TATA

TATA POWER

Management of Change (MOC) Procedure

Rev No.	Reason for Revision	Prepared By	Checked By	Approval by
Rev No. 00	First release	R&P Sub-committee	D R Kamath	Vijay Chourey
Rev No. 01	Standardization of procedure	Sudhir Kumar (Corporate Safety)	Navendra Singh (Head – Corp Safety Operation)	Vijay Chourey (Chief – Corp Safety)
Rev 02	Periodic Revision	Navendra Singh Head- Safety (T&D) Corp safety	Rajesh Sharma Head- Safety (Generation) Corp safety	Suresh Khetwani Chief - Corporate Safety & Environment
Rev 03	Periodic Revision	Navendra Singh Head- Safety (T&D) Corp safety	Rajesh Sharma Head- Safety (Generation) Corp safety	Suresh Khetwani Chief - Corporate Safety & Environment

Contents

Section	Description	Page No.
1.0	**OBJECTIVE**	**3**
2.0	**SCOPE**	**3**
3.0	**EXPECTED RESULTS**	**3**
4.0	**ACCOUNTABILITY & RESPONSIBILTIY**	**3**
5.0	**GLOSSARY/ DEFINITIONS**	**4**
6.0	**PROCEDURE**	**5**
7.0	**RECORDS**	**6**
8.0	**TRAINING & COMMUNICATION**	**8**
9.0	**VERIFICATION**	**6**
10.0	**EXCEPTION**	**6**
11.0	**REFERENCES**	**6**
12.0	**REVIEW**	**6**
13.0	**ATTACHMENTS/APPENDIX**	**7**
--	Annexure – 1: Management of Change (MOC) Form (TPSMS/GSP/MOC/007/FORM/01)	**8**
--	Annexure – 2: Checklist for Closure/regularization of Approved MOC (TPSMS/GSP/MOC/007/FORM/02)	**10**
--	Annexure – 3: Illustration / case studies of incidents caused due to Failure of MOC	**11**

1. OBJECTIVE:

The objective of this document is to establish the procedures necessary to ensure that HSE risks are managed to an acceptable level in Tata Power Management of Change (MOC) process.

2. SCOPE:

This procedure applies to all operating plants and project sites of Tata Power Group companies including JVs/Subsidiaries.

Exclusion: Changes applicable to manpower are not covered through this procedure. These to be covered as per HR procedure.

3. EXPECTED RESULTS:

3.1. Manage all permanents and temporary changes with acceptable level of risk.

4. ACCOUNTABILITY & RESPONSIBILITY:

4.1. **ACCOUNTABILITY**: Concerned Division's Heads/Assets Custodian.

4.2. **RESPONSIBILITY**:

4.2.1. **Chief Safety Officer**:

4.2.1.1. Be the **approval authority** and **custodian** of this document, which shall include coordinating regular reviews and updates and all supporting documents.

4.2.1.2. Be the Technical Authority in Tata Power for this Technical Guidance in case of conflicts between Tata Power divisions and/or external contractors/consultants.

4.2.1.3. Ensure this Technical Guidance document is effectively implemented and maintained at all levels within the organization and ensure the contents of this document are adapted to meet change as necessary.

4.2.2. **Division Heads:**

4.2.2.1. Ensure necessary action as per this document is effectively implemented and maintained within their business area and ensure the contents of this document are adapted to meet change as necessary.

4.2.2.2. Ensure reviews are identified and planned well in advance with sufficient time and resources allocated.

4.2.2.3. Provide adequate support and resources to effectively implement the requirements of this document.

4.2.3. **Line Managers:**

4.2.4. Initiate the process for Management of Change and follow the required procedures as mentioned in this document.

5. GLOSSARY/ DEFINITIONS:

Controls: Methods used to manage safety risks. Controls can be Elimination, Substitution, Engineering controls, signage/warnings and /or administrative controls, Isolation/ separation, PPE.

e-MOC: MOC initiated through SAP Platform.

Job Safety Analysis: Job safety analysis (JSA) is a procedure which helps integrate accepted safety and health principles and practices into a particular task or job. In a JSA, for each basic step of the job, it is to identify potential hazards and to recommend the safest way to do the job.

Hazard: Source or situation with potential for harm, something that can cause body injury / occupational illness, damage property.

Hazard Identification & Risk Assessment: Hazard Identification & Risk Assessment is to identify and evaluate the hazards, Risk and put controls measures for safe execution of activities.

Job: A piece of physical work defined by time or other limits and that has a clear start and end point

MOC: Management of Change

Management of Change: Any Modification/change/replacement pertaining plant/equipment/Machines/structure which is **Replacement not–in–Kind (RNIK)** to previous one (for example replacement of any new spare which is not similar to previously used spare, replacement of outdoor switchyard with Gas Insulated switchgear (GIS), Changing route of pipelines, modifying set values of Safety devices like safety valve etc.).

Non Routine Job / Task: Where an SOP / SMP is not available or the conditions of the SOP / SMP have changed

Replacement not–in–Kind (RNIK): Replacement of any new spare which is not similar to previously used spare.

Replacement in–Kind (RIK): Replacement of any new spare which is similar to previously used spare, may be change in brand/manufacturer.

Risk: Effect of uncertainty, Risk is a combination of the consequences of an event and the associated “likelihood” of occurrence.

Risk Assessment: A systematic and structured process whereby hazards present in a workplace, or arising from workplace activity, are identified, risks assessed / evaluated, and decisions prioritized in order to reduce risks to acceptable levels.

Severity: The level of consequence / harm of an event that could occur due to exposure to the hazard present

Shall: Mandatory requirement

Should: Optional requirement

Statutory requirements: Laws, regulations applicable at the location of plant /work.

Task / Activity: A sequence of steps taken to conduct a job. A task is a sub element of a Job.

6. PROCEDURE:

6.1. Recognizing and Initiating the change process:

6.1.1. The following may typically be considered (not all inclusive) as a change that may have an impact on HSE performance when not managed properly:

6.1.1.1. Replacement Not–in–Kind (RNIK)

6.1.1.2. Design Changes in plant/equipment/Machines

6.1.1.3. Changes to structure

6.1.1.4. Operations & technology changes

6.1.1.5. Changes in procedures

6.1.1.6. Safety system changes

6.1.1.7. Other changes like but not limited to innovation leading to improvement in process/methodology/time/safety etc.

6.2. Types of MOC:

6.2.1. Temporary MOC: Any MOC for maximum period upto six month.

6.2.2. Permanent MOC: Any MOC which shall be valid without any limitation of time.

6.3. Steps for initiation, approval and implementation of Management of Change (MOC):

Following steps shall be adhered any change where this procedure is applicable. Refer **Annexure – 1** for “Process Flow Diagram (PFD) for initiation, approval and implementation of Management of Change (MOC)” for more details.

6.3.1. All MOC request shall be initiated from respective engineers/Heads seeking for Change.

6.3.2. MOC shall be initiated as per **Annexure-1** Management of Change (MOC) Format (TPSMS/GSP/MOC/007/FORM/01).

6.3.3. MOC request shall be commented by R&P SIT Chairman of concern division. He may further take inputs from Rules & Procedure Sub-committee if required. He alongwith consultation of division safety team will identify list of departments/agencies to involved for review and inputs for the proposed MOC. MOC request shall be forwarded to all such departments/agencies for their review & inputs. All such inputs received shall be considered as appropriate while doing risk assessment for the proposed change.

6.3.4. Detailed Risk Assessment for the risk arises due to MOC shall be carried out and additional control measures shall be mentioned. Risk assessment reviewed by Division Safety Head and approved by Divisional Chief shall be attached with MOC request.

6.3.5. Temporary MOC request shall be approved/rejected as appropriate by concern Divisional Chief/CEO.

6.3.6. Permanent MOC request shall be cleared and commented by concern Divisional Chief/CEO.

6.3.7. Permanent MOC shall be forwarded along with approved risk assessment for review of Corporate safety team.

6.3.8. MOC request should be forwarded with recommendations from corporate safety within seven (07) working days to concern Divisional Chief/CEO.

6.3.9. Permanent MOC shall be reviewed and approved/rejected by concern Divisional Chief/CEO as appropriate

6.3.10. Temporary MOC shall be deemed expired automatically after six months. New MOC request shall be initiated in case same MOC required further extension. However extension of MOC shall not be permitted for more than two consecutive approvals for same MOC and it shall be considered as permanent MOC and shall be forwarded to concern Divisional Chief/CEO for review and approval.

6.3.11. Implementation of approved MOC shall be done strictly within the scope of approval of that MOC. This shall be confirmed by implementation team in writing and approved by Division Chief/CEO. In case of change of scope during implementation or later stage, modified MOC request to be initiated.

6.3.12. After implementation of approved MOC; checklist shall be filled for closer / regularization as given in **annexure 2** (TPSMS/GSP/MOC/007/FORM /02)

6.3.13. For all MOC involving Capex should undergo PSSR (Pre start up safety review) after completion but before taking into operation. (refer TPSMS/GSP/PSSR/010 Pre Start-up Safety Review Procedure)

7. Records:

7.1. Permanent & temporary Approved & Implemented MOC (TPSMS/GSP/MOC/007 /FORM/01) along with risk assessment - Retention period five (05) years

7.2. Checklist for Closure/regularization of Approved MOC (TPSMS/GSP/MOC/007/FORM /02) Retention period three (03) years.

8. Training & Communication: Training of MOC Procedure shall be included and covered in Safety Training Calendar as per Safety Training needs.

Initial Communication to be done through Corporate Communication, Email and subsequently shall be made available at safety portal at Sangam.

9. VERIFICATION: Verification of implementation shall be done during Safety audit, field safety visit and site inspections.

10. Exception: Any exception to this procedure shall only be done as per Document Control .Procedure (TPSMS/GSP/DC/014)**.**

11. REFERENCES

- Tata Power Safety Management System (TPSMS) Manual
- EPM 01.08.07 - Management of Change Process

- OHSAS 18001:2007.
- Tata Health & Safety Management System (THSMS)

12. Review:

12.1. Review of this procedure shall be done as and when but not later than once in every three (03) years. Typical Factors like Changes in legislation, Review of Incident Reports, Inspection & Audit findings, Feedback from users, Recommendations in Incident investigation reports may be inputs for the review and revision of the procedure.

12.2. In case release of revised procedure gets delay due to obtaining feedback or any other reasons, safety advisory may be issued immediately to take precautions for the proposed changes in the procedure and revised procedure should be released subsequently.

13. ATTACHMENTS/APPENDIX :

Annexure – 1: Management of Change (MOC) Form (TPSMS/GSP/MOC/007/FORM/01)
Annexure – 2: Checklist for Closure/regularization of Approved MOC (TPSMS/GSP/MOC/007/FORM/02)
Annexure – 3: Illustration / case studies of incidents caused due to Failure of MOC

TPSMS/GSP/MOC/007/FORM/01 **Annexure - 1**

Management of Change (MOC) Form

SECTION-I:

(TO BE COMPLETED BY THE CONCERN DIVISION/JVs/ SUBSIDIARY)

Name of DIVISION/JVs/ SUBSIDIARY: _____

MOC Number: _____ **DATE:** _____

Brief description of Change proposed :_____

Location of plant/detail of equipment/Machine for subjected to change:

_____

Type of MOC: Permanent/Temporary (Strike our which ever not applicable),

Duration in case of temporary Change:_____(not more than 6 month)

Justification/Explanation for need of MOC (use additional Sheet if required):

_____

_____

_____

_____

- Attached approved Risk Assessment? Yes/No
- Environmental, health, and safety reviews are complete and all concerns have been addressed. (Yes / No)

MOC Initiator Name & Sign: _____ Date: _____

Remark &sign by Division R&P SIT Chairman:

_____

Remark & sign by Division Safety Advisor: _____

_____

Accepted/ Accepted with Comments/Rejected (in case of Temporary MOC)

Comments By Division Chief (in case of Permanent MOC)

_____

_____

Sign & Name of Divisional Chief Date: _____

SECTION-II: **(Applicable for permanent MOC only)**
Safety Comments/Recommendations (use additional sheet if required)**:** _____ Date: _____ Chief- Safety/Corp Safety Rep.
Permanent MOC Accepted/ Accepted with Comments/Rejected: - Date: _____ _____ Division Chief/CEO

TPSMS/GSP/MOC/007/FORM/02 **Annexure - 3**

Checklist for Closure/regularization of Approved MOC

S. No	Checks Points	Yes/ No/ NA	Remarks
1.	Applicable Operating, maintenance and emergency procedures have been reviewed.		
2.	Concern persons involved/affected due implementation of approved MOC are trained.		
3.	Legal & Other requirements register updated as applicable		
4.	Concerned drawing (P&ID etc.) are revised and updated.		
5.	Whether MOC implemented as per approved MOC documents.		
6.	Approved copy (duplicate) sent to R&P Sub committee and mail copy kept at division level.		
7.	Affected Site Housekeeping/restoration maintained after implementation of MOC.		
8.	Safety signage updated as applicable.		
9.	PSSR carried out (in case of MOC involving Capex)?		
10.	Learnings captured and shared concerned divisions/ departments, Corporate Engineering and Corporate safety?		
11.	Any other		

MOC Initiator Name & Sign: _____ Date: _____

Division R&P SIT Chairman: Name & Sign: _____ Date: _____

Division Chief: Name & Sign: _____ Date: _____

Annexure - 3

Illustration / case studies of incidents caused due to Failure of MOC

Case Study 1: Flixborough Disaster

At about 16:53 hours on Saturday 1 June 1974 the Nypro (UK) site at Flixborough was severely damaged by a large explosion. Twenty-eight workers were killed and a further 36 suffered injuries. It is recognized that the number of casualties would have been more if the incident had occurred on a weekday, as the main office block was not occupied. Offsite consequences resulted in fifty-three reported injuries. Property in the surrounding area was damaged to a varying degree.

Prior to the explosion, on 27 March 1974, it was discovered that a vertical crack in reactor No.5 was leaking cyclohexane. The plant was subsequently shutdown for an investigation. The investigation that followed identified a serious problem with the reactor and the decision was taken to remove it and install a bypass assembly to connect reactors No.4 and No.6 so that the plant could continue production.

During the late afternoon on 1 June 1974 a 20 inch bypass system ruptured, which may have been caused by a fire on a nearby 8 inch pipe. This resulted in the escape of a large quantity of cyclohexane. The cyclohexane formed a flammable mixture and subsequently found a source of ignition. At about 16:53 hours there was a massive vapour cloud explosion which caused extensive damage and started numerous fires on the site.

Eighteen fatalities occurred in the control room as a result of the windows shattering and the collapse of the roof. No one escaped from the control room. The fires burned for several days and after ten days those that still raged were hampering the rescue work.

The control of plant modifications

As already described, the temporary pipe was installed very quickly, to restore production, and there was no systematic consideration of the hazards or consequences. One of the main lessons to be learned is that no modification should be made until it has been authorized in writing by a competent person who should normally be professionally qualified, and that before giving that authorization the competent person should try to identify all the consequences and should specify the change in detail. When the modification is complete and before it is commissioned he should inspect it to see that his intentions have been followed and that the modification ‘looks right’. In particular, the modification should be made to the same standard as the original design and this standard should be specified in detail. In addition, there should be a guide sheet or check list to help the competent person identify the consequences and a training programme is needed to convince people that the modification control procedure is

necessary. As with all procedures, regular monitoring is needed to make sure that the procedure is being followed.

A proper Management of Change (MOC) procedure could have prevent this accident. Any modification should be designed, constructed, tested, and maintained to the same standards as the original plant.

Case Study 2: Ash Handling (Wagon Loading) Platform, Jojobera Power Plant

One lost workday (Fatal reportable) accident occurred in Jojobera power plant while unloading fly ash bag from his truck moved for next trip for loading. Driver lost control on vehicle and it got turn towards right side of the platform (toward the wall side) and hit one person was present along with his bicycle parked. The injured person was immediately rushed to the MGM Hospital for treatment where he was declared dead.

The bicycle parking and water point were provided nearby edge of loading platform without considering its impact as this platform was already in use for unloading and truck movement. Management of Change (MOC) were not followed prior installation of water points and bicycle parking stand in view of truck movement in the same location. This incident was occurred because of failure of adherence to Management of Change (MOC) procedure.

Case Study 3: Incident at Saki Sub Station

A Metal halogen light fitting was installed on the fence. The body of the fitting got short, as the Light fitting was mounted on the fencing and, the fencing became live. Main Gate of Saki was replaced during the Ongoing Project. During replacement, Earthing of Main Gate and a part of fencing (Between two Gates) disconnected. Due to which one person got electrocuted.

A proper Management of Change (MOC) procedure could have prevent this accident. Any modification / change should be constructed, and maintained to the same standards as the original.