MAKE IN INDIA

भारतीय मानक ब्यूरो IS / ISO 9001

BUREAU OF INDIAN STANDARDS QMS

DRDO CFEES

CONTROLLERATE OF QUALITY ASSURANCE (AMN)

PREDICTIVE TECHNOLOGY LABORATORY

CONTROLLERATE OF QUALITY ASSURANCE (AMN)
PREDICTIVE TECHNOLOGY LABORARTORY

PREDICTIVE TECHNOLOGY LABORARTORY

Controllerate of Quality Assurance (Amn) (CQA(A)) is a premier establishment of DGQA, under Department of Defence Production, mandated with the role of ensuring that entire range of ammunition used by the armed forces are of specified Quality and reliability.

The predictive technology laboratory (PTL) of CQA (A) has been established to develop advanced tools and methods with the objective to analyze and predict ammunition behavior during its entire shelf life. It entails both prognostic and diagnostic checks conducted on the ammunition products. This would tangibly reduce premature down gradation or failure of ammunition in storage and operational use, thus achieving optimized safety, performance and longevity.

Broad capabilities include Shelf Life extension, Defect Investigation, Failure Analysis, and Periodical Health Check program for stockpile, testing through accelerated ageing (ISAT), Modeling and Simulation and Advanced Statistical Analysis of test data through IMC techniques as per NATO standards.

To allow Predictive Technology Laboratory to carry out its intended role PTL has

- Ammunition Breakdown Laboratory.
- ISAT / Environment Test Laboratory.
- Explosive Analysis Laboratory.
- X - Ray Laboratory.
- Metallurgy / Mechanical / Chemical Laboratory.
- Disposal Ground.
- Explosive Store Houses.
- General Engg Workshop.

AMMUNITION BREAK DOWN LABORATORY

Facility established to carry out breakdown of known / unknown Ammunition from 0.22" to 155mm Ammunition.



Specialized / skilled manpower trained in breakdown and recovery of explosive filling, ranging from pyrotechnic, initiatory, low and high explosives.

Special services rendered to The Indian Armed Forces, Ordnance Factory Board (OFB) & DRDO for assisting in indigenization & development of ammunition by reverse engineering method.

Also validation of ammunition involved in Fire accidents affected by shock waves, retrieval of lodged rounds from the Gun, in situ spot investigation.

Lab is equipped with Robotics / Remote Controlled & operated machines for safety.

- Shell extraction machine for both high / low caliber ammunition.
- SPM for Recovery of High Explosive fillings
- SPM for drilling operations
- Squeezing and tapping apparatus for recovery of detonators fillings.

ISAT / ENVIRONMENT TEST LAB

DGQA Evaluation to be carried under one roof as per the mandate of JSG 0102 Assessment of shelf life of ammunition as per ISAT (A) & ISAT (B) trials. Test facilities created with following equipment and machines.

- Conditioning Chambers of size $1m^3$ and $2m^3$
- Vibration test machine
- Jolt and bump Machine
- Salt spray chamber
- Dry Heat cum humidity chamber.





EXPLOSIVE ANALYSIS LABORATORY

The laboratory has trained experts in the field of explosive testing's. It has the facility for carrying out one time shelf life assessment using IMC techniques as per NATO Standards. Also the Chemical analysis of Propellants, Pyrotechnic Composition, Initiatory Compositions, High Explosives as per MIL / JSG standards are carried out at the laboratory

Test facilities created for IMC

Thermal Activity Monitor
High Performance Liquid Chromatography
Fourier Transmission - Infra Red Spectroscopy
Gas Chromatography Mass Spectroscopy
Bomb Calorimeter
Differential Scanning Calorimeter
Simultaneous Thermal Analyzer

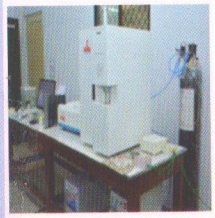
Test facilities created as per JSG / Mil Stds

- B & J Apparatus
- VS Test Baths
- Ph Meters
- Melting Point Apparatus
- Set Point Apparatus
- Puffing Point Apparatus
- Magnetic Stirrers
- Halogen Analyser
- Heat Test
- Dutch Test
- MV Bath
- Small Vessels Tests.

X - Ray LABORATORY

To confirm the filling defects like Piping, Porosity, Cracks in High Calibre High Explosive Filled Shells so as to facilitate not only timely completion of Defect Investigation but also pin point the reason of failure. It allows the confirmation of missing components in Fuzes, Grenades and Misc Stores. It also allows in mapping three dimension view of unknown ammunition received for breakdown without sealed paper particulars. Laboratory is equipped with 450 KV X-Ray System with Computed Radiography Scanner

METALLURGY / MECHANICAL / CHEMICAL LABORATORY



The facility have testing facility for HRA , HRB & HRC, BHN tests, Compression and Load Test of Springs, Torsion Tests of Wires , Rods , Strips, Impact Test, Electrical Resistance and Conductivity Tests, Detection of surface Flaws, Estimation of Carbon Sulphur as per IS, Wet Analysis of Plain Carbon & Alloy Steel, Estimation of copper and lead. The laboratory also has the facility for Macro Examination of Surface Defects and Identification of Microstructure and Grain Size

Test Facilities at Chemical, Mechanical & Metallurgical Lab

- Tensile Tester - Up to 400 kN
- Vickers Hardness Tester -1to120 kg
- Rockwell Hardness Tester - 60 to 150 kg
- Brinnel Hardness Tester-250 kg
- Spring Testing Machine -100 kg
- Torsion Tester -1000 Nm
- Impact Tester
- Electrical Voltage Breakdown Tester -Up to 260 V
- Electrical Continuity Tester- Up to 15 V
- Compression & Tension load test of springs
- Torsion Test of wires, rods, strips & pipes
- Electrical Resistance & continuity of Anodized coating per sample.
- Macro examination With/without photograph
- Detection of surface flaws for ferrous metals
- Estimation of Carbon as per IS 228 Pt 1- 1987 Re 2008 & 3685-1966 Re 2006
- Lead as per IS 3685-1966 Re 2006
- Standard Metal Microscope - 50x to 300x
- Stereo Microscope -4x to 25x
- Magnetic Crack Detector 1500 mm length & 250 mm dia

Email : cqaamnpune-dgqa@nic.in
Fax : 020 2582 4011/12
Phone : 020 2582 4015/19
PTL : 020 2582 4037/38
Addl 'C' : 020 2582 4005

Address :
Controllerate of Quality Assurance (Ammunition)
Nehru Road, Khadki, Pune - 411 003