



## Policy on Quality Professionals of OFB

(VERSION II)

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 one of the oldest and largest Defence industrial setup which functions under the Department of Defence Production of the Ministry of Defence. It 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 equipment and systems with our Armed forces has a direct impact on national defence. To realize manufacturing of defence equipment and systems of world class quality, involvement of quality professionals in the process of manufacturing is essential. Accordingly, a need has been felt to formulate a policy for quality professionals of OFB.

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Place: Kolkata

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**(Saurabh Kumar)**

DGOF & Chairman  
Ordnance Factory Board

# Policy

## 1. Introduction:

In today's highly competitive & demanding environment with all other resources being even, it is the Human resources that gives an organisation, the competitive edge to excel. With increased thrust on quality of output, a need has been felt by OFB organisation to develop quality professionals & deploy them in the quality related activities. This policy has been devised to act as guiding document for developing & deploying quality professionals.

## 2. Objective:

- a) Role enhancement through visible distinction
- b) To develop Quality Professionals having in-depth knowledge, techniques and skills in Quality Managements, knowledge on latest international best quality practices, quality tools, approaches & techniques to diagnose quality problems, analyse available information & devise sound practical solutions etc.
- c) To develop Quality Professionals for: -
  - i) Using proper quality control tools, techniques at the work place.
  - ii) Systematic and logical analysis of Quality problems and their solutions.

## 3. Role of 'Quality Professionals':

- i) Additional status to existing duty allocation
- ii) Resource to Sr.GM/GM
- iii) Support to QC & Production

## 4. Categories of Quality professionals:

There will be four categories of Quality professionals with following designation:

- I. Quality Guide
- II. Quality Marshall
- III. Quality Sherpa
- IV. Quality Patron

Designation will be awarded to the eligible employees of OFB, as per the training completed and successfully qualifying in the evaluation process.

## 5. Quality guide

### A. Eligibility & essential qualification:

- i) Chageman/Supervisor/IE/NIE of OFB who has degree/diploma in engineering or equivalent, B.SC./M.SC.
- ii) Must have completed at least 03 year of service in the OFB organisation and residual service of minimum 5 years.
- iii) There should not be any pending enquiry/vigilance case against the individual.
- iv) The individual must have APAR grading more than 6.0
- v) Name of the individual must be recommended by divisional officer of the individual concerned.

Note: - Supervisor/NIE will be trained in next phase.

### B. Syllabus of training:

#### 1. Preparatory Training

Selected participant is expected to undergo a preparatory training at respective factory/OFIL. Such preparatory course should covers following topics:

- Technical drawings and specifications.
- Use of excel for statistical tool analysis.
- Concept of tolerances.

#### 2. Training by selected training institution

Sl.No.	Module	Topics
1.	Introduction to Quality	A. Basic concept of Quality B. Why Quality C. Difficulties in Quality D. Top Management Quality Policy E. Product Quality F. Process Quality G. Quality Cost
2.	Introduction to Total Quality Management (TQM)	A. Concept of Quality management B. PDCA(Plan, Do, Check and Act) & SDCA(Standardise, Do, Check and Act) loop C. Quality losses in product life cycle D. Continuous improvement E. Basic Problems in Quality management
3.	QC Tools & QC Story	A. 7 QC tools B. Measurement system analysis C. Exercises D. Examples & sharing of QC story sample projects

4.	Industry 4.0 and National and International standards	A. INDUSTRY 4.0 basics B. Introduction to National and International Quality standards, and their implementation.
5.	Automation in Quality System	Basic measurement concepts, Automation in Measurement
6.	Industrial Visit to Deming Prize winning companies	Responsibility of conduction of such visit would be of OFILs & not of selected training institutions.

**C. Duration:**

The training will be of duration of 07 weeks, as per the following breakup:

Sl. No.	Training type	Duration	Venue
1.	Theoretical training on specified syllabus	02 weeks	OFIL by Indian Institute of Technology/ Indian Statistical Institute/NIT/Academic/ Reputed quality training institutions from Indian industry
2.	Supervised Project/Practical training Mentorship- External faculty though online support Internal Mentor- Quality head of respective factory	04 weeks	Factory
3.	Recap/evaluation/certification	01 week	At OFIL with same faculty. Joint certification by OFIL and Training Institution, after successful conduction of project and examination

**Note: Cash award of Rs. 2000/- to be given to successful participant of his training by respective factory as a incentive.**

#### **D. Duty & Responsibility: -**

- i) Quality Audit
- ii) Training of ground level workers on quality
- iii) Process improvement initiation
- iv) Specific Quality related assignment/investigation
- v) Will be part of team for interaction with the customer

## **6. Quality Marshall**

Quality Marshall Course will be conducted in two parts. Successful completion of both the parts in sequential order will lead to certification of Quality Marshall. There shall be at least three months 'period for practice after completion of first part.

### **A. Eligibility & essential qualification:**

- i. Officer (IOFS and JWM technical) of OFB Organisation having degree/diploma degree/diploma in engineering or equivalent, B.SC./M.SC.
- ii. Must have completed at least 03 year of service in the OFB organisation and residual service of minimum 5 years.
- iii. There should not be any pending enquiry/vigilance case against the individual.
- iv. The individual must have APAR grading more than 6.
- v. Name of the individual must be recommended by Sr.GM/GM/HoD.

### **B. Syllabus of training:**

#### **1. Preparatory Training**

Selected participant is expected to undergo a preparatory training at respective factory/OFIL. Such preparatory course should covers following topics:

- Technical drawings and specifications.
- Use of excel for statistical tool analysis.
- Concept of tolerances.

## 2. Training by selected training institution

<b><u>Part-I</u></b>		
Sl. No.	Module	Topics
1.	Introduction to Quality	A. Basic concept of Quality B. Why Quality C. Difficulties in Quality D. Top Management Quality Policy E. Product Quality F. Process Quality G. Quality Cost
2.	Introduction to Total Quality Management (TQM)	A. Concept of Quality management B. PDCA(Plan, Do, Check and Act) & SDCA(Standardise, Do, Check and Act) loop C. Quality losses in product life cycle D. Continuous improvement E. Basic Problems in Quality management
3.	QC Tools & QC Story	A. 7 QC tools B. Exercises C. Examples & sharing of QC story sample projects D. Successful Quality circle case study
4.	Industry 4.0 and National and International standards,	A. INDUSTRY 4.0 basics B. Introduction to National and International Quality standards, and their implementation.
6.	Automation in Quality System	Basic measurement concepts, Automation in Measurement
7.	Six Sigma Green Belt	A. DMAIC( Define, Measure, Analyze. Improve and Control) including: Team Charter B. Process Mapping Techniques (SIPOC, TDC, Value analysis) C. Process Walk through, Quick wins D. Operational Definitions E. Measurement System analysis (GRR study, Kappa & Visual Inspection) F. Baseline, Statistical hypothesis tests G. Multiple regression analysis H. Statistical methods for attribute I. Solution selection, Standardization J. Use of Minitab for calculations K. Lean Tools

<b><u>Part-II</u></b>		
1.	Employee Involvement tools	A. Human Error Prevention B. Employee Involvement on shop floor
2.	Product Development tools	A. Quality Function Development (QFD) B. Tree Diagram C. Kano Model
3.	Finance	A. Cost Management
4.	TPM	A. TPM: Details of 8 pillars of TPM along with case study sharing
5.	Classical Design Of Experiments (DOE)	A. Full factorial DOE B. Fractional Factorial DOE C. Plackett Burman DOE
6.	Product development & Reliability	A. Overview on Reliability Engineering
7.	PACE	A. Presentation and Communication Effectiveness B. Enabling Implementing skills
8.	Industrial Visit to Deming Prize winning companies	Responsibility of conduction of such visit would be of NADP/OFILs & not of selected training institutions.

**C. Duration:**

The training will be of duration of 14 weeks, as per the following breakup:

Sl. No.	Training type	Duration		Venue
		Part-I	Part-II	
1.	Theoretical training on specified syllabus	02 weeks	02 weeks	IOFS - NADP JWM technical - OFIL Medak, OFIL Ambarnath by Indian Institute of Technology/ IIM/NIT/Indian Statistical Institute/NITIE
2.	Supervised Project/Practical training Mentorship- External faculty though online support Internal Mentor- Quality head of respective factory	04 weeks	04 weeks	Factory



3.	Recap/evaluation/certification	01 week	01 week	IOFS - NADP JWM technical - OFIL Medak, OFIL Ambarnath with faculty assistance from Indian Institute of Technology/ IIM/NIT/Indian Statistical Institute/NITIE after successful completion of part I and part II theory, practical and examination at each part.
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**Note: Cash award of Rs. 3000/- to be given to successful participant of his training by respective factory as a incentive.**

**D. Duty & Responsibility: -**

- i. Review and improvement of Quality documents like QAP and process schedule etc.
- ii. Quality audit
- iii. Process audit and Improvements
- iv. Implementation of Industry 4.0 for quality.
- v. Part of Inter factory teams for problem solving/Investigation
- vi. Associate in design & development activities in ODC
- vii. Will be part of team for interaction with the customer

They will also act as internal faculty for training programme at Fy/OFIL/NADP.

## **7. Quality Sherpa**

**A. Eligibility & essential qualification:**

- i) Officer (IOFS and JWM technical) of OFB Organisation who has certification level of Quality Marshall.
- ii) Must have completed at least 05 year of service in the OFB organisation and residual service of minimum 5 year. He must have also completed at least two years service after qualifying as a quality marshal
- iii) There should not be any pending enquiry/vigilance case against the individual.
- iv) The individual must have APAR grading more than 6.
- v) Name of the individual must be recommended by Sr.GM/GM/HoD.

**B. Syllabus of training:**

Sl. No.	Module	Topics
1.	Top management Leadership & strategy, Daily Work Management & standardization	A. Managing Change B. Approach to strategy management and Deployment C. Policy deployment Balance Score Card(BSC), Deployment , Linkage to Daily Management & Role of Daily Management . D. Industry 4.0 E. PLM (Product life-cycle management), ERP and MES(Manufacturing execution system) for integrated modern production management
2.	Zero Effect & Zero Defect (ZED)	ZED Concept
3.	TRIZ ( Theory of Resolution of Invention- related tasks)	TRIZ concept and tools
4.	Factory Visits & Case Study	
5.	Industrial Visit to Deming Prize winning companies	
6.	Basic elements of QIS, including source of data, kind of data to be managed, data analysis and decision making	Quality Information System
7.	Defect investigation/analysis	Defect investigation Analysis with case studies, traceability( including FMEA)
8.	Impact of design on quality.	Quality of Design(including DFSS, DFX)
9.	Automation in quality system	Advanced sensor applications in quality measurements.
10.	PROJECT	
11.	EXAMINATION	

**Note: Cash award of Rs. 5000/- to be given to successful participant of his training by respective factory as an incentive.**

### **C. Duration:**

The training will be of duration of 07 weeks, as per the following breakup:

Sl.No.	Training type	Duration	Venue
1.	Theoretical training on specified syllabus	02 weeks	Indian Institute of Technology/IIM
2.	To carryout project work	04 weeks	Factory
3.	Recap/evaluation/certification	01 week	Indian Institute of Technology/IIM

### **D. Duty & Responsibility: -**

- i. Review and improvement of Quality documents like QAP and process schedule etc.
- ii. Quality audit
- iii. Process audit and Improvements
- iv. Implementation of Industry 4.0 for quality.
- v. Part of Inter factory teams for problem solving/ Investigation
- vi. Associate in design & development activities in ODC
- vii. Automation in Quality system implementation
- viii. Review utilisation of trained resources -
  - Defect Investigation
  - Will be part of team for interaction with the customer

**E.** They will also act as internal faculty for training programme at Fy. /OFIL/NADP.

## **8. Quality Patron: -**

### **A. Eligibility & essential qualification:**

- i) Senior JWMS & Chargeman looking after Production & QC
- ii) Must have completed at least 20 year of service in the OFB organisation.
- iii) There should not be any pending enquiry/vigilance case against the individual.
- iv) The individual must have APAR grading more than 6.0
- v) Name of the individual must be recommended by divisional officer of the individual concerned.

## **B. Syllabus of training:**

Sl.No.	Module	Topics
1.	Introduction to Quality	A. Basic concept of Quality B. Why Quality C. Difficulties in Quality D. Product Quality E. Process Quality
2.	QC Tools & QC Story	A. 7 QC tools B. Examples & sharing of QC story sample projects
3.	Latest National and International standards, International Quality Practices, their requirements and their application.	A.INDUSTRY 4.0

## **C. Duration:**

The training will be of duration of 01 week, as per the following breakup:

Sl.No.	Training type	Duration	Venue
1.	Theoretical training on specified syllabus & certification	01 week	OFIL with assistance from internal faculty

## **D. Duty & Responsibility: -**

- i) Training of ground level workers on quality
- ii) Process improvement initiation
- iii) Specific Quality related assignment/investigation
- iv) Will be part of team for interaction with the customer

## **9. The strength of Quality Professionals:**

In order to maintain uniformity of no of quality professionals trained based on strength, all the factories to be divided in 03 groups namely-

- a) Small group of factories (Employees strength less 1000)- Total 11 Nos.  
Factories- OFPKR, OFCd, OEFHZ, OFN, GIF, HEPF, HEF, OFBH, OFDR, OFKAT, MPF
- b) Medium group of factories (Employees strength more than 1000 & less than 2000)- Total 15 Nos.  
Factories- OFDC, FGK, OFDUN, EFA, OPF, OFT, SAF, OLF, OFI, OFM, OCFV, OFA, CFA, MSF, OFV
- c) Large group of factories (Employees strength more than 2000)- Total 15 Nos.

Factories-

OCFS, OFBA, OFBOL, OEFC, GCF, VFJ, GSF, OFPM, OFCH, RFI, OFC, OFAJ, AFK, OFK, HVF

Group of factories	Quality Sherpa			Quality Marshal			Quality Guide		
	IOFS	JWM(T)	Total	IOFS	JWM(T)	Total	C/M (T)	IEs	Total
Small-11	1	1	2	2	4	6	8	16	24
Medium-15	1	1	2	3	6	9	12	24	36
Large-15	2	2	4	4	8	12	16	32	48
Total	56	56	112	127	254	381	508	1016	1524

\*Strength of Quality patron would be as per requirement.

Database on quality professional shall be maintained by HRD/OFB on OFB comnet.

## **10. General Duties and Responsibilities of Quality professionals**

Duties and Responsibilities may be one or more of the followings: -

- i.** Defect investigation of critical areas/repeated failures assigned by Sr.GM /GM from time to time.
- ii.** Quality professionals shall be able to apply data analytics to the data available with OF Organisation and can apply QC tools to improve quality of our Products.
- iii.** These professionals will be able to co-relate the data with defect/accident, repeated failures and can suggest appropriate remedial measures to overcome the process deficiency, if any to achieve six sigma level of production.
- iv.** To do error proofing of ammunitions/Weapons/Equipments.
- v.** Analysis of abnormal rejection and RFR data of QA/QC, to find out root cause of RFR and their by suggestion to reduce/remove RFR/Rejection.
- vi.** Quality professionals to attend monthly Quality Review Meeting of the factory.
- vii.** To apprise Sr. GM/GM regarding steps to improve process capability/observations periodically.

- viii.** May visit proof ranges/ firing trial sites as directed by Sr. GM/GM to observe and record performance of the products as and when required.
- ix.** To give inputs/contribution during functioning of Failure Review Board/Defect Investigations.
- x.** To advise factories on training programs/seminars to facilitate Quality Awareness and strengthening of Quality system.
- xi.** Quality professionals should work in close co-ordination with factory & actively participate in all Quality related meetings such as Quality Review, Failure Review Board, Alteration Committee, SQAE Liaison etc.
- xii.** To discharge any additional duty, related to Quality system as assigned by OFB.
- xiii.** Final reports of Quality professionals to be discussed with Sr. GM/GM & summary to be forwarded to OFB.
- xiv.** Quality professionals to personally do any project assigned by competent authority related to any critical area affecting the quality of product on regular basis and report of the same is to be submitted to competent authority.
- xv.** Quality professionals of respective factories to look into the root cause of the complaints in online Customer Complaint Monitoring System (CCMS)/ Internal Complaint Monitoring System (ICCMS) after due verification and there by suggesting majors to avoid reoccurrence of such complaints.

## **11. Project Selection Guidelines:**

Project selection for practical training at factory should be done in consultation with factory QCO. Projects selection to be done where it can have meaningful impact on quality of products/systems like

- Products/process having high UAR, RFR
- Higher no of customer Complaints
- Repetitive proof failure
- Repetitive QA defects
- High wastage of material (Low yield)

This is not exhaustive criteria but only for guidance purpose. QCO can select any project which he feels of importance.

**12.** The policy shall be reviewed from time to time.