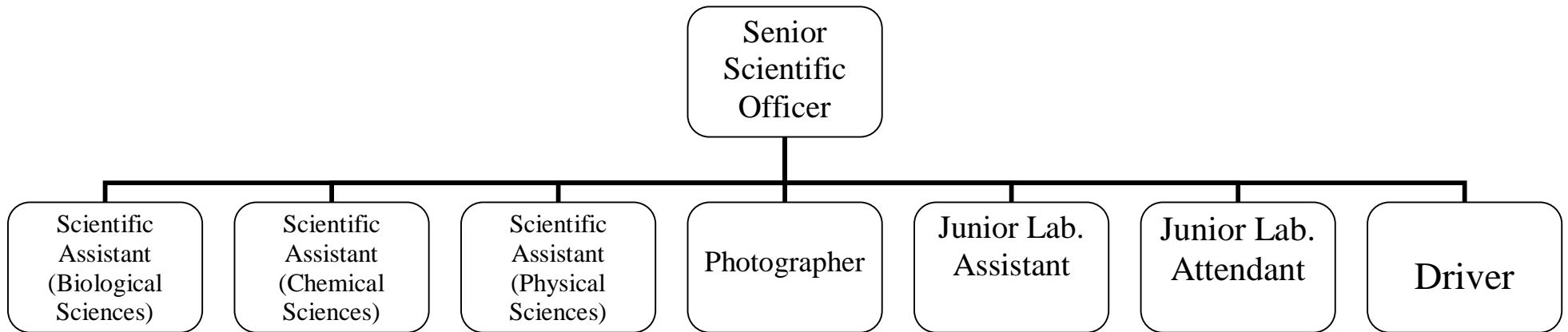
Model Chart for organizational structure of *Regional Forensic Science Laboratory*

Jt. DIRECTOR



— . . — **Insert such structure for every Division**

Model Chart for organizational structure of Mobile Forensic Science Laboratory



Contd.....

124. Indicate in the model-charts, number of posts required by you at various levels.
Or else, give here your own model-charts and indicate therein the number of posts required.
[In any case, reflect those numbers appropriately in Tables - 1, 2 and 3]
125. Enumerate number of units required as per work load in each division at your organization.
126. Mention constraints in getting vacant posts filled in your organization.
127. Mention constraints in getting sanction for extra staff required in your organization.
128. Suggest some remedies with respect to the preceding two problems.
129. Mention any other option for delivering the desired results more effectively.
130. Identify the gaps existing in between posts affecting normal promotional avenues in your organization.
131. Suggest changes (in bullet points) to bridge such gaps.
132. Your organization needs / does not need changes in terms of: - (a) recruitment; (b) pay scale; (c) promotion procedure; (d) career progression scheme; (e) service conditions; and (f) human resource motivation.
133. If there is need, explain 'why', and also offer your suggestion to bring in positive change.
134. Are you in favour of scientific institution - models like DRDO and ISRO?
135. For effective utility of field forensic investigator at the crime scene level, legal provisions are desirable in Cr. P. C. so that the IOs may

A	request field forensic service during the course of investigation
B	request field forensic service in death investigations
C	file crime scene forensic report in the court of law wherever required
	Any other: (please write/type within this box)
	What is your preference in the above regard? (please write/type within this box)

Contd.....

136. Regarding opinion of experts (vide Indian Evidence Act)

A	Section 45 defining expert in Indian Evidence Act does not cover in specific words all forensic experts signing the reports
B	Section 45 A does not cover electronic (cyber/computer/digital) evidence forensic scientists
C	Forensic science and forensic experts should be added to the existing disciplines and experts in section 45 and section 45 A
	Any other: (please write/type within this box)
	Do you think that sections 45 and 45 A do not require any amendment? (please write/type within this box)

137. Use of forensic expert report by the court

A	All forensic experts signing reports are not explicitly covered under 293 Cr. P.C.
B	GEQDs, Dy.GEQDs and AGEQDs are also not covered
C	All forensic experts of CFSLs (including Document experts) and of State/UT FSLs issuing reports should be included under 293 Cr. P.C.
	Any other: (please write/type within this box)
	Do you think Section 293 Cr. P.C. does not require any amendment? (please write/type within this box)

138. Regarding the Information Technology Act (2000)

A	Forensic I.T. work is not covered in this Act
B	Forensic I.T. experts are also not covered specifically in section 79 A of this Act
C	Electronic evidence – related forensic experts should be explicitly included under section 79 A of this Act.
	Any other: (please write/type within this box)
	Do you think that Sec. 79 A of I.T. Act does not require any amendment? (please write/type within this box)

139. Regarding the Biological Diversity Act (2002)

A	Biodiversity related work / offence (wildlife, bioprospecting, biosurvey ,biopiracy etc) falls under the purview of forensic science
B	A separate division in Forensic Science Laboratory is needed for this work.

Contd.....

C	Forensic work and forensic experts should be covered under this Act relating to its Sections 3,4,6,7, and 24 r/w Sec. 55,56,57 and 58
D	Resolution of Intellectual Property Rights (IPR) – disputes is enabled by forensic work / experts.
	Any other: (please write/type within this box)
	Give reason for separate division requirement (please write/type within this box)

140. Regarding the Right to Information (RTI) Act (2005)

A	Requests for information forwarded from the office of the Information Commissioner are regularly received/replied by your organization
B	Information under RTI Act is often sought from your organization pertaining to case work
C	Individuals often request your organization for information under RTI Act, pertaining to aspects other than case work
	Any other: (please write/type within this box)
	Should information pertaining to scientific activity of forensic science laboratories / institutions be exempted from the purview of RTI Act ? (please write/type within this box)

141. At present scientific investigation is considered accomplished when

A	portable items such as blood stained earth and control earth are sent to FSL
B	stains swabbed from immovable objects along with control samples are sent to FSL
C	observations on portable items and immovable items are recorded and interpreted at the crime scene
D	crime scene reconstruction is suggested
	Any other: (please write/type within this box)
	What is your preference in the above regard? (please write/type within this box)

142. The utility of forensic science at the crime scene level is to

A	pin point the accused
B	provide lead in the investigation
C	reconstruct the crime
D	fulfill the administrative formalities

Contd.....

	Any other: (please write/type within this box)
	What is your preference in the above regard? (please write/type within this box)

143. Among the cases that are convicted, forensic science utility contributes to

A	less than 10 %
B	10 to 25 %
C	25 to 50 %
D	more than 50 %
	Any other: (please write/type within this box)
	What would you like it to be? (please write/type within this box)

144. Regarding arriving at the truth

A	Police officer relies on witness statement
B	Prosecutor relies on police officer's report
C	Judge relies on arguments by the opposing counsels
D	Field forensic investigator relies on physical evidence
	Any other: (please write/type within this box)
	What is your preference in the above regard? (please write/type within this box)

145. Regarding forensic science awareness among Police; it is

A	excellent
B	very good
C	good
D	poor
	Any other: (please write/type within this box)
	Give one reason for your choice (please write/type within this box)

146. Mention four constraints that dilute forensic science awareness among Police (within the respective boxes)

A	
B	
C	
D	

Contd.....

147. Suggest four ways to improve forensic science awareness among Police (within the respective boxes)

A	
B	
C	
D	

148. Regarding forensic science awareness among Judiciary; it is

A	excellent
B	very good
C	good
D	poor
	Any other: (please write/type within this box)
	Give one reason of your choice (please write/type within this box)

149. Mention four constraints that dilute forensic science awareness among Judiciary (within the respective boxes)

A	
B	
C	
D	

150. Suggest four ways to improve forensic science awareness among Judiciary (within the respective boxes)

A	
B	
C	
D	

151. Regarding forensic science awareness among Prosecutors & other lawyers; It is

A	excellent
B	very good
C	good
D	poor
	Any other: (please write/type within this box)
	Give one reason for your choice (please write/type within this box)

Contd.....

152. Mention four constraints that dilute forensic science awareness among Prosecutors and other lawyers (within the respective boxes)

A	
B	
C	
D	

153. Suggest four ways to improve forensic science awareness among Prosecutors & other lawyers (within the respective boxes)

A	
B	
C	
D	

154. Regarding forensic science awareness among CBI / NIB / Customs /Banks/Army etc; it is

A	excellent
B	very good
C	good
D	poor
	Any other: (please write/type within this box)
	Give one reason for your choice (please write/type within this box)

155. Mention four constraints that dilute forensic science awareness among CBI / NIB / Customs /Banks/Army etc (within the respective boxes)

A	
B	
C	
D	

156. Suggest four ways to improve forensic science awareness among CBI / NIB / Customs /Banks/Army etc (within the respective boxes)

A	
B	
C	
D	

Contd.....

157. Is your organization accredited?

158. If not, give reason if any

159. If accredited, give nut-shell note on;

- a) International/ National.....?
- b) Organization as a whole / Division(s).....?
- c) Other pertinent information

160. Impact of accreditation on your organization's enhanced requirement with respect to

- a) human resource
- b) infrastructure

(Please also ensure that your answer gets reflected appropriately in Tables 1,2 and 3 attached herewith).

Contd.....

SUMMARY - SET

<p><i>1. Please give five specific points for each of the following, in the context of crimes and external / internal threats to homeland security, involving cyberspace, bombs, biological & chemical agents, currency and communication</i></p>	
<p>Technology (equipments/ facilities etc) augmentation</p>	
<p>Training requirements (inland/ abroad)</p>	
<p>Focussed R&D thrust areas</p>	
<p>Data repository for pooling & sharing</p>	
<p>National net-working for 24x7 forensic help-line</p>	
<p>Swift action emergency forensic teams</p>	
<p>Prophylactic/ proactive / preventive forensics</p>	

2. In terms of employability at and performance in F.S.L., compare [by ticking the appropriate box in a five grade scale : namely, P (Poor), A (Average), G (Good), Vg (Very good) and E (Excellent)]

	P	A	G	Vg	E
i) Person with B.Sc. (Forensic Science), and M.Sc. (Forensic Science)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii) Person with B. E. / B. Tech. (core subject), and M.Sc. (Forensic Science) / PG Diploma in Forensic Science	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii) Person with B.Sc. (core subject), and M.Sc. (Forensic Science)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iv) Person with M.Sc. / M.E. / M.Tech. (core subject)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
v) Person with M.Sc. (core subject), and M.Sc. (Forensic Science) / PG Diploma in Forensic Science	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
vi) Person with M.E. / M.Tech (core subject), and M.Sc. (Forensic Science) / PG Diploma in Forensic Science	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Should there be a Forensic Science Council of India (like the Medical Council of India) to regulate education, ethics etc.?

(Please tick \surd one)

[Yes] [No]

4. Should there be national uniformity in the regulations, syllabi, etc for all diploma, degree and PG courses of Forensic Science?

[Yes] [No]

5. Should there be national uniformity in forensic science service – delivery (from scene of crime/ occurrence through analysis report/ opinion to expert testimony) for proving innocence/ guilt in criminal, civil and regulatory justice systems ?

[Yes] [No]

6. Is time ripe for an all India service

[Yes] [No]

Contd.....

pattern for forensic science ?

7. Would you like a model like DRDO ?

[Yes] [No]

8. Or, would you recommend Indian Forensic Science Service on par with other Union Civil Services (IFS, IAS, IPS....etc.)?

[Yes] [No]

9. Can the Directorate of Forensic Science (GoI, MHA) be elevated to Department of Forensic Science under MHA?

[Yes] [No]

10. The CFSL(CBI) at Delhi may be brought under the proposed Dep't of Forensic Science

[Yes] [No]

11. The Central Fingerprint Bureau (CFPB) component of the NCRB may be brought into the above proposed CFSL (Delhi).

[Yes] [No]

12. The GEQD set-up at Shimla may be incorporated and enlarged into a full fledged CFSL

[Yes] [No]

13. The GEQD set-up at Kolkata and Hyderabad may be incorporated into the respective CFSLs.

[Yes] [No]

14. The Forensic Science Wing at the SVP National Police Academy (Hyderabad) may be extricated and groomed into National Forensic Science Academy (in the lines of other National Academies for All India Civil services, Defense forces...)

[Yes] [No]

15. The forensic science component of NICFS (Delhi) may be shed down.

[Yes] [No]

16. In a rapid time bound manner, all the forensic establishments in India (including the FSLs, CELs, FP Bureaux of UTs / States) may be brought under the Dep't of Forensic Science (MHA-GoI)

[Yes] [No]

Contd.....

17. All competent forensic establishments (and their scientists) may be enthused to undertake R & D work ; and, the concept of discipline - based “Centres of Excellence” for CFSLs may be dropped. [Yes] [No]

18. In the changing scenario, there may be one nodal CFSL for each of :-

- a) Proficiency testing
 - b) Standard Operating Procedures
 - c) Standard Reference Materials
 - d) Accreditation
 - e) Certification and re-certification
- [Yes] [No]

19. Deputation - mode filling of scientific posts may be dispensed with [Yes] [No]

20. More and better Awards and other incentives are needed for enhancing HR morale [Yes] [No]

21. Intra-unit Weekly Group Discussions, Journal Club Meetings etc. are needed for optimal scientific ambience [Yes] [No]

22. Bench-marks for scientific auditing/ accountability/ performance appraisal of forensic scientists and Forensic Science Laboratories need to be identified and implemented [Yes] [No]

Table - 1: Infrastructure - evidence type - qualification and training																
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
S.No.	Evidence type	Analysis type	Name of unit in which it is presently analyzed (please write/type below - if there is no facility, indicate as "none")	Name of the unit in which you desire it to be analysed (please write/type below)	Equipments that are available presently	Equipments that are required additionally (give reasons) (indicate fund required in INR)	Methodology for analysis: Following the current manual	Methodology for analysis: Following new guidelines in journals or other sources	Methodology for analysis: Following guidelines that have been presented in conferences	Methodology for analysis: Following guidelines that are indigenous to the lab but not reported	Methodology: not available	Space requirement (carpet area in sq. ft.)	Qualification of the present staff	Qualification that you desire as suitable	Training for the present staff: adequate ; lacking	Training that you desire as suitable with location where it is available
1	Fire arms, ammunition, fired/misfired cartridges; bullets; pellets, wads; gunshot residues; clothing etc.	Functionality, factory/country made, linkage, identification														
2	Stains/swab of body fluid/bio specimen (blood, semen, vaginal secretion, saliva, urine,faeces etc) on different matrices	Stain pattern, detection, confirmation, individualisation														
3	Hairs, nails, bones (intact/pieces/ burnt) with/without antemortem x-ray	Finding damage, cut, pulled etc ; tissue - trace, origin, individualisation														
4	Soil/earth, fiber, wood, plant products/pollen	Comparison, origin, tissue traces														

5	Cloth, tools	Tear/cut identification, linkage and comparison															
6	Diatom	For diagnosing drowning															
7	Skull, with/without photograph or antemortem x-ray; pelvis	Sex, age, facial reconstruction (2D/3D/computerised); superimposition /individualisation															
8	Photographs or surveillance camera images	Comparison with previous photographs (photo to photo comparison)															
9	Witness memory based portrait building	Photo-fit (conventional or software based)															
10	Lip & ear print	Individualisation															
11	Foot, footwear and innersole prints, tyre marks, skid marks	Individualisation ; type/model and speed of vehicle															
12	Currency/envelope, clothing/ handwash	Flourescent dyes, identification of phenolphthalein and its degradation products															

13	Items from vitriolage cases	Detection of acid, alkali														
14	Items from cases of arson, self immolation, dowry deaths (inflammable products, petroleum products etc)	Identification of residual products														
15	Building/bridge material, cement etc	Examination for conformity to standards/ specifications														
16	Petroleum and cosmetic products	Examination for conformity to standards/ specifications														
17	Fast moving consumer goods (food, beverages, soap, fan, motors, etc)	Examination for trade mark violation														
18	Paints	Chemical composition, comparison in hit and run cases														
19	Coin and currency notes	Examination for counterfeit														
20	Idols or their portions, jewels, zari etc	Metal composition														
21	Documents (intact, torn, charred etc); writing on immovable surface	Comparison of writing, signatures, deciphering contents, erasure, alteration etc; analysis of paper, ink, writing material, age														

22	Typed, Printed (Electrostatic/laser /dot matrix) etc. Documents; impressions and seals	Comparison for common origin														
23	Explosives, components and exploded residues; incendiaries; pyrotechnique material, circuitry material	Identification of components of explosive device; analysis and linkage of exploded residues; evaluation of source and tagging, reconstruction of post- blast scene and IED.														
24	Plant products (bhang, ganja, charas, opium, alkaloids etc.); Psychotropic substances; material (lab ware, syringes, packets etc.)	Analysis for illicit production and identification and quantification of narcotics & psychotropic substances														
25	Stamp paper, revenue stamps	Counterfeit examination														
26	Camera, film, photo, negatives	Photo, photo to photo comparison and linkage with camera														
27	Broken objects	For physical match														

28	Erased numbers	Identifying the original numbers																
29	Tool marks	Comparison for common origin																
30	Electrical meters and security seals	Evidence of tampering																
31	Paint flakes/ smear; glass pieces and fractured glass	Comparison for common origin and finding direction of force																
32	Battery and related automobile items	Establishing accidental/ auto mobile fire																
33	Instruments like phone etc	Working condition																
34	Boilers , cylinders etc.	Analysis on bursts																
35	Damaged electrical appliance, charred wires, switch boards, fuse carriers, etc	Electrical cause of fire																
36	Bottles/sachets/packets/plastic canes etc, containing liquor	Identification of alcoholic liquors and spurious substances																
37	Fresh samples/stains of blood, semen, saliva, tissue, bones, foetus etc.	DNA typing, individualisation and paternity solution																
38	Human/animal viscera, blood, urine, vomitus, stomach wash etc	Detection of poison/ drugs/ alcohol, and quantification																
39	Uterus as a whole and rectal tissues	Detecting local abortifacient																

40	Plastic bags, ropes, cords, wires etc	Comparison for origin														
41	CD, Cassettes etc.	Voice print analysis														
42	Hardware/software	Cyber crime/digital forensics														
43	Visible and latent prints	Finger print examination														
44	Bite marks, filled teeth, dental x-ray, denture	Odontological examination														
45	Human subject (suspect/witness)	Polygraph														
46	Human subject (suspect/witness)	Brain mapping														
47	Human subject (suspect/witness)	Narco analysis														
48	Other evidences (Please mention)	Relevant/innovative analysis (please mention)														

Table - 2: Infrastructure - work load and end user utility

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
S.No.	Name of the unit in the lab	Number of cases reported during the past five years (2005-2009)	Current pendency	Agency seeking clearance of pendency (Example: Investigating Officer; Head of the Department; Government; Any other; none)	Reason for seeking clearance of pendency (Example: for investigation; for court trial; administrative; any other)	Number of analyzed cases in which report and analyzed articles have not been taken delivery of	Current staff strength	Additional staff required (give reasons)	Number of analysts involved in each case	Number of signatories in each report	Cadre of the supervisory analyst signing the report	Any change you desire ?	Utility appraisal: Number of cases in which laboratory finding was 'inconclusive'	Utility appraisal: Number of cases in which laboratory finding differed from the history given by the investigating officer	Utility appraisal: Number of cases in which the finding that 'differed' was followed up by the investigator	Utility appraisal: Number of cases in which the prosecutor had pre-trial discussion with the analyst	Utility appraisal: Number of cases in which the analyst testified in courts	Utility appraisal: Number of cases in which the judgment copies have been received in the laboratory	Utility appraisal: Number of cases in which the findings have been published
1	Anthropology																		
2	Ballistics																		
3	Biology																		
4	Brain Mapping																		
5	Chemistry																		
6	Computer Forensics/Digital Forensics																		
7	Documents																		
8	Excise																		
9	Explosives																		
10	Narco analysis																		
11	Narcotics																		
12	Photography																		
13	Physics																		
14	Polygraph																		

15	Prohibition																		
16	Serology/DNA																		
17	Toxicology																		
18	Voice Identification																		
19	Instruments																		
20	R & D																		

Table - 3: Staff pattern							
A	B	C	D	E	F	G	H
S.No.	Cadre: A, B etc.	Designation (present)	Scale of pay	Number of posts	Place of deployment (Example: HQ Lab, Regional labs, Mobile labs, District labs etc.)	Re-designation desired, if any	Reason for re-designation
1		Director					
2		Addl. Director					
3		Jt. Director					
4		Dy. Director					
5		Asst Director					
6		Sr. Sci. Officer					
7		Sci. Officer					
8		Jr. Sci. Officer					
9		Librarian					
10		Asstt Librarian					
11		Sr. Sci. Assistant					
12		Sci. Assistant					
13		Jr. Sci. Assistant					
14		Photographer					
15		Sr. Lab. Assistant					
16		Lab. Assistant					
17		Jr. Lab. Assistant					
18		Sr. Lab. Attendant					
19		Lab. Attendant					
20		Jr. Lab Attendant					
Admn. Staff							
21		Section Officer					
22		Assistants					

23		Stenographer Grade - I					
24		Stenographer Grade - II					
25		Stenographer Grade - III					
26		U.D.C. (Upper Division Clerk)					
27		L.D.C. (Lower Division Clerk)					
28		Computer Operater					
29		Driver					
30		Daftari					
31		Mali (Gardener)					
32		Farrash					
33		Peon					
34		Sweeper					

Table -3a: Expenditure (in INR) on training, research and library

A	B	C	D	E	F	G
S.No.	Expenditure on training (2005-2009)	Expenditure on training (2009)	Expenditure on research (2005-2009)	Expenditure on research (2009)	Expenditure on library (2005-2009)	Expenditure on library (2009)
1						
2						
3						
4						
5						
6						

Table - 4: Training and its utility

A	B	C	D	E	F	G	H	I	J	K	L	M	N
S.No.	Name of the staff	Name of the first training with dates	Number of years of experience in the area corresponding to the first training	Number of reports signed in the area corresponding to the first training	Name of the second training with dates	Number of years of experience in the area corresponding to the second training	Number of reports signed in the area corresponding to the second training	Name of the third training with dates	Number of years of experience in the area corresponding to the third training	Number of reports signed in the area corresponding to the third training	Please add additional columns if more than three trainings have been undergone by the same staff	Present unit where the staff is working	Give comment on the relevance of training(s) to the present job requirement
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													

Table- 7 : SOC study, reconstruction and usefulness						
A	B	C	D	E	F	G
Sl. No.	Year	No. of cases of SOC study by lab team	Designation of the Head of the SOC team	Designation of other officials in the team	Percentage of cases in which the SOC finding was useful for investigation	Remarks
1	2005					
2	2006					
3	2007					
4	2008					
5	2009					

Table- 8 : Time frame for analysis and reporting

A	B	C			D
S.No.	Name of the unit in the lab	Turn-around time required (number of days, approximately)			Remarks
		Classical/routine analysis	New problem analysis	Innovation (in process, procedure,device)-involved analysis	
1	Anthropology				
2	Ballistics				
3	Biology				
4	Brain Mapping				
5	Chemistry				
6	Computer Forensics/Digital Forensics				
7	Documents				
8	Excise				
9	Explosives				
10	Narco analysis				
11	Narcotics				
12	Photography				
13	Physics				
14	Polygraph				
15	Prohibition				
16	Serology/DNA				
17	Toxicology				
18	Voice Identification				
19	Instruments				
20	R & D				
21	Any other (please mention)				

Dr. GOPAL JI MISRA
CONSULTANT

Dr. C. DAMODARAN
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Email : pplanfs2010@gmail.com

No. P Plan FS / Consult / 4 / 2010

Dated : 09 / 03 / 2010

Dear Sir / Madam,

Sub : Perspective Plan for Indian Forensics (2010) – **Feedback from forensic science service users** – Requested - Regarding

Ref : Letter No. DFS/234/06/06-(Plan)/PM-II dated 15/01/2010, from
Special Secretary, MHA, GOI, New Delhi – 110 001

Season's Greetings.

2. Well, as you may be happily aware, the Hon'ble Home Minister, Government of India at a press conference on Feb 01, 2010 had announced that 2010 is the Year of Forensic Science. As such, the MHA – Government of India has appointed us (Dr. Gopal Ji Misra and Dr. C. Damodaran) as Consultants (vide reference cited above), to prepare a Perspective Plan for Forensic Science in the country, to usher in global competitiveness/credibility in strategy and service-delivery enabled by revamping and modernizing technology, human resource and infrastructure.
3. This unique project of Perspective Plan-preparation is a time-bound mission-mode responsibility for us; and, is possible, only with your vibrant cooperation/contribution.

Contd....

4. In this context we request you and your organization **(as end-user of forensic science service, from scene of crime / occurrence through analysis – report - testimony to the pronouncement of judgment / orders)** to spare precious time and efforts, and send us feedback as per the format **attached**.
5. Kindly arrange to take on this load (of giving feedback) in the interest of Society and posterity; and, we will be thankful to receive your response before 25 / 03 /2010.

Regards / Best wishes

Sincerely

(Dr. GOPAL JI MISRA)

(Dr. C. DAMODARAN)

Encl: Format for Feedback

To :

FORMAT FOR FEEDBACK ON FORENSIC SCIENCE

Please tick (✓) in the appropriate box in the five grade scale; namely : A (Average), G (Good), Vg (Very good), E (Excellent) and O (Outstanding)

I. Assessment of forensic scientists and forensic science laboratories

S.No.	FEATURE	SCALE				
		A	G	Vg	E	O
i.	Response - time					
ii.	Scientific competency					
iii.	Opining / reporting quality					
iv.	Opining / reporting speed					
v.	Corroborative utility					
vi.	Probative utility					
vii.	Lead – giving utility					
viii.	Prophylactic utility					
ix.	Innocence – proving utility					
x.	Expert testimony – clarity					
xi.	Professional interaction					
xii.	Ethical conduct					
xiii.	Overall forensic science service – delivery					
xiv.	Infrastructure (building, space & vehicles)					
xv.	Infrastructure (equipments)					
xvi.	Infrastructure (library)					
xvii.	Human resource (number of scientists & staff)					
xviii.	Human resource (qualification & expertise)					
xix.	Human resource (training)					
xx.	Organizational structure					

II. Description of occasions if any, wherein forensic science service has gone against justice delivery (in few sentences)

III. Indication of forensic science awareness among its end-user (namely, your) officers and personnel

A
 G
 Vg
 E
 O

IV. Suggestions for improvement (requested in about nine "bullet – points")

Dr. GOPAL JI MISRA
CONSULTANT

Dr. C. DAMODARAN
CONSULTANT



Flat No. 11, Officer's Flat
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Phase-11, MOHALI-160 061(Pb.)

No. P Plan FS / Consult / 5 / 2010

Dated : 12 / 03 / 2010

Dear Sir / Madam,

Sub : Perspective Plan for Indian Forensics (2010) – **Comments from Fingerprint Bureau** – Requested – Regarding.

Ref : Letter No. DFS/234/06/06-(Plan)/PM-II dated 15/01/2010, from
Special Secretary, MHA, GOI, New Delhi – 110 001

Season's Greetings.

6. Well, as you may be happily aware, the Hon'ble Home Minister, Government of India at a press conference on Feb 01, 2010 had announced that 2010 is the Year of Forensic Science. As such, the MHA – Government of India has appointed us (Dr. Gopal Ji Misra and Dr. C. Damodaran) as Consultants (vide reference cited above), to prepare a Perspective Plan for Forensic Science in the country, to usher in global competitiveness/credibility in strategy and service-delivery enabled by revamping and modernizing technology, human resource and infrastructure.
7. This unique project of Perspective Plan-preparation is a time-bound mission-mode responsibility for us; and, is possible, only with your vibrant cooperation/contribution.

Contd....

Attachment - D

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Mobile : 094172-00892
094442-77878

8. In this context, we now request you to offer comments on the following.
 - a. In case your Bureau is not an integral part of a Forensic Science Laboratory :-
 1. are you happy with the FSLs and forensic scientists in their professional interaction with your Bureau and your experts ?
 2. if your answer is 'NO', please suggest ways and means to improve interaction (in not more than five "bullet-points", please)
 - b. In case you feel that Fingerprint examination should be integral part of a Forensic Science Laboratory :-
 - give reason as to 'WHY ?' (in not more than five "bullet-points", please)
 - c. In case you are already within the umbrella of FSL :-
 - are you happy with your professional performance ? Yes / No
 - if your answer is 'NO', please suggest ways and means to improve your performance (in not more than five "bullet-points", please)
5. We will thankfully appreciate receiving your response before 24- 03 -2010. Your input will be in the interest of better forensic science & related service delivery to the Society.

Regards / Best wishes

Sincerely

(Dr. GOPAL JI MISRA)

(Dr. C. DAMODARAN)

NB: You may please feel free to make copies of this and send to your Fingerprint colleagues across India, for their response to us; thanks.

To :

Dr. GOPAL JI MISRA
CONSULTANT

Dr. C. DAMODARAN
CONSULTANT

Flat No. 11, Officer's Flat
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No. P Plan FS / Consult / 6 / 2010

Dated : 12 / 03 / 2010

Dear Sir / Madam,

Sub : Perspective Plan for Indian Forensics (2010) – **Comments from Forensic
Medicine Experts / Police Surgeons** – Requested - Regarding

Ref : Letter No. DFS/234/06/06-(Plan)/PM-II dated 15/01/2010, from
Special Secretary, MHA, GOI, New Delhi – 110 001

Season's Greetings.

2. Well, as you may be happily aware, the Hon'ble Home Minister, Government of India at a press conference on Feb 01, 2010 had announced that 2010 is the Year of Forensic Science. As such, the MHA – Government of India has appointed us (Dr. Gopal Ji Misra and Dr. C. Damodaran) as Consultants (vide reference cited above), to prepare a Perspective Plan for Forensic Science in the country, to usher in global competitiveness/credibility in strategy and service-delivery enabled by revamping and modernizing technology, human resource and infrastructure.
3. This unique project of Perspective Plan-preparation is a time-bound mission-mode responsibility for us; and, is possible, only with your vibrant cooperation/contribution.

Contd....

4. In this context, we now request you to offer comments on the following.
Should the practice at Forensic Science Laboratories and at Forensic Medicine Departments continue to be separate? Yes / No
 1. if 'Yes', give reasons (as "bullet-points", please)
 2. if 'No', suggest alternate(s), and justify every alternate (as "bullet-points", please)

5. We will thankfully appreciate receiving your response before 24- 03 -2010. Your input will be in the interest of better forensic science & related service delivery to the Society.

Regards / Best wishes

Sincerely

(Dr. GOPAL JI MISRA)

(Dr. C. DAMODARAN)

NB : You may please feel free to make copies of this and send to your Forensic Medicine colleagues across India, for their response to us; thanks.

To :

Dr. GOPAL JI MISRA
CONSULTANT

Dr. C. DAMODARAN
CONSULTANT



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No. P Plan FS / Consult / 7 / 2010

Dated : 12 / 03 / 2010

Dear Sir / Madam,

Sub : Perspective Plan for Indian Forensics (2010) – **Comments from Chemical Examiner's Laboratories** – Requested - Regarding

Ref : Letter No. DFS/234/06/06-(Plan)/PM-II dated 15/01/2010, from
Special Secretary, MHA, GOI, New Delhi – 110 001

Season's Greetings.

2. Well, as you may be happily aware, the Hon'ble Home Minister, Government of India at a press conference on Feb 01, 2010 had announced that 2010 is the Year of Forensic Science. As such, the MHA – Government of India has appointed us (Dr. Gopal Ji Misra and Dr. C. Damodaran) as Consultants (vide reference cited above), to prepare a Perspective Plan for Forensic Science in the country, to usher in global competitiveness/credibility in strategy and service-delivery enabled by revamping and modernizing technology, human resource and infrastructure.
3. This unique project of Perspective Plan-preparation is a time-bound mission-mode responsibility for us; and, is possible, only with your vibrant cooperation/contribution.
4. In this context, we now request you to offer comments on the following.
 - a) In case your laboratory is not an integral part of a Forensic Science Laboratory :-

Contd....

- are you happy with the FSLs and forensic scientists in their professional interaction with your lab and your scientists ? Yes / No
 - if your answer is 'NO', please suggest ways and means to improve interaction (in not more than five "bullet-points", please)
- b) In case you feel that CEL should be integral part of a FSL :-
3. give reasons as to 'Why ?' (in not more than five "bullet-points", please)
5. We will thankfully appreciate receiving your response before 24- 03 -2010. Your input will be in the interest of better forensic science & related service delivery to the society.

Regards / Best wishes

Sincerely

(Dr. GOPAL JI MISRA)

(Dr. C. DAMODARAN)

NB : You may please feel free to make copies of this and send to your CEL colleagues across India, for their response to us; thanks.

To :

Dr. GOPAL JI MISRA
CONSULTANT

Dr. C. DAMODARAN
CONSULTANT



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No. P Plan FS / Consult / 8 / 2010

Dated : 12 / 03 / 2010

Dear Sir / Madam,

Sub : Perspective Plan for Indian Forensics (2010) – **Comments from Serologist to Government** – Requested - Regarding

Ref : Letter No. DFS/234/06/06-(Plan)/PM-II dated 15/01/2010, from
Special Secretary, MHA, GOI, New Delhi – 110 001

Season's Greetings.

2. Well, as you may be happily aware, the Hon'ble Home Minister, Government of India at a press conference on Feb 01, 2010 had announced that 2010 is the Year of Forensic Science. As such, the MHA – Government of India has appointed us (Dr. Gopal Ji Misra and Dr. C. Damodaran) as Consultants (vide reference cited above), to prepare a Perspective Plan for Forensic Science in the country, to usher in global competitiveness/credibility in strategy and service-delivery enabled by revamping and modernizing technology, human resource and infrastructure.
3. This unique project of Perspective Plan-preparation is a time-bound mission-mode responsibility for us; and, is possible, only with your vibrant cooperation/contribution.
4. For a century your organization has been engaged in and contributing to forensic science service delivery. In a changed scenario (as well as in the context of the above-cited Sub / Ref), we now request you to offer comments on the following.

Attachment - G

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Contd....

- a) Your institute is not an integral part of a Forensic Science Laboratory; under the circumstances :-
- are you happy with the FSLs and forensic scientists in their professional interaction with your institute and your scientists? Yes / No
 - if your answer is 'NO', please suggest ways and means to improve interaction (in not more than five "bullet-points", please)
- b) In case you feel that such Serology Institutes should be integral part of a FSL :-
4. give reasons as to 'Why ?' (in not more than five "bullet-points", please)
5. We will thankfully appreciate receiving your response before 24- 03 -2010. Your input will be in the interest of better forensic science & related service delivery to the Society.

Regards / Best wishes

Sincerely

(Dr. GOPAL JI MISRA)

(Dr. C. DAMODARAN)

NB : You may please feel free to make copies of this and send to other Serology Institutes if any (such as yours) across India, for their response to us; thanks.

To :

Dr. GOPAL JI MISRA
CONSULTANT

Dr. C. DAMODARAN
CONSULTANT



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No. P Plan FS / Consult / 9 / 2010

Dated : 12 / 03 / 2010

Dear Sir / Madam,

Sub : Perspective Plan for Indian Forensics (2010) – **Inputs from Retired/senior forensic scientists and others**– Requested - Regarding

Ref : Letter No. DFS/234/06/06-(Plan)/PM-II dated 15/01/2010, from
Special Secretary, MHA, GOI, New Delhi – 110 001

Season's Greetings.

2. Well, as you may be happily aware, the Hon'ble Home Minister, Government of India at a press conference on Feb 01, 2010 had announced that 2010 is the Year of Forensic Science. As such, the MHA – Government of India has appointed us (Dr. Gopal Ji Misra and Dr. C. Damodaran) as Consultants (vide reference cited above), to prepare a Perspective Plan for Forensic Science in the country, to usher in global competitiveness/credibility in strategy and service-delivery enabled by revamping and modernizing technology, human resource and infrastructure.
3. This unique project of Perspective Plan-preparation is a time-bound mission-mode responsibility for us; and, is possible, only with your vibrant cooperation/contribution.
4. In this context, we now request you to offer your views, preferably as "bullet-points", incorporating pragmatically useful, implementable, sustainable, assessable and cost-effective highlights.

Contd....

Sl.No.	FEATURE	MALADY, if any	REMEDY	DISCERNIBLE SERVICE DELIVERY
(1)	(2)	(3)	(4)	(5)
1.	Infrastructure (building & space)			
2.	Infrastructure (vehicles)			
3.	Infrastructure (equipments & technology gaps)			
4.	Infrastructure (library)			
5.	Infrastructure (other aspects)			
6.	Human resource (scientists) (number)			
7.	Human resource (scientists) (qualification)			
8.	Human resource (scientists) [training : SOC to court testimony]			
9.	Human resource (scientists) (pay, recruitment & promotion)			
10.	Human resource (administrative staff) (number)			
11.	Human resource (admin. staff)(training for FSL set-up)			
12.	R&D			
13.	Proficiency testing			
14.	Accreditation			

Contd...

15.	Certification and re-certification			
16.	Ethical conduct			
17.	Bench-marks for performance appraisal (for scientists/organizations)			
18.	Scientific audit and accountability			
19.	National forensic net-working for synergy			
20.	24 x 7 forensic information service (help-line)			
21.	Swift action emergency forensic team			
22.	Prophylactic/proactive/preventive forensics			
23.	Structure and role(s) of DFS(GOI)			
24.	Forensic science education (UG/PG/Ph.D)			
25.	Structure and role(s) of NICFS			

5. We will thankfully appreciate receiving your response before 24- 03 -2010. Your input will be in the interest of better forensic science & related service delivery to the Society.

Regards / Best wishes

Sincerely

(Dr. GOPAL JI MISRA)

(Dr. C. DAMODARAN)

NB : You may please feel free to make copies of this and send to your friends / colleagues across India, for their response to us; thanks.

To :
Dr. GOPAL JI MISRA
CONSULTANT

Dr. C. DAMODARAN
CONSULTANT

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No. P Plan FS / Consult / 10 / 2010

Dated : 15 / 03 / 2010

Dear Sir / Madam,

Sub : Perspective Plan for Indian Forensics (2010) - **Details about the Directorate of Forensic Science (DFS), MHA : GoI** – Requested – Regarding.

- Ref : 1) Letter No : DFS/234/06/06-(Plan)/PM-II dated 15/01/2010, from Ms. Anita Chaudhary, Special Secretary, MHA, GOI, New Delhi – 110 001
- 2) Our letter No : P Plan FS / Consult / 1 / 2010 dated 12–2–2010 sent to you and others
- 3) Our letter No : P Plan FS / Consult / 3 / 2010 dated 13–3–2010 enclosing Questionnaire etc. (sent already to CFSLs, GEQDs, FSLs of UTs / States, CFSL – CBI & SVPNPA)

Season's Greetings.

- 2 Well, as you may be happily aware, the Hon'ble Home Minister, Government of India at a press conference on Feb 01, 2010 had announced that 2010 is the Year of Forensic Science. As such, the MHA – Government of India has appointed us (Dr. Gopal Ji Misra and Dr. C. Damodaran) as Consultants (vide reference 1) cited above), to prepare a Perspective Plan for Forensic Science in the country, to usher in global competitiveness/credibility in strategy and service-delivery enabled by revamping and modernizing technology, human resource and infrastructure.

Contd...

3. This unique project of Perspective Plan-preparation is a time-bound mission-mode responsibility for us; and, is possible, only with your vibrant cooperation/contribution.
4. In this context, we send herewith a full set of Ref.3 cited above. Kindly study the same and respond to us as deemed fit.
5. In addition, please furnish the forensic relevance of each of the on-going(DFS-funded) Ph.D-related fellowship research and extramural research projects. (Please use just two or three sentences only, for each).
6. In addition, please send details (in separate sheets) for the following :-
 - I. Give the organization chart and explain briefly the administrative structure in your organization (organization here means DFS (Delhi) and its CFLs and GEQDs)
 - II. State briefly about autonomy status in your organization.
 - III. What is the system of internal communication in your organization?
 - IV. Briefly describe the various factors that enhance or mar the work - environment in your organization.
 - V. Describe the system for assigning responsibility and assessing accountability in your organization.
 - VI. Explain briefly the status of delegation of authority vis-à-vis productivity in your organization.
 - VII. State briefly the present relationship among seniors, colleagues and subordinates horizontally and vertically that enhances or mars the environment and service delivery.
 - VIII. Give a set of "bullet points" as your suggestions / recommendations towards optimizing the structure etc issues raised in the preceding seven questions.

Contd...

(You may also propose alternate organizational charts for the existing **Directorate** of F.S. as well as for hypothetical *Department* of F.S. under MHA.)

7. It will be kind of you to send all the information (vide paras 4, 5 and 6 above) so as to reach us before 31 - 3 - 2010.

Regards / Best wishes

Sincerely

(Dr. GOPAL JI MISRA)

(Dr. C.DAMODARAN)

Encl : Ref. 3 (full set)

To

The Chief Forensic Scientist
Directorate of Forensic Science
(MHA- GoI)
Block : 9, Floor : 8
CGO Complex, Lodhi Road
NEW DELHI – 110003

Dr. GOPAL JI MISRA
CONSULTANT

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Flat No. 11, Officer's Flat
Commando Complex
Phase-11, MOHALI-160 061(Pb.)
Email : pplanfs2010@gmail.com

No. P Plan FS / Consult / 11 / 2010

Dated : 15 / 03 / 2010

Dear Sir,

Sub : Perspective Plan for Indian Forensics (2010) – **Specific comments / details from NICFS, Delhi** – Requested - Regarding

Ref : Our letter in No: P Plan FS / Consult / 2 / 2010 dated 4-3- 2010

We do hope that your kind response to the Ref. cited above is being made ready.

2. Meanwhile, it is now requested of you to offer your answer – details / comments to the enclosed Questionnaire (having 24 questions). Kindly arrange your response to reach us before 31-3-2010.

Regards

Sincerely yours

(Dr. GOPAL JI MISRA)

(Dr. C.DAMODARAN)

Encl : Questionnaire (with 24 questions)

To

The Director
National Institute of Criminology and Forensic Science
Outer Ring Road
ROHINI, Sector -III
DELHI – 110 085

1. Regarding forensic science program in your institution, please state whether it has focussed

- A goals / objectives
- B educational policy reflecting uniqueness
- C reviewing and monitoring mechanism
- Any other: (please write/type within this box)

What is your preference in formulating mission, goals and objectives for the program? (please write/type within this box)

2. Regarding the organizational setting for the forensic science program in your institution, please state whether it has

- A been recognized by accrediting bodies
- B a chart indicating the program's relationship with other components
- C exclusive budget allocation
- D faculty participation in governance
- Any other: (please write/type within this box)

What is your preference of the organizational setting? (please write/type within this box)

3. Regarding teaching and research in the forensic science program in your institution, please state whether it has

- A facility for interdisciplinary cooperation
- B policy for commitment to ethical dealings
- C policy regarding conflict of interest
- D policy for collaboration
- Any other: (please write/type within this box)

What is your preference regarding teaching and research? (please write/type within this box)

4. Regarding the head for the forensic science program in your institution, please state whether he has

- A sustained record of scholarship in forensic science education
 - B quality research in appropriate topics
 - C experience and knowledge of the forensic science laboratory system
 - D provision for periodic review of his performance
- Any other: (please write/type within this box)

What is your preference for evaluating program head? (please write/type within this box)

5. Regarding the research by the head for the forensic science program in your institution, please state whether it

- A is related to core science
 - B is related to forensic science
 - C has been published in forensic science journals (give details)
- Any other: (please write/type within this box)

What is your preference on the type of research capability of the program head? (please write/type within this box)

6. Regarding the qualification of the head for the forensic science program in your institution, please state whether it

- A is masters in core science
 - B is PhD in core science
 - C is masters in forensic science
 - D is PhD in forensic science
- Any other: (please write/type within this box)

What is your preference on the qualification of the program head? (please write/type within this box)

7. Regarding the professional experience of the head for the forensic science program in your institution, please state

- A the number of years in academic field alone (.....years)
 - B the number of years in forensic science alone (.....years)
 - C the number of years in academic field and forensic science (..... years)
 - D the number of years in other areas (specify) (.....years)
- Any other: (please write/type within this box)

What is your preference on the desired professional experience of the program head? (please write/type within this box)

8. Regarding faculty recruitment policy in your institution, there is

- A a policy for recruitment
 - B a policy for retention
 - C a policy for promotion
 - D a policy for tenure
- Any other: (please write/type within this box)

What is your preference of recruitment policy? (please write/type within this box)

9. Regarding the resources for the forensic science program in your institution, there is

- A a stable budgetary base from your institution
 - B scope for external funding other than government
 - C scope for community resources
 - D scope for funding through students' fees
- Any other: (please write/type within this box)

What is your preference of resources? (please write/type within this box)

10. Regarding the curriculum for forensic science in your institution, there is scope for learning

- A the basics of forensic science
 - B professional value and ethics
 - C skill through experience
 - D skills of applied value to the national need
- Any other: (please write/type within this box)

What is your preference of for the curriculum for forensic science? (please write/type within this box)

11. Regarding the evaluation of students' performance in the forensic science program of your institution, it is done by the

- A staff of your institution
 - B staff of other institution
 - C peer reviewers within the country
 - D peer reviewers outside the country
- Any other: (please write/type within this box)

What is your preference of evaluation of students' performance? (please write/type within this box)

12. Regarding infrastructure for research in your institution, there is

- A separate laboratory for each of chemistry, biology and physics branches (specify the area)
 - B enough computer facility in each laboratory (specify the number of computers)
 - C subscription for accessing hard and soft copies of journals (specify the number of journals, hard and soft separately)
 - D enough technical staff (specify the number)
- Any other: (please write/type within this box)

What is your preference of infrastructure for research? (please write/type within this box)

13. Regarding the research in your institution, there is enough	
A	funding (specify the annual allotment)
B	instruments (provide the list of instruments division wise)
C	qualified supervisors (mention the number)
D	output (provide the list of publications)
Any other: (please write/type within this box)	
What is your preference of research? (please write/type within this box)	
14. Regarding the subject matter of research in your institution, it is related to	
A	core science
B	forensic science
C	problem areas in forensics identified in international level
D	problem areas in forensics identified at the national level
Any other: (please write/type within this box)	
What is your preference of subject matter of research? (please write/type within this box)	
15. Regarding the applied value of research in forensic science in your institution, there is	
A	collaboration with forensic science laboratories
B	problem identification based on internationally recognized needs
C	problem identification based on local crime scene experience
D	problem identification based on local analytical experience
Any other: (please write/type within this box)	
What is your preference of applied value of research? (please write/type within this box)	

16. Regarding the success of research in forensic science in your institution, it is measured by

- A publications in ISI data base journals (provide details)
 - B publications in non ISI data base international journals (provide details)
 - C publications in national journals (provide details)
 - D Conference proceedings (provide details)
- Any other: (please write/type within this box)

What is your preference to measure the success of research? (please write/type within this box)

17. Regarding the service offered by the forensic science program of your institution to the community, there is

- A involvement in consultation (provide details)
 - B scope for sustainment (provide details)
 - C scope for multi institutional involvement (provide details)
 - D involvement of students (provide details)
- Any other: (please write/type within this box)

What is your preference in service - offer? (please write/type within this box)

18. Regarding the faculty of the forensic science program in your institution

- A Their tenure status is transparent
 - B Their CVs are accessible
 - C Their qualification and the university from which they earned the degree are spelt out
 - D The fields of professional experience are clearly indicated
- Any other: (please write/type within this box)

What is your preference of the faculty? (please write/type within this box)

19. Regarding the student enrolment in forensic science program in your institution, there is transparency in

- A fee structure (provide details)
- B eligibility qualification (provide details)
- C scope for counselling (provide details)
- Any other: (please write/type within this box)

What is your preference of enrolment system? (please write/type within this box)

20. Regarding the support for the students in forensic science program in your institution, there is

- A provision for scholarship
- B scope for work study
- C scope for research / teaching assistantship
- D hostel facility
- Any other: (please write/type within this box)

What is your preference of support? (please write/type within this box)

21. Regarding the academic advising system for the students in forensic science program in your institution, there is

- A specified mentor for each student
- B provision for guiding in career pathways
- C provision for professional advice
- D provision for counseling
- Any other: (please write/type within this box)

What is your preference of academic advising system? (please write/type within this box)

22. Regarding the system for disciplinary action on the students in forensic science program in your institution, there is a

- A system for assessing students' satisfaction
 - B system for handling students' complaint
 - C system for warning students
 - D system for dismissal and reinstatement
- Any other: (please write/type within this box)

What is your preference of disciplinary system? (please write/type within this box)

23. Regarding the evaluation and planning of the forensic science program in your institution, there is

- A provision for regular self evaluation (provide details)
 - B provision for identifying problem areas (provide details)
 - C provision for formulation of corrective action (provide details)
 - D internal institutional review (provide details)
- Any other: (please write/type within this box)

What is your preference of evaluation and planning? (please write/type within this box)

24. Please react briefly to the following GENERAL COMMENT ON M.Sc. (Forensic Science) SYLLABUS

"The first year syllabus of Master's degree corresponding to the major subject of the student's Bachelor degree, should be fully covered in the syllabus of M.Sc. (Forensic Science)"

.....

Dr. GOPAL JI MISRA
CONSULTANT

Dr. C. DAMODARAN
CONSULTANT

Flat No. 11, Officer's Flat
Commando Complex
Phase-11, MOHALI-160 061(Pb.)
Email : pplanfs2010@gmail.com

No. P Plan FS / Consult /12 / 2010

Dear Sir / Madam,



Attachment - K

Òkj r I j dkj
Government of India

xg eakj;
Ministry of Home Affairs

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Phone : 0172-2622672

0172-2605933

0172-2666792

}Ext.210

Mobile : 094172-00892

094442-77878

Dated : 17 / 03 / 2010

Sub : Perspective Plan for Indian Forensics (2010) – **Courts – Registrar General / Registrar** - Feedback from users of forensic science service, in the Format – Requested - Regarding

Ref : Letter No. DFS/234/06/06-(Plan)/PM-II dated 15/01/2010, from
Special Secretary, MHA, GOI, New Delhi – 110 001

Season's Greetings.

2. Well, as you may be happily aware, the Hon'ble Home Minister, Government of India at a press conference on Feb 01, 2010 had announced that 2010 is the Year of Forensic Science. As such, the MHA – Government of India has appointed us (Dr. Gopal Ji Misra and Dr. C. Damodaran) as Consultants (vide reference cited above), to prepare a Perspective Plan for Forensic Science in the country, to usher in global competitiveness/credibility in strategy and service-delivery enabled by revamping and modernizing technology, human resource and infrastructure.
3. This unique project of Perspective Plan-preparation is a time-bound mission-mode responsibility for us; and, is possible, only with your vibrant cooperation/contribution.

Contd....

4. In this context, we request you to arrange action, as deemed fit, to provide feedback on forensic science service delivery (in the Format, enclosed).
5. We will be highly thankful to receive your response by 31 / 03 /2010.

Regards / Best wishes

Sincerely

(Dr. GOPAL JI MISRA)

(Dr. C. DAMODAR AN)

Encl : Format for Feedback

To :

FORMAT FOR FEEDBACK ON FORENSIC SCIENCE

Please tick (✓) in the appropriate box in the five grade scale; namely : A (Average), G (Good), Vg (Very good), E (Excellent) and O (Outstanding)

I. Assessment of forensic scientists and forensic science laboratories

S.No.	FEATURE	SCALE				
		A	G	Vg	E	O
i.	Response - time					
ii.	Scientific competency					
iii.	Opining / reporting quality					
iv.	Opining / reporting speed					
v.	Corroborative utility					
vi.	Probative utility					
vii.	Lead – giving utility					
viii.	Prophylactic utility					
ix.	Innocence – proving utility					
x.	Expert testimony – clarity					
xi.	Professional interaction					
xii.	Ethical conduct					
xiii.	Overall forensic science service – delivery					
xiv.	Infrastructure (building, space & vehicles)					
xv.	Infrastructure (equipments)					
xvi.	Infrastructure (library)					
xvii.	Human resource (number of scientists & staff)					
xviii.	Human resource (qualification & expertise)					
xix.	Human resource (training)					
xx.	Organizational structure					

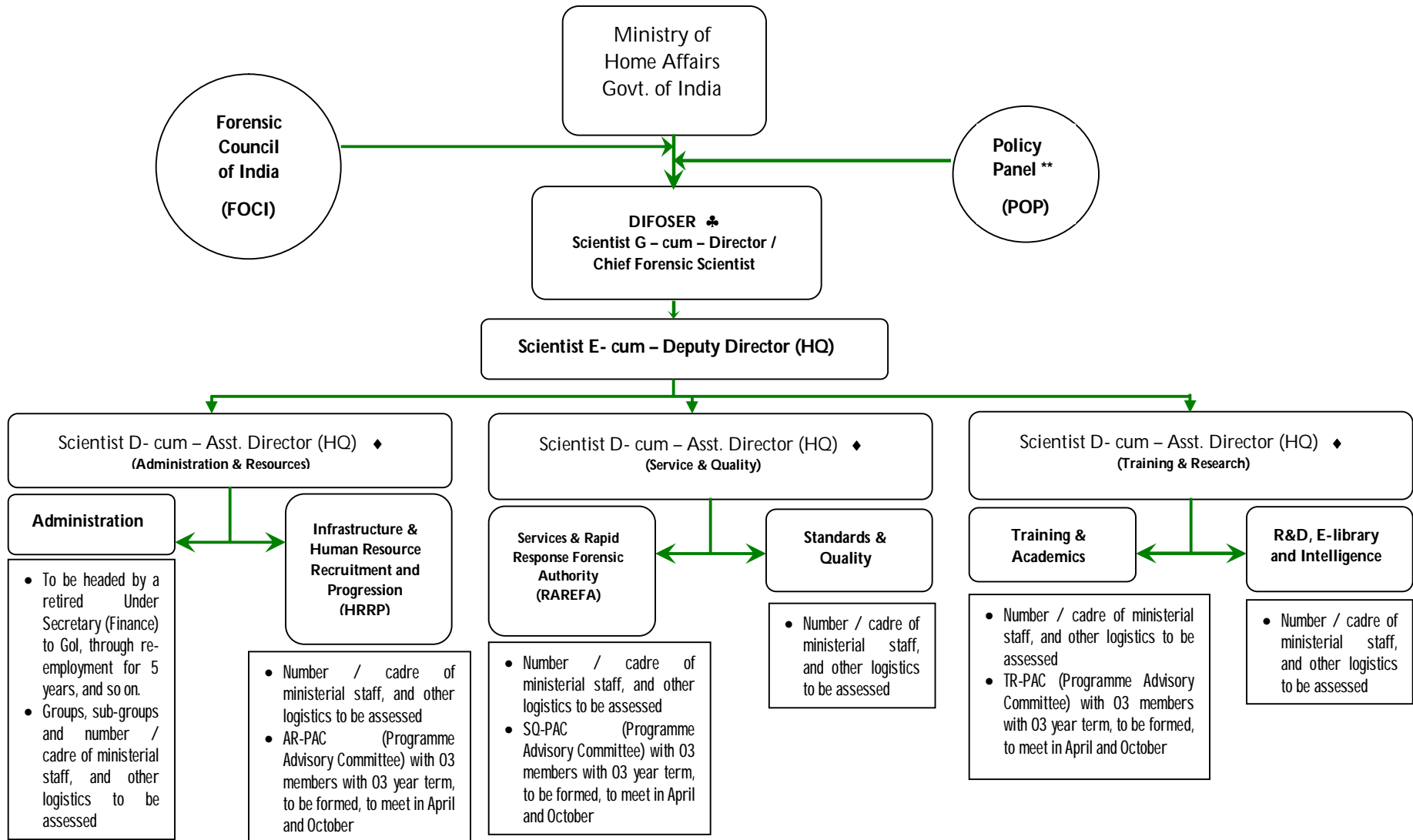
II. Description of occasions if any, wherein forensic science service has gone against justice delivery (in few sentences)

III. Indication of forensic science awareness among its end-user (namely, your officers and personnel

A
 G
 Vg
 E
 O

IV. Suggestions for improvement (requested in about nine "bullet – points")

Recommended Organizational Structure of Directorate of Forensic Service (DIFOSER) ♣



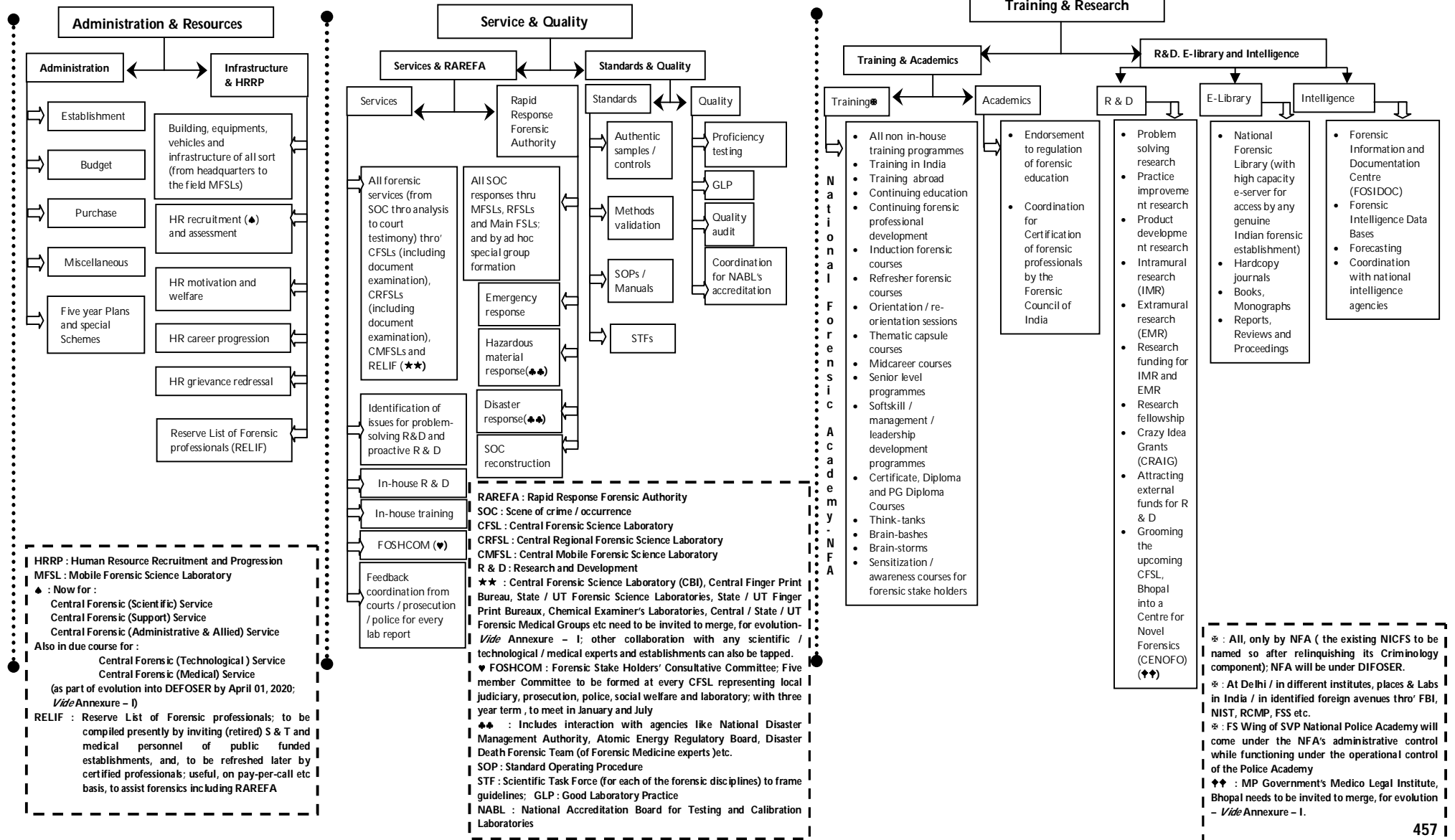
♣ DIFOSER to be in place by September 2010 and then, to be evolved into :-

- Department of Forensic Service (DEFOSER), (under MHA) with enlarged scope, strength and strategy - - - as on April 1, 2020
- National Forensic Service Organization (NFSO) (an autonomous body) with redefined doctrines and rehoned consolidation - - - as on April 1, 2035

♦ See Annexure - II

** With five members; 1. Supreme Court Judge (Retired) – Chairperson; 2. Vice President of FOCI- Member; 3. Jt. Secretary(MHA)- Member; 4. Jt. Secretary (Fin.)- Member; and, 5. Director / CFS (DIFOSER)- Member Secretary; with three year term, to be formed, to meet in January and July

Recommended functions of the Directorate of Forensic Service (DIFOSER) through the three portfolio-clusters of its headquarters
(Vide Annexure – I)



The Forensic Act (*proposed*)

An Act to regulate the profession of forensics and for that purpose to constitute Forensic Council of India

Functions of Forensic Council of India : - The functions of Forensic Council of India shall be-

(a) to regulate practice of various disciplines of forensics (including forensic science, forensic medicine, forensic pathology, forensic odontology, forensic psychology, forensic psychiatry, forensic engineering and forensic technology);	(f) to administer Certification and Re-certification of forensic practitioners;
(b) to lay down standards of education [•] and training [•] for practice and for registration (including forensic scientists, forensic medical examiners, forensic pathologists, forensic odontologists, forensic psychologists, forensic psychiatrists, forensic engineers, and, forensic technologists);	(g) to constitute a Special Purpose Vehicle named "Indian Forensic Service Improvement Board (IFOSIB)" to organize IFOSI Grants (IFOSIG)-Fund [‡] ;
(c) to accredit forensic educational programs and forensic educational institutions;	(h) to organize forensic discipline-wise annual Workshops through creation of Indian Society of Forensics;
(d) to prescribe standards of professional conduct and code of ethics for forensic professionals;	(i) to publish Journal of the Indian Society of Forensics by outsourcing to reputed multinational scientific publishers;
(e) to admit, prepare and maintain Indian Forensic Register;	(j) to perform such other functions to regulate the profession of forensics and all other functions conferred on it by or under this Act;
	(k) to form special purpose vehicles, committees, sub-committees etc to carry out the functions of the Council;
	(l) to do all other things necessary for discharging the aforesaid functions.

[•] Certificate, Diploma, PG Diploma, Degree, and PG Degree Courses; on- line / distance-mode / part-time / full time; in sync with Medical Council of India, University Grants Commission etc.

[‡] Primarily by enthusing / tapping Collective Corporate Social Responsibility (CCSR) of chambers of commerce (like FICCI, ASSOCHAM, CII etc) as well as public sector units (PSUs) and joint sector units

Annexure - IV

Amendments to Act / Code (*proposed*)

S.No.	Act / Code	Amendment proposed
1	The Indian Evidence Act Section 45	Insert the following in Section 45; after "..... facts." , and, before "Such....." :- "Also, the opinions upon that point, of the Director, Additional Director, Joint Director, Deputy Director, Assistant Director, Principal Scientific Officer, Scientific Officer of a Central Forensic Science Laboratory or a State / Union Territory Forensic Science Laboratory, are relevant facts."
2	The Code of Criminal Procedure Section 293	In Section 293, substitute the existing 4(e), with :- "the Director, Additional Director, Joint Director, Deputy Director, Assistant Director, Principal Scientific Officer, Scientific Officer of a Central Forensic Science Laboratory or a State / Union Territory Forensic Science Laboratory ; "
3	Information Technology Act Section 79A	Modify Section 79A, as :- "Forensic Science Laboratories of the Central Government, State Governments and Union Territory Governments, for the purposes of providing expert opinion on electronic form evidence before any court or authority, are Examiners of Electronic Evidence. The Central Government may also , for the purposes of providing expert opinion on electronic form evidence before any court or other authority, specify, by notification in the Official Gazette, any other Department, body or agency of the Central Government or a State Government or a Union Territory Government as an Examiner of Electronic Evidence."