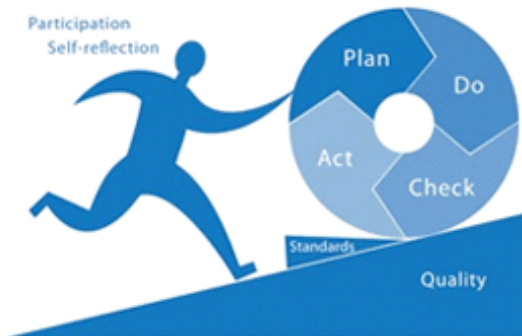




SOP on 'Quality Management System in Ordnance Factories'



Government of India, Ministry of Defence, Department of Defence Production
ORDNANCE FACTORY BOARD, 10-A, S. K. Bose Road, Kolkata - 700001



PREFACE

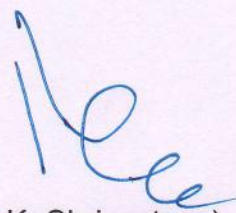
Indian Ordnance Factories is the oldest and largest industrial setup which functions under the Department of Defence Production of the Ministry of Defence and forms an integrated base for indigenous production of ordnance and equipment, with the primary objective of self reliance in equipping the armed forces with state of the art battlefield equipments.

The quality of defence equipments and systems with our Armed forces have a direct impact on national defence. Quality Management is a continuous process involving all stakeholders at various stages from concept to disposal stages. A need was felt to publish a document that shall act as the guiding document for various quality functions in Ordnance Factory organization. Also, MoD vide letter No. P0001/20/2017-D(Prod-II) dated 12.09.2017 had directed OFB to formulate SOP on 'Quality Policy' in association with DGQA and in consultation with all the stakeholders.

SOP on 'Quality Management System in Ordnance Factories' covering quality aspects over life cycle of products in Ordnance Factories Organization has been finalized and approved by Ordnance Factory Board. The same is issued for organisation-wide guidance and compliance.

Date: 19 November 2018

Place: Kolkata



(P.K. Shrivastava)

DGOF & Chairman

Ordnance Factory Board

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Annexure

Annexure	Subject
A	OFB Order no. 108/QAG/TS/QCS Dtd 18/07/2014
B	Order no. 01847/OFB/Secy (DP)/DGQA/Tech Coord (16TC) Dtd 14/08/2014
C	OFB letter no. 108/PR/Israel/TS/QCS Dtd 09/11/2004 and 108/FRB/QCS Dtd 23/09/2013

SOP on 'Quality Management System in Ordnance Factories'

1.0. Introduction:

The Indian Ordnance Factories Organisation is a family of 41 Ordnance Factories under the aegis of its corporate headquarters **Ordnance Factory Board, Kolkata** and is engaged in production, assembly of components/parts, testing, logistics, research, development and marketing of a comprehensive defence product range in the area of land, sea and air systems. Indian Ordnance Factories is the oldest and largest industrial setup which functions under the Department of Defence Production of the Ministry of Defence and forms an integrated base for indigenous production of defence hardware and equipment, with the primary objective of self reliance in equipping the armed forces with state of the art battlefield equipments.

The quality of defence equipments and systems with our Armed forces have a direct impact on national defence. Quality management system (QMS) is a set of policies, processes and procedures required for planning and execution production/development/service) in the core business area of an organization. (i.e. areas that can impact the organization's ability to meet customer requirements).

It is felt that there has to a be document that shall act as the guiding document for various quality functions in Ordnance Factory organization. Also, MoD vide letter No. P0001/20/2017-D(Prod-II) dated 12.09.2017 had directed OFB to formulate SOP on 'Quality Policy' in association with DGQA and in consultation with all the stakeholders.

Accordingly, SOP on 'Quality Management System in Ordnance Factories' covering quality aspects over life cycle of products in Ordnance Factories Organization has been prepared.

2.0 SCOPE :

This SOP is intended to give general guidelines regarding functioning of Quality Management System of Ordnance Factories Organization and its associated activities. The document comprehensively covers quality aspects over life cycle of products in Ordnance Factories and roles/responsibility of all the stakeholders in each stage.

Exception: Provision of this document will be superseded by any other agreement between customer or their Authorized representative and manufacturer.

3.0 DEFINITION:

QMS: Quality Management System is a set of policies, processes, their interaction & procedures focused on consistently meeting customer requirements and enhancing their satisfaction. It is aligned with organization's purpose and strategic direction.

Risk: Effect of uncertainty.

Effectiveness: Extent to which planned activities are realised and planned result are achieved.

Efficiency: Relationship between the results achieved and the resources used.

Control Points: A check point parameter (In a process) at which control can be applied to prevent, eliminate or limit the risk factor to an acceptable level.

Surveillance Points: The Perpetual monitoring and verification of the status of procedure, method conditions, processes, products and services and analysis of records in relation to stated references to ensure that specified requirement for quality are being met.

- FAI:** Final Acceptance Inspection is done for acceptance/return for rectification/rejection of the products on Acceptance Quality Level or the relevant governing technical specifications.
- RFR:** Return for rectification is Re-processing of a product for achieving of standard Quality parameters.
- AIA:** (AIA) Authorised Inspection Agency (also known as Quality Assurance Agency) is an agency which certifies the quality of the products on behalf of the customers e.g. DGQA organization for Army, DGAQA for Air Force, DGNAI for Navy, Ordnance Factories for self certified items etc.
- Resident Inspector:** Local representative of AIA, with his/her establishment (normally) within the factory
- QAC:** Quality Assurance Certificate is a certificate issued by resident inspector certifying specified requirements for the outgoing stores/ materials.
- QCC:** Quality Conformance Certificate is a certificate which certifies that the stores/ materials has been manufactured as per relevant drawing, spec. and particulars/ process schedule& submitted for issue of QAC by resident inspector.
- I- Note:** Inspection note is a document which certifies that the stores/ Products have been manufactured & issued to concern agency as per specified requirement

AHSP: Authority Holding Sealed Particulars (AHSP): AHSP is the authority responsible for collecting, collating, developing, amending, updating, holding and supplying sealed particulars of the defence items in accordance with the laid down procedure. AHSP may be the Director General of Quality Assurance (DGQA) or an authority in the Service Headquarters for service specific items. Similar responsibility for the Naval and Air Force equipments rests with respective Service Headquarters. DGAQA is the AHSP for aviation stores of all the Services. DGAQA is also nodal agency for Missile System Quality Assurance Agency (MSQAA). DGNAI is the AHSP for all conventional and guided Naval Armament(NA) stores(except small arms and associated ammunition). Procurement officers, the suppliers and the Inspection Agencies are required to comply with the drawings / specifications approved by the AHSP.

Ordnance Factories are the AHSP for certain types of 'B' vehicles and stores issued to indentors, other than the defence services.

QAP: Quality Assurance Plan is a document which details the processes, equipments , instruments etc. required to ensure desired quality of the product. Factory shall prepare QAP of the product with the help of local rep. of AIA.

Inspection officers: Authorized officer nominated/ appointed by SR.GM/GM to carry out QC inspection.

4.0 ORGANISATION'S QUALITY POLICY:

"We are dedicated to meet customer's requirement, strive to achieve zero defects through continuous process improvements, to ensure healthy & safe work environment and minimize environmental pollution".

Goals & Objectives:

Consistent with the quality policy, Ordnance Factory Board shall continuously strive towards achieving the following:

- I. Establish and maintain a Quality Management System as per International Standard ISO 9001 (Latest version) & strive to achieve integrated Management System certification covering environmental and OHSMS in addition to Quality Management System.
- II. Involvement of all personnel in achieving the objective and need based training of personnel.
- III. Promote indigenization activity of imported stores.
- IV. Monitor, Control and improve the Quality of incoming materials, processes and products to ensure their specified quality and safety at all stages of life cycle of the product.
- V. Continually improve processes through technology up-gradation to achieve optimal utilization of resources like machine, manpower, materials etc.
- VI. Establish and maintain customer focus throughout the organization with the ultimate aim of achieving satisfaction of all stakeholders.
- VII. Emphasis on in-house R&D to innovate new products.
- VIII. Provide in-time after sale services to the full satisfaction of customer.
- IX. Strive to supply the products qualifying as per international acceptance practices at par with reputed foreign suppliers for similar range of products.
- X. Achieve demonstrable consistency of product quality and move towards self-certification

Milestones towards achieving the above goals shall be set by the concerned operating divisions keeping in view the technological capability of the factory and quality function requirement.

5.0 QUALITY MANAGEMENT SYSTEM

5.1 Ownership of Quality:

Being manufacturer, OFB through its factories shall own the responsibility of ensuring Quality System for delivery of products and services to its customers.

5.2 Quality Setup in Ordnance Factories:

(i) At the apex level, activities related to quality shall be looked after by QC division of OFB Head Qtrs. headed by Member/ Technical Service. The major responsibilities of QC division at OFB shall be :

- Formulation/Revision /Implementation of Quality Policy directives/guidelines at Ordnance Factories.
- Co-ordination & Interaction with all the stakeholders like Users, Ministry, Quality Assurance agencies.
- Monitoring & Controlling Quality Performance of the Organization.

(ii) At the unit level (i.e. Factories), each Ordnance Factory shall have a well established Quality Management System compliant to ISO-9001(Latest version) standard so as to deliver safe, reliable and fully compliant products/services to the Armed Forces with ultimate aim to achieve customer satisfaction. The quality management activities in factory shall include planning, establishment, measurement verification and validation, review, controls, and evaluate potential risk and mitigation plan of each process, preventive/corrective actions Risk and opportunities etc. Each factory shall,

document, establish and maintain processes to discharge above mentioned activities in the most efficient & effective manner.

(iii) Each factory shall have a Quality Audit Group (QAG) that will serve as an extended arm of QC division of OFB. This group shall audit the functioning of Quality Control System in OFs with reference to Input material, manufacturing process, acceptance etc.& provide feedback to factory as well as QC division of OFB for monitoring & control of QMS of the factory.




5.3 Quality Functions in Ordnance Factories :











The Quality functions in the factories shall be implemented/monitored by the following agencies:

- (i) Operator and line supervisor of production unit.
- (ii) Quality Control (QC) wings of the factory
- (iii) Authorised Inspection Agency (AIA) of the customers
- (iv) Quality Audit Group (QAG)

5.3.1 Roles & Responsibility

The responsibility of discharging quality functions of the agencies mentioned above shall be as follows:

	Stages of Inspection	Responsibility
	Input materials	
	All input materials (including critical parameters).	QC (OF) [@]
	Critical input materials (only for audit and surveillance of mutually agreed critical parameters)	AIA of Customer ^{*#}

	Stage /Inter-stage Production	
	Stage Inspection and tests	QC (OF) [@]
	Control Point Inspection and tests	AIA of Customer [*] / Jointly by QC(OF) & AIA of Customer
	Surveillance /Spot check on process & inspection reports & other documents generated by QC(OFs)	AIA of Customer [*]
	Final Product	
	Final Inspection and issue of QCC	QC (OF) [@]
	Final Acceptance Inspection(FAI)	AIA of Customer
	Dynamic Proof (Where specified)	AIA of Customer
	Packing of accepted store in approved packages	Concerned OFs
	a) Issue of Inspection note	QC(OF) [@]
	b) Issue of QAC (final issuing factory)	AIA of Customer
	c) Issue of inspection note (IFD issuing factory)	QC(OF) [@]

* As recommended by Raman Puri Committee, Ordnance Factories shall gradually take over their responsibility after suitably strengthening QC(OF).

For items where DGAQA is the AIA, store shall be offered for Quality Audit to AIA on receipt at OFs. Also, selection & proof of hardware components (wherever specified), shall be the joint responsibility of QC & AIA(QAA) of Customer.

@For Naval Armament Stores, DGNAI or his authorized Inspection agency

5.3.2 Inspection of Input materials:

For products issued by OFB to Army, for inspection of input materials, **SOP for inspection of input material**(updated from time to time)issued by OFB and available at OFB internet website www.ofb.gov.in under link 'policies', shall be the guiding document. For Air Force products, **DGAQA SOP**(updated from time to time) issued by OFB, and available at OFB internet website www.ofb.gov.in under link 'policies' shall be the guiding document. For Naval Armament Stores issued to the Indian Navy, input material inspection shall be undertaken by DGNAI or his authorized representative in accordance with instructions for Quality Assurance of Naval Armament Stores issued by DGNAI.

5.3.3 Inspection of Stores:

Ordnance factories shall produce the products meeting General Staff Qualitative Requirements (GSQR) provided by the customer i.e. the Indian Armed Forces. **GSQR** are documented in the form of **specifications** and **drawings**. Authority Holding Sealed Particulars (AHSP) shall be the custodian of the specifications and drawing and are also the authority for any change in specification & drawing. Items are produced as per the process schedule/Quality Assurance Plan, duly prepared by the concerned Factory in consultation with AIA/QAA/Rep of AHSP, if required and reviewed periodically. The role & responsibility of inspection at various stages of production is already mentioned in the para 5.3.1 above. The inspection & quality control of all the production stores produced will be guided by Quality Assurance Plan (QAP) of the concerned store.

5.3.4 Quality of tools , gauges, machinery & equipments, etc. :

The responsibility of quality control & inspection/periodic calibration of tools, gauges, machinery & equipments etc. used by factory, shall rest with the factory QC deptt. & will be maintained as per the process schedule, gauge schedule, QAP etc. The responsibility of quality control & inspection/calibration of tools, gauges, machinery & equipments etc. used by AIA of customer shall rest with AIA. Further testing facilities required by AIA at shop floor will be provided by OFs.

5.3.5 Quality System of Vendors:

Vendors in Ordnance Factories are registered as per the provisions of **SOP of vendor registration** issued by OFB. The same is available at OFB internet website www.ofb.gov.in under link 'vendor registration', shall be the guiding document. As per the SOP, vendor has to map its technological capability and inspection facilities with the requirement mentioned by the factory.

5.3.6 Process Audits:

(i) To ensure that specified processes are followed at every stage of production in Ordnance Factories, Quality Audit Group (QAG) of each factory has been entrusted to carry out process audit as well as audit of Quality system in Ordnance Factories as per the guidelines issued **vide OFB Order No 108/QAG/TS/QCS Dated 18.07.2014**(enclosed as Annexure-'A').

(ii) Representatives of AIA may independently carry out process audits for which separate SOP on process audits have been issued vide order no 01847/OFB/ Secy (DP)/DGQA/Tech Coord (16 TC) dtd 14.08.2014(enclosed as Annexure-'B'). Representative of AIA may also carry out process audit jointly with QC or QAG of OFs. In case of Naval Armament Stores, DGNAI or his authorized rep would undertake process audit under the following conditions viz. change in manufacturing

process, change in raw material, occurrence of defects in service or as and when required.

5.3.7 Transfer of Inspection Responsibility(TOIR) Audit for DGAQA

In line with transfer of inspection responsibility of input materials, stage and inter-stage inspection from DGQA to DGOF, procedure of Transfer of Inspection Responsibility (TOIR) of input material, stage and inter-stage inspection from DGAQA to DGOF has been jointly formalized and documented as **SOP for TOIR**. An audit on implementation of TOIR shall be carried out yearly by Board of Officers consisting of members from HQ-DGAQA, OFB, Concerned AIA & QC of respective OFs.

6.0 Framework for Defect Investigation :

6.1. For defects at customer end:

AHSP shall be the authority to carry out defect investigation in association with concerned factory rep to find out the exact cause of defect, agency responsible for the defect and suggest remedial measures etc. For carrying out defect investigation every AHSP has got their own SOP. For Air Armament Stores the DI at customer end to be carried out as per the provision given in DDPMAS (latest version).The timeframe of investigation mentioned in the documents mentioned above shall be followed.

6.2 For defects at factory end:

- (i) Every factory has got Failure Review Board (FRB) with SQAQO/ local NAIAs one of the members & Sr.GM/GM being the Chairman of the board. FRB shall

find out the root cause of the failures & suggests remedial measures to avoid such occurrences in future. The detailed instruction on functioning of FRB has been circulated vide OFB letter no. 108/PR/TS/QCS Dtd. 09-11-2004 and 108/FRB/QCS Dtd. 23-09-2013(enclosed as Annexure-'C'). For IAF stores, FRB may be constituted on similar lines with member of AIA. Normally, FRB shall conclude its proceedings within six months. Failing which, the issue may be raised to next higher level for early conclusion.

(ii) Investigation of Heavy Rejection

All rejections in excess of standard estimates should be immediately subjected to a separate or joint inspection by Production and QC and suggest remedial measures urgently to avoid recurrence of such rejection. Where similar rejections are found to be in persistence, the same will be personally investigated by the senior officers. Findings of investigation, causes of rejections and remedial measures shall be forwarded to the concerned operating division at OFB. Investigation Reports of such high rejections may be shared with AIA. Normally, such investigations to be concluded within three months.

6.3 Disposal of Rejected store

Stores which are finally rejected and cannot be gainfully utilized, the same will be disposed of as per applicable standard procedure.

7 Documentation :

Each Ordnance Factory shall maintain **Quality Manual** as per ISO 9001 latest version. Quality manual will describe in detail how the factory's Quality Management System operates. It will include individual factory's quality policy and goals, a detailed description of its quality control system that may include staff roles, procedures, systems, authority, responsibility, resource management, controls,

identification & traceability, conformance & nonconformance etc. required to deliver quality products & services in line with its goals & objectives.

Apart from the above, every factory may maintain following documents & records with respect to Quality Management Systems:

System related documents

- i. Procedures for implementation and maintenance of QMS
- ii. Work Instructions/SOP
- iii. Forms and Formats

Product and service related documents

- i. Drawing/Specification
- ii. Process Schedule
- iii. Quality Assurance Plan(QAP)
- iv. Inspection schedule, Gauge schedule, Proof schedule
- v. The documents, record for NABL Accredited lab as per IEC 17025

Documented procedure is to be established for the identification/ storages, protection, retrieval, retention time and disposal of record to provide evidence and compare that the results achieved are as planned. The followings records/ documented information shall be retained.

- i. Management review meetings
- ii. Customer Complaint & feedback
- iii. Supply orders (Contract review)
- iv. Training Records
- v. Approved Vendor List
- vi. Test and inspection report
- vii. Material inward slip
- viii. Calibration records
- ix. Non-conforming items
- x. Preventive measures records
- xi. Production deviation form

- xii. Product identification
- xiii. Internal Audit
- xiv. NQDBMS
- xv. Record of improvements done in the process/ product.
- xvi. Defect Investigation Report
- xvii. Configuration control document(for Air Armament Stores)
- xviii. Minutes of QMS & Sub-committee meeting on QA and special process Audit.

8 **Synergy among stakeholders:**

To ensure delivery of quality products & services, it is necessary to establish synergy and coherence among all stakeholders. In order to achieve the same, following shall be the mechanisms to be followed by each of the Ordnance Factory:

- (i) **Failure Review Board:** An institutionalized system for analyzing failure and taking corrective activities as a step towards continual improvement. Separate Board for air armament stores with a member of AIA(QAA) shall be formed.
- (ii) **Alteration Committee/ Configuration Control Board:** Formed to take product improvement with aim to enhance performance safety and shelf life.
- (iii) **Interaction Meeting with Resident Inspectors:** To work in close coordination with DGQA/DGAQA/DGNAI and resolve dispute, if any as per the mutually agreed schedule.
- (iv) **Quality Review Meeting (Monthly):** To review in-house Quality Control activities related to input material, production process and improvements in the system as a whole.
- (v) **Quarterly Quality Review Meeting:** May be held between CQA (Ammn) and General Managers of Ammunition Group and feeder OFs to resolve the technical issues unresolved at SQAE level. DGAQA to be included in case of Air Armament Store. For Navel Armament Stores, the meeting is to be held between CNA(OF) and General Managers of Ammunition group and feeder OFs to resolve the technical issues not solved at local NAI level.

- (vi) **Quarterly Review Meeting on defects & accidents of OFB products:** May be held by DGQA between DGQA, OFB, Users, Designers etc. for monitoring, reviewing cases of defect investigations related to stores supplied to Army.
- (vii) **User Interaction Meeting**
The Interaction Meeting schedule and periodicity for various levels has been finalized with MGO Branch. It was decided that the interactions with user will be at three levels namely Unit level, Division Level and Apex Level. P&P Division of OFB will be nodal for interactions at Division and apex Level. Unit Level interactions would be monitored by respective division. Similar methodology shall be followed for stores supplied to Indian Air Force. For Naval Armament Stores, the User Interaction Meeting shall be held on a quarterly basis between Indian Navy & OFB to take stock of existing bottlenecks and address customer concerns.
- (viii) **NQDBMS (Networked Quality Database Management System)**
In NQDBMS, document related to document audit/process audit, defect investigation, Failure Review Board, supply order related activities etc. may be uploaded.

09. Handling of Deviation against store produced in Factory:

Deviations in products/services to be avoided normally. However, in the event of unavoidable circumstances, deviation if applied by factories, may be authorized by the followings authorities:

Sanctioning authority	Class of deviation	Nature of deviation
Designer / AHSP	A	Major deviations in design and materials affecting serviceability, interchangeability and durability.
Designer / AHSP	B	Major deviations in design and materials affecting durability but not affecting serviceability, interchangeability.
AIA	C	Deviations in design and materials causing minor changes in durability but not affecting serviceability or interchangeability.
AIA	D	Minor deviations in design, materials but not affecting durability, serviceability or interchangeability.



AIA	E	Minor deviations in manufacturing details not affecting design, materials, serviceability, interchangeability or durability.
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Note: For stores issued to Indian Navy, normally, no deviations from acceptance parameters are permitted. However, the matter would be considered on a 'case to case basis' by a waiver board comprising members from OFs, NAI, User and DRDO. In case of Naval Armament Stores, Sanctioning authority shall be CNA (OF) for Class A,B and C.

10. Warranty Scheme:

Products of Ordnance Factories are issued to the Indian Armed Forces under warranty scheme. The complete details of warranty scheme as well as the operation of warranty scheme is covered in the '**SOP of Warranty Scheme in Ordnance Factories**' issued by OFB shall be the guiding document.

11. OFB shall review and upgrade this policy periodically.

	<p>Government of India Ministry of Defence ORDNANCE FACTORY BOARD 10-A, S. K. Bose Road Kolkata - 700 001</p>	
<p>TEL : (033) 2213 0281 (DDG/QCS) TEL : (033) 2210 0823 (Dir/QCS)</p>		<p>FAX: (033) 2210 7629</p>

No. 108/QAG/TS/QCS

Dt. 18 - 07 - 2014

To
The QAGOs
Quality Audit Group (QAG)

Sub: - Audit guidelines for QAG

1. QAGO to prepare quarterly audit programme for all QAGs under his control by selecting at least one assembly/sub assembly/product in consultation with Sr. GM/GM for audit every month. Priority to be accorded to assembly/sub assembly/product having higher failure/RFR. It should be planned in such a way that all the major/critical assemblies should get audited in a year.
2. For selected assembly/sub-assembly product and its components audit is to be carried out by QAG as follows.
 - A) a) Input material inspection as per specification/drawing.
 - b) Availability of TOT/AHSP documents(latest version)
 - c) Availability of updated Process Schedule, QAP & Gauge Schedule & their conformance to TOT/AHSP documents
 - d) Manufacturing process (Including process parameter) w.r.t process schedule.
 - e) Stage and final inspection as per QAP/Process Schedule.
 - f) Inspection documents and records.
 - g) Identification mark on components sentenced RFR.
 - h) Non removable identification mark on rejected component at all stages of inspection.
 - i) Procedure being followed for defacing/destruction of rejected stores.
 - j) Integrity of entries in NQDBMS.
 - k) Storage, Packing & Dispatch w.r.t. Specification/Process Schedule.
 - l) Calibration of Gauges & Testing Equipments.
 - m) Any other non-conformity observed.

- B) All the non-conformities to be recorded in a tabular form with a column for Remark/PDC of DO/GO/CO of audit area.
- C) Complete report to be sent to QAGO and Sr.GM/GM.QAGO will also verify/monitor/crosscheck removal of non-conformity.
- D) Non conformities to be again verified every month by QAGs and pending points to be brought to the notice of Sr. GM/GM & QAGO.
3. QAGO will prepare summary of audit activities of all the QAGs under his control and send to QCS, OFB by 7th of every month in the following formats I & II.

Format -I

Factory:

Assembly/sub assembly/product:

Number of non-conformity observed:

Number of non-conformity to be settled within a month:

Detail of non-conformities likely to take more than one month to settle (as per the format below):

Audit Area	Brief of Observations/Nonconformities	PDC by date
Input material inspection		
Availability of TOT/AHSP documents		
Process schedule, QAP & Gauge Schedule		
Manufacturing process		
Stage and final inspection procedure		
Documentation and Records		
Handling of RFR and Rejections		
Entries in NQDBMS		
Storage, Packing & dispatch		
Calibration of Gauges & Testing Equipments		

Format-II

Factory :

Assembly/Sub assembly/Product	Month (Year)	No. Of Non-conformities	
		Observed	Settled

Note: Report should include month wise updated status of all previous months.

4. QAGOs to audit themselves any critical area in consultation with /as directed by Sr.GM/GM, affecting the quality of products and its findings to be discussed with Sr.GM/GM.
5. QAGOs to maintain proper record of all activities carried out by their respective QAGs for review by Member/TS.

Next report in the above formats should reach QCS,OFB by 07.08.14.


(Rajiv Gupta)
Member/TS

Copy to:

All Sr.GM/GM- Audit of critical areas may be assigned to QAGOs as and when required.

254/TS
27.8.14

19725/ES
27/8

e-mail : tc16-dgqa@nic.in

Tele: 23016219
Fax : 2301 3760

REGISTERED
Government of India
Ministry of Defence
Deptt of Defence Production
Dte Gen of Quality Assurance
Room No. 37, 'H' Block
Nirman Bhawan PO
New Delhi-110011

No. 01847/OFB/Secy(DP)/DGQA/Tech Coord (16TC) 14 Aug 2014

✓ DGOF & Chairman OFB
Chairman BEML
Chairman BDL
Chairman BEL

SOP ON PROCESS AUDIT

1. The DGQA Organization is multi disciplinary in nature, with the responsibility of Quality Assurance of stores & equipment widely ranging in terms of technology, population, criticality, usage pattern etc. Accordingly, the manufacturing process also differs in each case. The onus of building quality in a product is primarily with the manufacturer. DGQA is mandated to provide second party Quality Assurance. The challenge for DGQA, which is responsible for quality, is to ensure that the Quality Management System (including QC and first party QA of the production agencies) is so strengthened that the quality of end product is consistently high. DGQA can then carry out Quality Assurance in its true sense i.e. Product Audit at the final stage and Process Audits for the purpose of further enhancing quality.

2. Since most of the Defence manufacturers are still a long way from achieving such levels of high quality on their own, the role of the Second party Quality Assurance agency i.e. DGQA becomes all the more important since it has to continue with its current close involvement and also create an environment to move towards self certification. Therefore, it is important for the DGQA Organisation to evolve newer tools & methodologies to achieve enhanced and consistent levels of quality and at the same time build an enabling environment by introducing more involvement and accountability of the QC and first party QA agencies of the manufacturer. One such methodology is conduct of regular Process Audits.

M/S
27/8/14
DDG/QCS
Re discuss
14
27/8

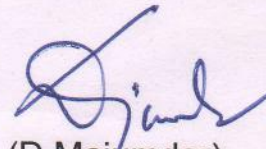
3. Process Audits are purposeful because they can identify weaknesses, while also identifying areas of improvement. As per ISO9000: 2005, process Audit is the systematic, independent & documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which the process audit criteria are fulfilled.

4. A Standard Operating Procedure (SOP) has been formulated to standardise the methodology of conducting Process Audits across all the Tech Directorates of DGQA. This SOP describes the documented procedure of carrying out audit of manufacturing/assembly/testing and evaluation processes by DGQA Establishments.

5. The selection of processes to be audited will be done based on feedback received on the quality of products supplied & defects reported from the field. User representatives may also be associated with this activity on requirement. Effectiveness of the process audits will also be gauged through the same feedback loop.

6. A copy of the SOP is enclosed for your info please. Regular feedback from stakeholders at all levels on improvement in quality of products, post adoption of the Process audit philosophy by DGQA Organisation would be appreciated.

7. During the last 11 months, DGQA Estts have conducted 87 process audits of identified processes. A total of 254 Non-conformities were noted and conveyed to the respective auditees. 51 Non-conformities of major/critical nature have been shortlisted. A number of them have been addressed while others still need immediate attention. The details of the major Non-conformities giving out PDC and current status of settlement is attached as Appendix for your necessary action.



(D Majumdar)
Maj Gen
ADGQA (PP&T)
for DGQA

Encl: As above

Copy to:-

JS(ES) }

w.r.t. para 9 of "Roadmap for improving Quality of Defence products through systemic changes in Quality Assurance activities" prepared & submitted by DGQA vide part case No.01847/OFB/EC-QA/DGQA/Tech Coord (16 TC) dated 08 May 2014.

DCOAS(P&S)
MGO
E-in-C
DG MF
DG Inf
SO-in-C
DG OS
DG Arty
DG ST
DG WE
DG EME
DG AAD

} For information please.

Internal

All Tech Dtes

} For necessary monitoring of NCs at para 7 above and implementation of SOP.

DIQA

} For information please.

STANDARD OPERATING PROCEDURE
CONDUCT OF PROCESS AUDITS BY DGQA

Introduction

1. DGQA Organisation is multi disciplinary in nature with the responsibility of Quality Assurance of Stores & Equipment widely varying in terms of technology, usage pattern/exploitation, criticality etc. The role of DGQA has gradually evolved from Quality Control (QC) to Quality Audit and Surveillance, with the aim of ensuring product quality shifted to the manufacturer, who is responsible for internal Quality Control and is also the first party quality assurer. DGQA is mandated to provide second party Quality Assurance. The challenge for DGQA, which is still held responsible for quality, is to ensure that the QMS is so strengthened (including QC and first party QA of the production agencies) that the quality of end product is such that it qualifies for self certification. DGQA can then carry out Quality Assurance in its true sense i.e. Product Audit at the final stage and Process Audits for the purpose of further enhancing quality towards higher levels of six sigma, and measurement of defectives in parts per million (ppm), ppb and ppt. It can also concentrate on core areas like Configuration Management.

2. Since most of the Defence manufacturers are still a long way from achieving such levels of high quality on their own, the role of the Second party Quality Assurance agency i.e., DGQA becomes all the more important since it has to continue with its current close involvement and also create an environment for the manufacturer to move towards self certification. Therefore, it is important for the DGQA Organisation to evolve newer tools & methodologies to achieve enhanced and consistent levels of quality and at the same time build an enabling environment by introducing more involvement and accountability of the QC and first party QA agencies of the manufacturer.

3. One such approach is conduct of regular Process Audits. The quality of a product depends largely on the input material used and the proper adherence to the laid down process. In order to assure quality, it is important that Process Audits are carried out periodically to ensure adherence to process schedules. Process Audits are purposeful because they can identify weaknesses, while also identifying areas of improvement. (for the production dept as well as the QC dept) Process Audit is one of the important and useful tools in ensuring consistency in Quality of products produced through an established process. An optimum combination of process parameters will produce desired results. As per ISO 9000: 2005, Process Audit is the systematic, independent & documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which the process audit criteria are fulfilled.

4. The present tools available with DGQA to judge the Quality of defence stores are in terms of feedback from the User (Field formations), Ordnance Depots and Base Workshops. During production, the health of a manufacturing unit in terms of Quality is accessed by the number of Rejections at final stage, Quantities Returned for

Rectification (RFR), Quality Improvement Notes and Non Conformance Certificates issued during production stage, deviations sought in production etc. Ideally if the Quality Control department of the Production Agency is adequate there should be no reason for RFR by the QA agency which carries out only sampling checks whereas the QC of the factory carries out a 100% inspection. The selection of Processes to be Audited should be based on the feedback on Quality of products and the effectiveness of the process audits should also be gauged through the same system of feedback thus making the cycle complete. The ultimate improvement in the system would be a very important enabling factor for the Production Agencies to move towards self certification.

Aim

5. This SOP aims to standardize the methodology of Process Audit carried out by the DGQA establishments with a view to improve quality of production, reduce defects and achieve consistency in the quality of stores produced for Defence forces.

Scope & Applicability

6. The SOP lays out a standardized procedure to be followed by DGQA Estts across all Disciplines while carrying out Process Audits in respect of DPSUs/Ordnance Factories/Trade firms, with a view to customize the Process Audit procedure in line with the role of Second Party quality audit performed by the DGQA Organisation. The SOP lays down a frame work encompassing various activities involved in process audit.

7. This SOP describes the documented procedure of carrying out audit of the manufacturing / assembly / testing / evaluation / development processes by the DGQA establishments. The contents of this procedure have been authorized and approved for issue by the DGQA. It shall be the responsibility of all officers and staff to familiarize themselves with the contents of this SOP and implement it at all times.

8. The effectiveness of a process control system depends upon the accuracy and speed with which the various elements of control functions are carried out. An indication of the effectiveness of a control system is provided by its shortest reaction time, i.e., the time interval between the occurrence of a deviation and the application of corrective action.

Process Audit

9. Process audit is an appraisal of the whole quality system. It is as much concerned with the quality of the product, as with the adequacy and effectiveness of the quality control system. Process audit may be conducted periodically or only when occasion demands, due to existence of quality problems.

10. Process audit includes the examination of the following aspects:-

- (a) Completeness and clarity of the manufacturing drawings and specifications and procedure for their updating.

- (b) Process capability of manufacturing equipment and adequacy of process controls.
- (c) Process control procedures of incoming materials and manufacturer management.
- (d) Adequacy and accuracy of gauges and test equipment and procedure for their calibration.
- (e) Quality Management Systems.

11. In addition to the above, samples of the important products may be taken for critical inspection in the laboratory. The number and type of defects in the samples will provide an index of the effectiveness of the control system.

Management of Process Audit Programme

12. ADGsQA of the Tech Dtes will grant the authority for managing process audit programme. The establishment, implementation, monitoring, review and improvement of the audit programme and identifying resources and ensuring their availability would be undertaken by the Controllerates and SQAES. Training of the auditors would be undertaken through DIQA, external Training Institutes and internal training facilities available with the Controllerates.

13. Tech Directorates would use the forum of Quality Review Meetings (QRMs), to be conducted on a quarterly basis, for analyzing all the data regarding defects received from the following :-

- (a) User. Defect reports and Feedback on the product.
- (b) Production Agencies. RFR data, Rejections and NCs in input material.
- (c) Proof Ranges. Rejection in proof.
- (d) Any other source.

On analysis, processes which need to be rectified will be identified and prioritized depending on the criticality and urgency of rectification. Detailment of process audit teams and timely completion will be monitored by the respective Tech Directorates.

14. To streamline & coordinate the activity of Process Audit at DGQA level, instructions will be issued by DQA(PP&T)/ 16TC. All Tech Dtes will carry out a detailed analysis of Defects reported from the field, and data collected during Production (which should be captured in the NQDBMS) relating to Non Conformities in Input material, RFR during production & Rejections at FAI/Proof. In order to rule out/ home on to the root cause of the defect, due to faulty process, Process Audits will be planned. These will be in addition to the routine Defect Investigation procedures already in place. Priorities of conduct of Process Audits will be decided by the Tech Dtes depending on the criticality/ recurrence of the Defects amongst other factors. The analysis of the Process Audits conducted will also be carried out in subsequent QRMs using data generated for the Product under Audit. To the extent possible, user and manufacturer representatives

should also be invited for the QRMs. Feedback will be provided to all the stake holders i.e. OFB/PSUs/Trade Firms/User/MoD in terms of both anomalies and recommendations and subsequent improvements if any. The feedback compiled for the various agencies should clearly bring out the value addition done by DGQA towards improving quality. Flow Chart of the Feedback system is given at **Appx 'A'**.

15. Outcome of the audit of various processes would be analyzed and remedial /corrective measures specified. Remedial measures in case of major deviations / observations would be incorporated into the process through deliberations with the Quality control department of the Production Agency. Process improvements would be closely monitored and reviewed continually and improvement formalized through AHSP. All Non Conformance(s) (NC) given during audit objection will be taken to their logical conclusion by effectively incorporating changes in design, material or method. These changes should be reflected in manufacture/vendor documents and also in AHSP documents such as the Quality Assurance Instructions (QAIs) etc, wherever necessary.

16. **Execution of On-Site Process Audit Activities.** The process audit team shall identify and plan the audit of production, Quality Control and Testing processes, which directly affect quality and shall ensure that these processes are carried out under controlled conditions. Controlled condition shall include the following:-

- Documented procedures defining the manner of production, Quality Control and Testing where the absence of such procedures could adversely affect quality.
- Use of suitable production machinery and a suitable working environment (e.g. temperature, humidity, lighting and cleanliness, etc) and safety measures.
- Compliance with reference standards, quality plans and/or documented procedures.
- Monitoring and control of suitable process parameters and product characteristics; monitoring and control of key characteristics where required by supply order/contract.
- The approval of processes and equipment, as appropriate.
- Criteria for workmanship, which shall be stipulated in the clearest practical manner (e.g. written standards, representative samples or illustrations).
- Suitable maintenance of equipment to ensure continuing process capability.
- Accountability for all products during manufacture (e.g. part quantities, split orders, nonconformities);

- Evidence that all manufacturing and inspection operations have been completed as planned.

17. Process Documentation to be audited shall contain:-

(a) Drawing, parts lists, process flow charts including inspection operations, production documents (e.g. manufacturing plans, work order, process cards) and inspection documents;

(b) Documents associated with specific tools enabling the tools to be designed, produced, validated, controlled, used and maintained.

18. Generating Audit Findings. Audit evidence should be evaluated against the audit criteria to generate the audit findings. Audit findings can indicate either conformity or nonconformity with audit criteria. Conformity with audit criteria and their supporting evidence should be recorded. Non-conformities and their supporting evidence should be recorded. Non-conformities may be graded. They should be reviewed with the production agency to obtain acknowledgement that audit evidence is accurate and that non-conformities are understood. Every attempt should be made to resolve diverging opinions concerning the audit evidence and findings and un-resolved points should be recorded. When specified by the audit objectives, audit findings can identify opportunities for improvement. A flowchart of Audit activities is given at **Appx 'B'**.

✓ 19. A typical check list for guidance of auditors is given below:

- Is the process defined in detail indicating sequence, manufacturer procedures, input, output, customer & related details for effective management?
- Are Standard Operating Procedures available? Are they current & being followed?
- Are quality characteristics of input materials critical to desired results identified? What is the frequency of their evaluation?
- Are Controllable Parameters being monitored & verified?
- How much variation is there around target values?
- How is the process parameter controlled?
- How are the control charts used?
- Is the measurement system adequate?
- What measurements are taken on process parameters?
- Are all resources including equipment, utilities, competent, manpower & work environment provided?
- Is there an audit schedule?
- Are corrective & preventive actions being taken as required?

20. Preparing the Audit Report. The audit team leader should be responsible for the preparation and contents of the audit report. The audit report should provide a complete, accurate, concise and clear record of the audit. On completion of Process Audit, salient aspects including non-conformities and recommendations which merit attention will be forwarded to DGQA Tech Coord (16 TC) duly approved by ADGsQA

within 30 days of completion of the audit. Feedback should be forwarded in the following format:-

Sr No	OFy/PSU/ Trade firm Audited	DGQA Estt	Process Audited	Team Leader	Major Non conformities (NCs) observed	Recommendations	PDC for settling NCs	Remarks
-------	-----------------------------	-----------	-----------------	-------------	---------------------------------------	-----------------	----------------------	---------

21. **Action on Non-conforming Product.**

Following actions will be implemented on non-conforming product :-

- The manufacturer shall establish and maintain documented procedures to ensure that a product that does not conform to specified requirements is prevented from unintended use or installation.
- The audit team shall provide for identification, documentation, evaluation, segregation (when practical) and disposal of non-conforming product.
- The procedures established by the manufacturer shall also take into account process nonconformity that may result in product nonconformity.

22. **Corrective and Preventive Action.** The manufacturer shall establish and maintain documented procedures for implementing corrective and preventive action and shall implement and record any changes to the documented procedures resulting from corrective and preventive action.

(a) **Corrective Action.** The procedures for corrective action shall include:-

- (i) Effective handling of User's complaints/feedback and reports of product non-conformities.
- (ii) Investigation of the cause of nonconformities relating to product, process and quality system, and recording the results of the investigation.
- (iii) Determination of the corrective action including product improvement needed to eliminate the cause of non-conformities.
- (iv) Application of controls to ensure that corrective action is taken and that it is effective.

(b) **Preventive Action.**

- The use of appropriate sources of information such as processes and work operations which affect product quality, audit results, quality records, service reports and customer complaints to detect analyze and eliminate potential causes of nonconformities;

- Determination of the steps needed to deal with any problem requiring preventive action;
- Initiation of preventive action and application of controls to ensure that it is effective;
- Ensuring that relevant information on actions taken is documented.
- Non conforming part, material or method should not form part of any future lot of same / similar product.

23. Feedback from Process Audit will be maintained in database at Technical Dtes level. Completion report & Major NCs which merit attention of DGQA will be regularly reported. Moreover, details of Process Audit & follow up action taken will also be included in the Annual Quality Report of OFs prepared by resident SQAEs. A typical Flowchart regarding conduct of Process Audit by DGQA Estts is given at **Appx 'C'**. format for monitoring improvement in Quality as a result of process audits is given below. All Tech Dtes will forward feedback as per format post QRM meetings(Defect Investigations) by 30th of Apr,Jul,Oct & Jan.

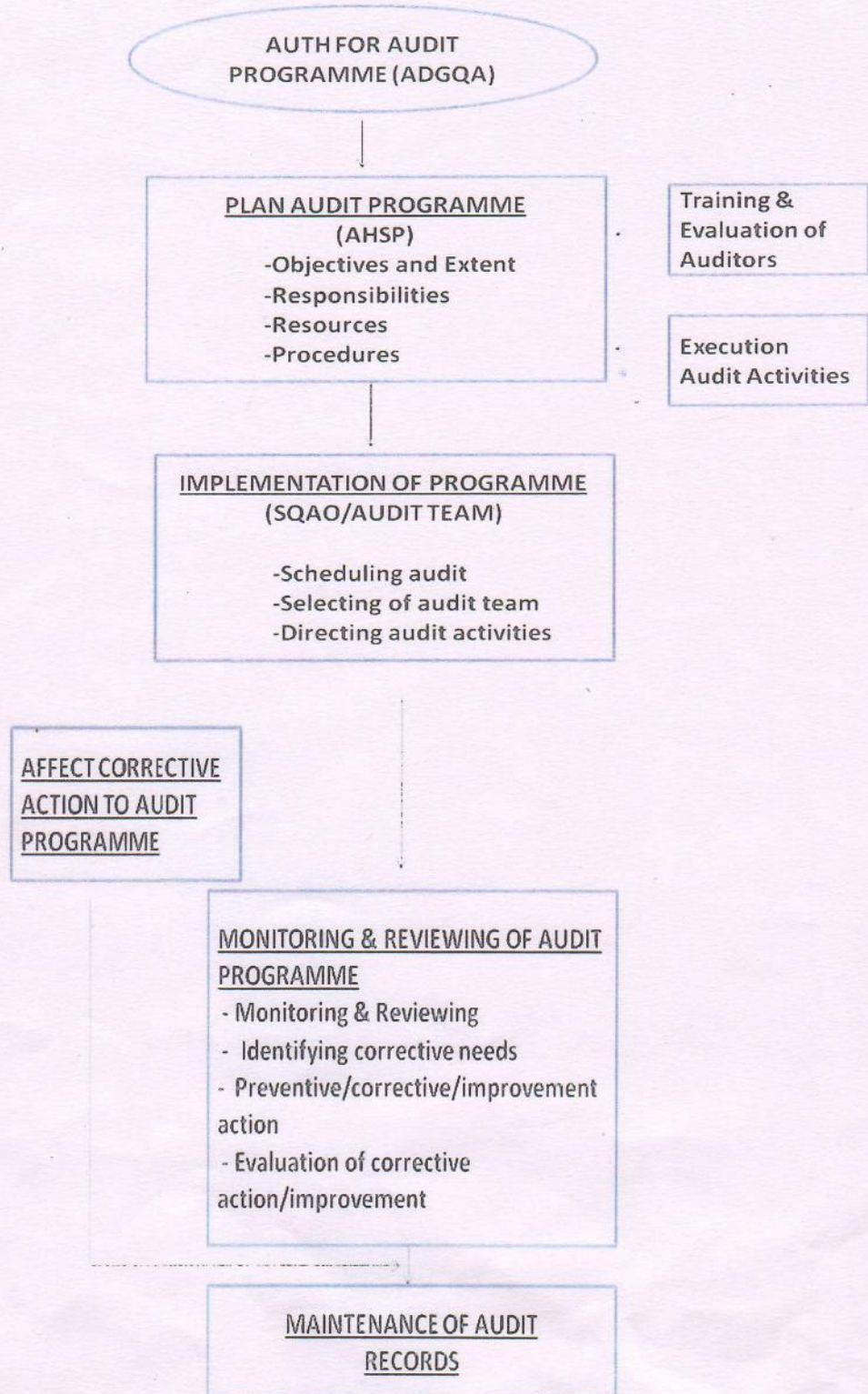
Ser No	Date	Factory audited	Process audited	Major NCs	PDC for settling NCs	Whether Corrective action taken (Y/N)	Any Improvement in Quality post corrective action	Remarks

CONCLUSION

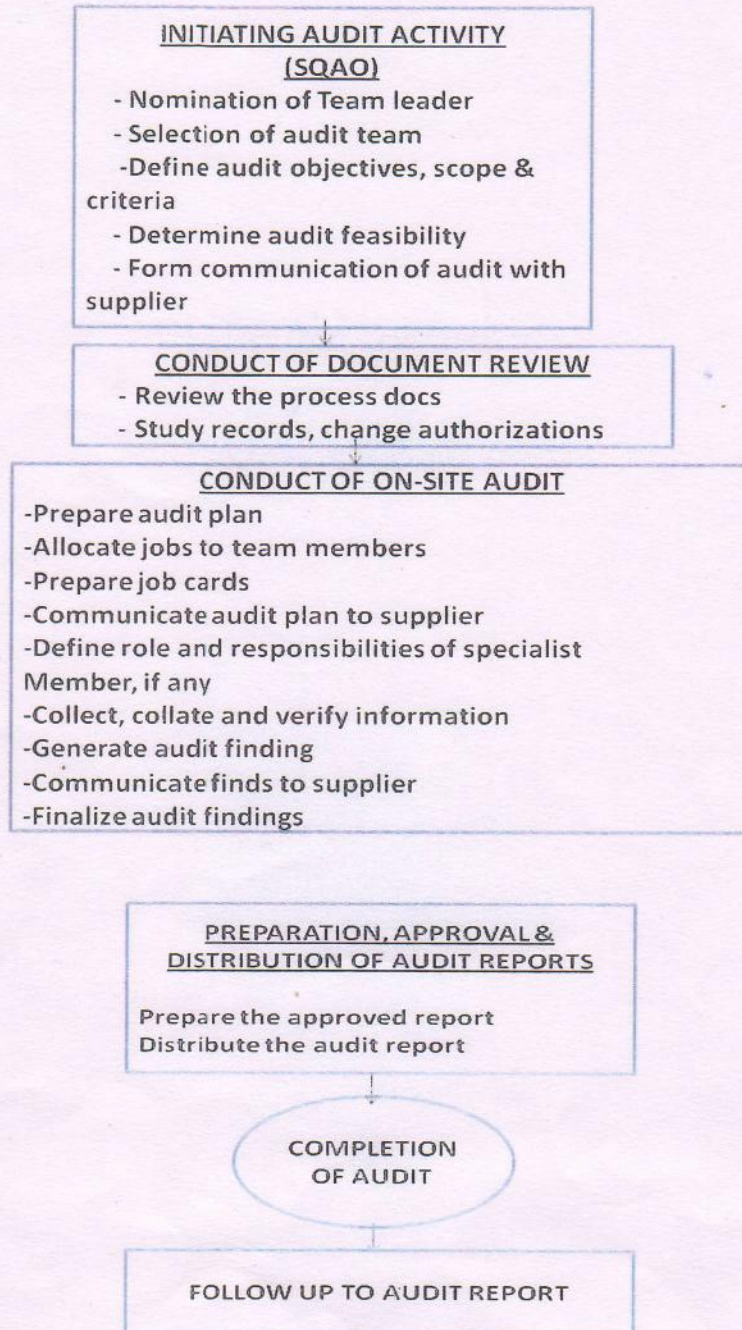
24. Audit must be independent of the established inspection and process controls. Audit results should be properly documented and forwarded to the Quality Manager as well as to the concerned divisions and the sections of the Production Agency. Any discrepancies revealed in the audit should be rectified within a reasonable period. Follow up action can be progressed by the Quality Manager under whose aegis process audit is normally carried out. Process audit should be regarded as a tool to help in improving the quality of a product and not for fault finding. Process audit requires the active cooperation of all departments and sections concerned with the quality of the product. This cooperation may not be forthcoming if there is fear of process audit.

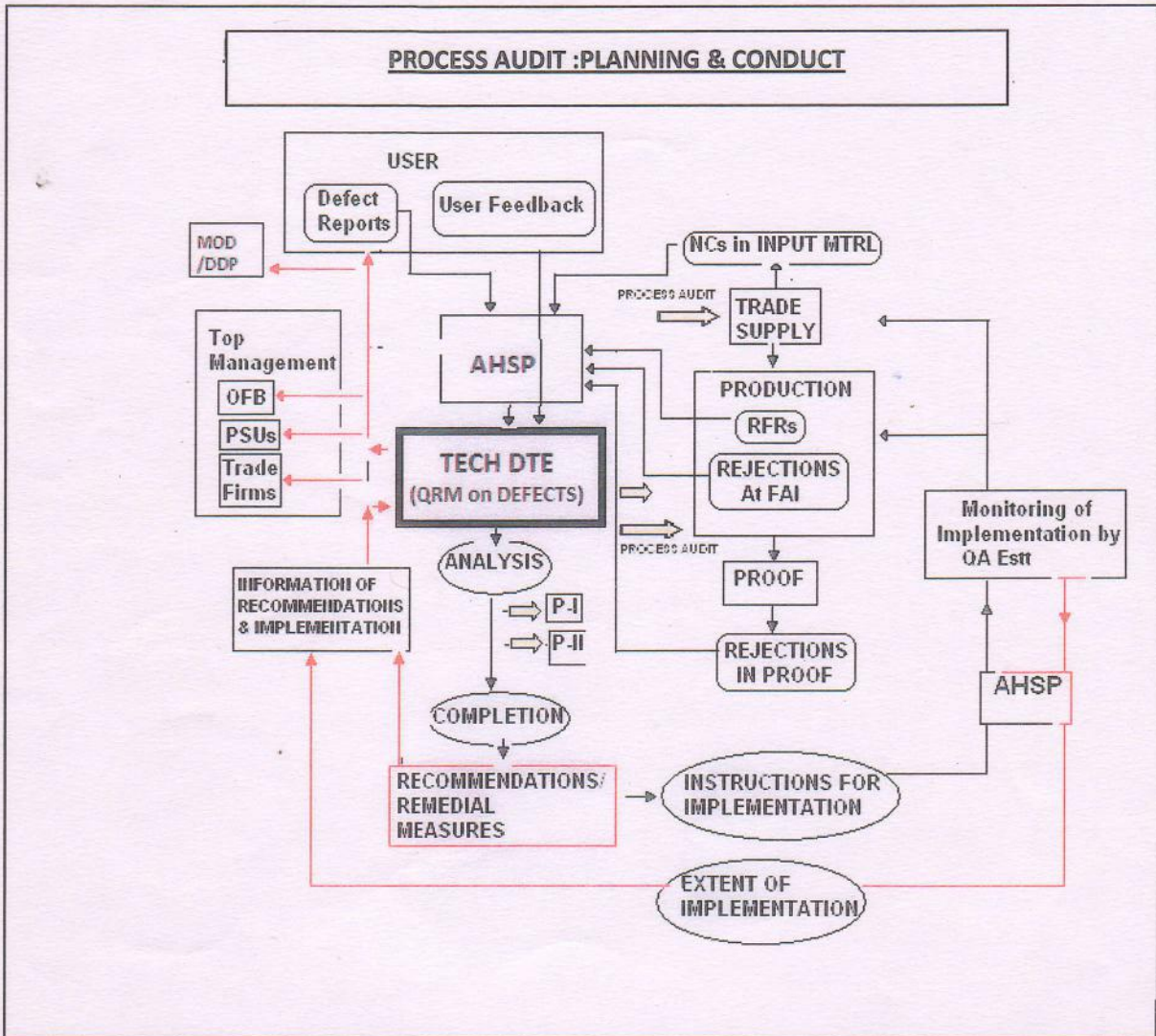
25. The conclusions of a systematic process audit may indicate need for corrective, preventive or improvement actions in processes in manufacturing methods and engineering practices. The process auditing checks thereby result in product quality improvements and performance of the end product. The completion and effectiveness of corrective action should be re-verified. It is, therefore, essential that DGQA and Production Agency act as equal partners working in tandem to facilitate continual product quality enhancement through process audits.

PROCESS FLOW FOR MANAGEMENT OF AUDIT PROGRAMME



FLOW CHART OF TYPICAL AUDIT ACTIVITIES







**Government of India
Ministry of Defence
Ordnance Factory Board
"AYUDH BHAWAN"
10-A, S. K. Bose Road
Kolkata - 700 001**



Tel : (033) 2213 0281 (DDG/QCS)
Tel : (033) 2210-0823 (Dir./QCS)

FAX: (033) 2210
7629

No.108/FRB/QCS

Date : 23.09.2013

To
The Sr. General Managers / General Managers
All Ordnance Factories

Sub:- Failure Review Board

Ref :- i) OFB letter No.- 108/PR/ISRAEL/TS/QCS, Dated- 09-11-2004
& 108/FRB/TS/QCS, Dated-13-12-2005.
ii) Minutes of the Meeting held with DGQA on 23-03-2013 at OFB.

1. As a step towards continual improvement, FRBs have been created in each Factory as an institutionalized system for attending internal failures noted during production process and FAI or reported by customers vide OFB letter under reference (i) (copy enclosed-A).
2. The decision has been taken in the interaction meeting with DGQA on 23-03-2013 at OFB, that all internal failure (during proof etc.) would be investigated under the aegis of Failure Review Board led by GM with SQAQO as one of the member. Findings of the Board along with the recommendation, salvaging actions would be examined by the AHSP for further necessary action.

Regarding all the external failures (during exploitation by user), defect investigation will be led by AHSP with the Factory Representative as one of the member as presently is being done.

3. **Further following were also decided in the meeting with DGQA on 23-03-2013.**
 - i) The FRB meeting will be held every month under the Chairmanship of Sr.GM/GM only and SQAQO holding charge will be present himself.

(2)

- ii) Defect Investigation to find out the causes under the aegis of FRB to be initiated for all the items rejected in the final acceptance test.
- iii) A time frame also needs to be decided for completing the investigation in the FRB meeting.
- iv) Corrective action to be taken to avoid any recurrence of the defect.
- v) Implementation of recommendation of the FRB to be reviewed in the subsequent meetings.

FRB is a very important step in improving the quality of product in Ordnance Factories where the decisions will be taken jointly by GM & SQAO. Sr. GM's/GM's are therefore requested to hold FRB every month without fail and forward the minutes of the FRB meeting to the QCS/OFB from Sept,13 onwards.

A line of confirmation will be appreciated.

 25/9/13
(M. K. JAIN)
Member/PEDB & TS

प्रकार
त्रालय
"आयुध भवन"
दीराम बोस रोड,
700 001

GOVERNMENT OF INDIA
MINISTRY OF DEFENCE
ORDNANCE FACTORY BOARD
"AYUDH BHAVAN"
SAHAJEE KHUDIRAM BOSE ROAD
KOLKATA - 700 001



संस्था रक्षाआयुध, कोलकाता
TELEGRAM MUNITIONS, KOLKATA
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फैक्स : (033) 2248-7665
FAX : (033) 2248-7665

सब पत्र व्यवहार सचिव के नाम करें किसी अधिकारी के नाम
All correspondence should be addressed to the Secy
and not to any officer by name

No.108/PR/ISRAEL/TS/QCS

Dt: 09/11/2004.

To
Sr. General Manager/ General Manager
All Fys.

Sub : Failure Review Board.

1.0 As a step towards continual improvement it has been decided to create an institutionalised system for attending to failures.

1.1 A "Failure Review Board" shall be formed in each Factory with constitution & functions as detailed below :

1.11 Constitution : 'Failure Review Board'

General Manager	- Chairman
Addl. General Manager / Responsible for Quality control	- Member
Addl. General Manager/ Responsible for production of concerned product	- Member
Addl. General Manager/ Responsible for Maintenance	- Member
Jt. General Manager / Quality Control	- Member Secy.

1.12 Functions :-

- A Flow chart showing the activities of Failure Review Board is enclosed at Annexure 'A'.
- All failures notified during production process or reported by customers should be recorded in computer with a distinct computer number (Failure Number).
- The status of failure should be updated in computer and monitored by Failure Review Board. Each major Failure should be entrusted to a committee / Task Force consisting of personnel from QA, Production & Maintenance.
- The Failure noticed should be subjected to Investigation of Cause & Analysis there of. The computer record should be updated to show "investigation & Analysis phase".
- On the basis of initial observation & Analysis made by Task/ Force/ committee/ individual report the short term and long term action for rectification should be decided.
- The computer record should now be updated to show the status of 'Remedial Action Phase'.

2.0

Short Term Action:

Short Term Actions shall include:

- Rectification of product to meet the specifications
- Immediate action for improving material handling / storage for linked process/ system.

3.0

Long Term Action :

- Where change is required in production process.
- Where improvement is required in component design & specifications.

3.1

Long Term Actions should be discussed in 'Alteration Committee' as per following steps:


- The proposed change in process /Component Drg should be delebrated in the Alteration Committee and the decision taken be confirmed through trials/ proof in association with DGQA rep/ user on requirement basis.
- On the basis of Trials /proof results the recommendation should be made to AHSP for making changes in sealed particulars.
- The computer record shall be updated accordingly.
- Once sealed particular are changed and change is implimented the computer record should be updated as 'closed'.

4.0

The Failure Review Board should meet once a quarter to review the progress of all failures. The frequency can be changed based on number of failures.

Kindly confirm implementation of above directives.

Encl : As above.

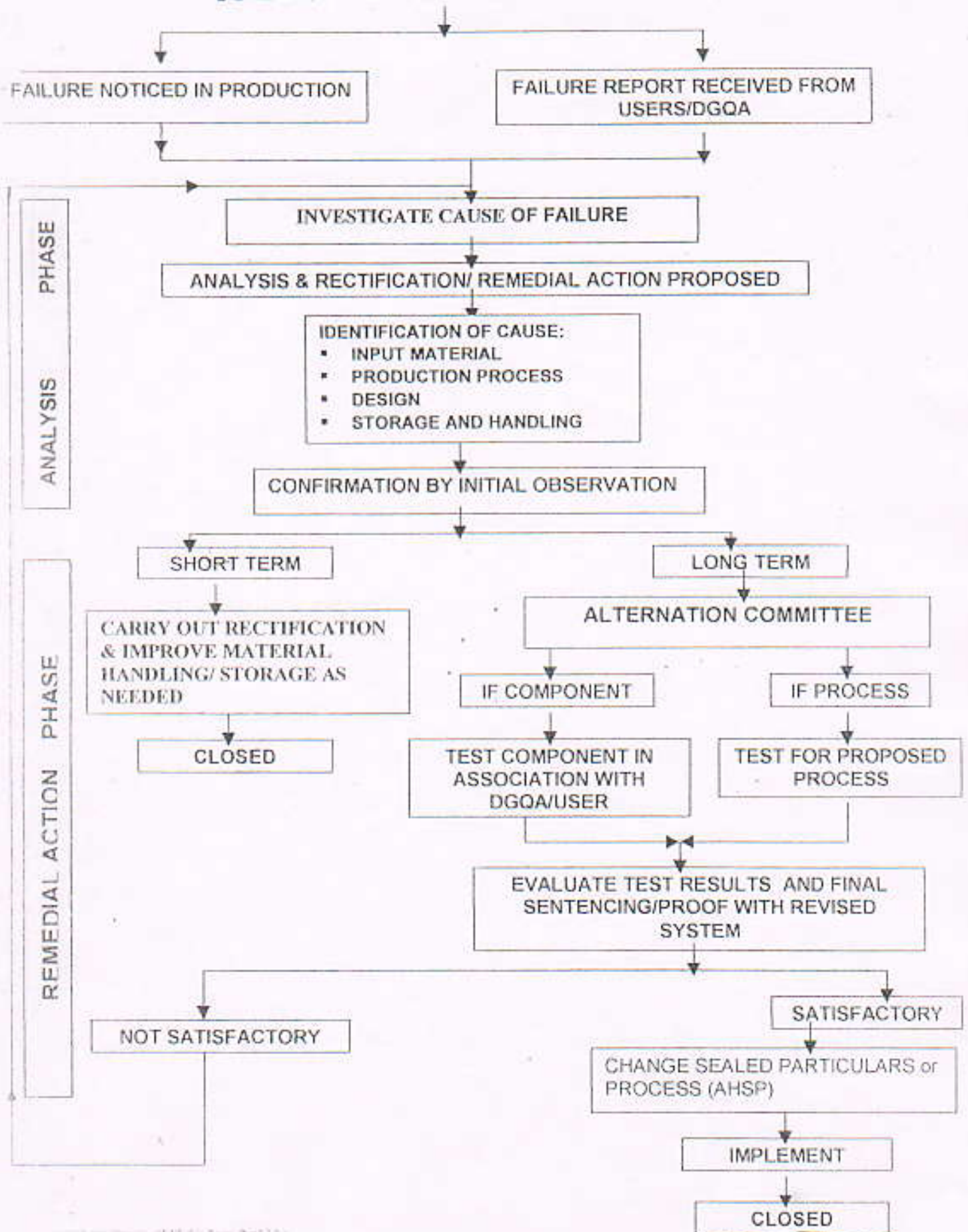

(C. B. SINGH)
MEMBER/ M&C and TS

o/c

Copy to:

Deptt. of Defence Production,
Ministry of Defence,
South Block, New Delhi- 110 011.
(Kind Attn: Shri H.C. Gupta, Addl. Secy / DP & DGQA)

FAILURE REVIEW BOARD



Speed Post

No. 108/FRB/TS/QCS
Government of India
Ministry of Defence
Ordnance Factory Board
10A, S.K. Bose Road
Kolkata - 700 001
Date - 13/12/2005.

To
The Sr. General Manager / General Manager,
All Factories.

Sub : Failure Review Board - Functioning and progress.

Ref : i) OFB letter No. 108/PR/ISRAEL/TS/QCS
dtd.09.11.04.

ii) OFB letter No. 108/FRB/TS/QCS dtd. 16.11.2005.

O.F.Board vide letter under ref.(i) has issued directives for formation of Failure Review Board (FRB) in all Ordnance Factories. The decision was taken to create an institutionalised system for attending failures as a step towards continual improvement.

Information has been received from many factories about formation and functioning of FRB. But at the same time it is really surprising to note that in some factories not a single meeting has been conducted so far, because no failure has been reported from the customers till date, which indicated that the very basics of the idea of formation of FRB has not been understood by many of the factories.

In view of the above, it is felt necessary to emphasis upon the following points related to the formation and functioning of FRB :-

1. Formation / functioning of FRB is a step towards continual improvement.

(2)

2. Formation of FRB is mandatory to all Fys. as per clause no. 1:11 of OFB directives under ref. (i)
3. FRB should function to review both External (reported from customers) as well as internal failures (notified during production process) to have defect - free out-put and also for continual reduction of in-process rejections.
4. FRB should meet once in a quarter.
5. All failure (External & internal) to be analysed by FRB to initiate short term and long term actions as remedial measures.
6. Long Term actions should be discussed in Alteration Committee Meetings and action to be taken as per steps mentioned in OFB directives clause no. 3.1.
7. All failure notified during production process (Internal failure) or reported by customers (External Failures) should be recorded in computer with distinct Computer Number (Failure Number).

It is once again intimated that all factories should ensure effective functioning of FRB strictly as per OFB directives under ref. (i) above.


(S. Mukhopadhyay)
Member / TS