**Safe Work Requirement**

Management of Change Procedure

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| Purpose The purpose of this procedure is to define ECDC Minimum Requirements for managing changes to the organization, design (equipment and/or well operations), equipment, plant, materials, operations, repairs, changes that cause a deviation from the current procedure, specification or activity level and legislation associated with the activities of ECDC Hand its subcontractors.  It will be used to evaluate, authorize, implement, communicate and document changes to process technology, chemicals, equipment, procedures, facilities, buildings, personnel, contracts and/or organizations.  The key objectives of this procedure are to:   1. Establish a common approach for requesting/documenting change requests/requirements; 2. Enforce an evaluation of a proposed change in terms of its benefit, its cost, and risk to the project, and the implications of the change to both ECDC and Participants; 3. Implement proper controls/sign-off’s/authorizations for all change requests; 4. Describe the required communications/coordination points for properly processing changes; 5. Create an audit trail of all requested and implemented changes.   It is important that all personnel involved with ECDC are aware of this process and understand the implications of exercising control over changes for reasons of business. Scope This management of change system is intended to satisfy the requirements for the ECDC operations and it covers:   1. A change which involves a revision to operating instructions. 2. A change in the logic of control, safety or monitoring systems. 3. A shift in operations parameters (pressure, temperature, level, flow rate, etc.) 4. A change in operations flow path including storage tanks, pumps, piping or injection points outside of normal operations. 5. A change that will increase the environmental, health, safety or human factors within operations. 6. Any deviation from a Global Practice or Established Operating Procedure, Work Program, Site Procedures and Work Methods. 7. A change involving abandonment of facilities. 8. A change that will affect existing permits or require new permits. 9. A change that will affect security of the location from third parties or introduce new hazards. 10. A change in materials used in the process, such as raw materials, products, additives, catalyst, desiccant or chemicals. 11. Key Personnel Changes. 12. Changes / Modifications to plant, equipment and material from their original design. 13. Facility / Site Changes. 14. Changes in operation to plant, equipment and material when the original design intent is infringed. 15. Changes to any safety equipment or safety related equipment. 16. Changes in legislation in order to ensure ongoing compliance of operating practices. 17. Replacement of existing plant, materials or equipment requiring drawings, certification or equipment history records to be altered or updated. 18. Temporary and emergency changes (including removal, disabling, bypassing or modifying an emergency shutdown device or system) are included in the scope of the MOC process. However, bypassing of such devices for servicing only is not part of the MOC process. Rather, the Permit to Work process will be used to manage this type of work.   **Note:**   1. All changes to equipment, procedures, facilities, or organizations will be subjected to a Management of Change (MOC) process. 2. Routine maintenance, breakdown maintenance, is not covered by the MOC process. 3. This process does not address replacements-in-kind.  Definitions  1. **Significant Change** 2. Any changes to parts, equipment, or facilities including changes resulting from purchasing a replacement with a non-identical make and model. 3. Any organizational changes. 4. Any significant Process Improvement Changes. 5. Any changes to standards, operating conditions, methods, or procedures. 6. **Change Package**   The Change Package is made up of all the documentation necessary for the submittal, review and implementation of the change. A sample Change Request Form is provided in **Attachment A.**   1. **Change in Operational Arrangements**   Where changes to an operational arrangement occurs, for example, from 24-hour operating to daylight manning only or when facilities are mothballed, should be subject to the change review process.   1. **Emergency Change**   An Emergency Change situation exists when changes are required & implemented to:   1. Prevent injury to personnel or damage to equipment. 2. Correct immediate safety and fire hazards or extreme service failure. 3. Prevent significant loss of productivity or assets. 4. **Management of Change (MOC)**   Management of Change is a documented process to ensure that safeguards are in place to eliminate the possibility of introducing hazards because of changes to operations, personnel, work contracts, process parameters, control parameters, trip and alarm set points, chemicals, facilities and organizations.   1. **Permanent Change**   A Permanent Change is one, which, once implemented, will be a permanent feature of the design, operation or procedural control of the facility.   1. **Replacement-in-Kind (RIK)**   A replacement-in-kind is one in which the old equipment is replaced with an identical part or an equivalent part approved and specified by the applicable engineering standard or in the case of a change to process parameters these remain within the established operating window. Replacement-in-kind is not subject to MOC procedures. However, any replacement of equipment or minor update to written procedures requires documentation in accordance with maintenance work requirements (e.g., work orders in the case of equipment) or appropriate approvals in the case of procedures. Any such replacement needs to include all necessary quality assurance, quality control, inspection and field verification. Some examples of replacements-in-kind are:   1. Repairing equipment or piping. 2. Replacing equipment or piping with material meeting the same specification as the original. 3. Painting or coating to the original specification using the same or equivalent materials. 4. Revision of procedures to include updated associated references. 5. **Temporary Change**   A change implemented with the intent that the change is applied for a fixed duration. Temporary changes that remain in place for longer than six months should be subject to the full permanent change procedures.   1. **Training Needs Analysis Change**   A Training Needs Analysis is utilized to identify the necessary training required to ensure that personnel are fully conversant with the equipment and operations within their facilities by identifying any required training needed because of a specific change.  **When to Raise? Inclusion.**   1. Temporary and Permanent changes (including removal, disabling, modifying an emergency shutdown device or system). 2. Any Changes to parts, equipment, or facilities including changes resulting from purchasing a replacement with a non-identical make and model. 3. Any Organizational Changes. 4. Any Significant Process Improvement Changes. 5. Any Changes to Standards, Operating Conditions, Methods, or Procedures. 6. Key Change: Prevent Injury to Personnel or Damage to Equipment; Correct Immediate Safety and Fire Hazards or Extreme Service Failure; Prevent Significant Loss of Productivity or Assets.   **Note**: Where changes to an operational arrangement occur, for example, from 24-hour operating to daylight manning only or when facilities are mothballed, should be subject to the change review process.  **When Not? Exclusion.**   1. Normal maintenance work, where parts or equipment are replaced by an identical part or equipment of an identical make and model. 2. Repairing Equipment or Piping. 3. Replacing Equipment or Piping with material meeting the same specification as the original. 4. Painting or Coating to the original specification using the same or equivalent materials. 5. Revision of Procedures to include updated associated references. 6. Minor Process or work procedure changes (modifications) are also excluded. 7. Urgently needed changes for an emergency are excluded from this process.   Note: Bypassing of ESD devices for servicing only is not part of the MOC process. Rather, the Permit to Work Process will be used to manage this type of work. Roles and Responsibilities  1. **General Manager** 2. Ensure full implementation of this MOC process. 3. Ensure personnel are fully trained in the application of the MOC process. 4. Ensure the implementation of this MOC process is audited. 5. **Project Manager (Project Management Team)**   Approve the change request taking into account the commercial, technical, HSE and Security risks associated with the change.  Perform any necessary actions as a result of an MOC request if it escalates to his level. These actions will include but not be limited to:   1. Review the MOC request feasibility. 2. Ensure that the entire required approval route is followed. 3. Review previous MOC records for similar procedures and control methods. 4. Ensure the hazard identification has been completed prior to the submittal of the MOC Request.   The project manager (or his delegate) prior to approval must:   1. Confirm that team have reviewed the change and assessed the risks. 2. Accept or otherwise identify supplementary review(s) before approval. 3. Ensure that all amendments and notification are maintained both in the office and at the project site. This shall form a part of the permanent record of the project. 4. **MOC Coordinator**   Responsible for keeping MOC request forms updated and for passing them onto Project Management.  Once approved and notification received, MOC Coordinator shall close out the change notification request within the system.  It is the responsibility of the MOC Coordinator to review the status of the change request forms on a weekly basis and pass on to the project manager for review / action.   1. Assign tracking number and keep records of all MOC requests. 2. Will keep MOC request forms updated. 3. **Change Originator:**   Anyone can request a change within the project. The originator will prepare a proposal using the change request form BSA-ECDC-HS-CL-O007-01- Management of Change template (technical, commercial, HSE). The proposal must include an assessment of the risks to the operation. The completed change request form (including all relevant support documentation) will then be issued to MOC Coordinator. Procedure  * 1. **The initiate:**  1. The originator shall submit the change request form to rig manager. 2. The rig manager shall log the request and pass onto the Project Management team for initiation of the review and approval process. 3. No changes shall be implemented until authorisation has been given by the Project Management team. 4. The originator should ensure that sufficient detail exists in the request for change. Change information may include: 5. The reason for the change, and the implications of not implementing the change. 6. The risks or impacts of implementing the change 7. The risks or impacts of not implementing the change. 8. The required resources (people, time, costs, etc ) 9. The Originator in line with the site supervisor will assess the impact of the personnel changes on the project performance, and discuss the suitability of the alternative personnel, and ensure the new personnel are properly briefed, and have to take the responsibility to: 10. Assesses the impact of changes on operational personnel with respect to training needs and methods of working. 11. Ensure skills and training match requirements for normal and emergency operations. 12. Consults operational personnel where changes have a significant bearing on operations. 13. The project management team will take the responsibility to: 14. Overview of the project organisation 15. Ensuring that personnel placement is appropriate to the business strategy and conforms with legislation 16. Communicating changes to roles and responsibilities in the new organisation 17. Project specific management system documentation is updated to reflect the change. 18. Assess the Proposed changes to equipment. 19. Hazard reviews, safety studies and design reviews will be undertaken by ECDC / Client to assure integrity of the design; these may include HAZOP and Safety Review if required. 20. Additionally, working practices will be revised to include identified site hazards. 21. Significant equipment changes must be approved by the ECDC Country Manager. 22. Equipment / design changes are classed as: 23. Any proposed uses of equipment outside the equipment’s certified design envelope. 24. Any change to a piece of equipment that has been designed to a recognized standard or code. 25. Any change to a piece of equipment that will constitute a component of the pressure envelope of the system. 26. Equipment changes or usage which results in deviation from the intended specification. 27. Any significant change to the work program shall be approved by ECDC project manager and The client representative, The changes shall be documented by means of amendment to the original work program and shall be issued to all parties. 28. Any alterations to the work program which affect equipment (modification, replacement, design etc) will be dealt with as engineering issue as per the provisions from G to K above. 29. Upon completion of review the ECDC HSE Manager will draft a revised procedure and revisit the associated risk assessment. 30. The draft revised procedure will be discussed with all affected personnel. 31. If acceptable the revised procedure will be submitted to the ECDC Manager for approval. 32. If approved the revised procedure will be added to the ECDC HSE-MS. 33. If the client approval is required, the project manager is responsible to get that approval after presenting the notification form to the client and review it with him. 34. If the client doesn’t agree, the project manager will note date, location and client comments and forward them to the ECDC Manager. 35. If there is a completely different alternative solution is proposed, then needs to record new notification form and keep the old one associated to the new document.     1. **Evaluation:** 36. ECDC Project Management Team shall evaluate the technical, operational, safety, environmental, quality and commercial aspects of the change. 37. The project manager will ensure that team are made available to perform the review to prevent un-planned changes being implemented. The review may identify additional information for decision-making.     1. **Agreement:**   The change must be agreed by the Review board with final approval received by the project manager, and the changes that have a significant impact on the project must be approved by the ECDC manager.   * 1. **Implementation:**   Only agreed changes will be implemented. All applicable records will be collated and retained on site with copies being issued to the project manager.   * 1. **Verifications:**   The change will be verified to ensure that it is in accordance with the change request form and that all relevant requirements have been met. This will be conducted by the HSSE Advisor or the Project manager.   * 1. **Documentation:**   The project Manager will ensure that all relevant documentation such as design of service, technical specifications, operating procedures, schedules, drawings and manuals, etc are updated. Document control procedures will be followed with respects to reviewing and approving changes to documentation.   * 1. **Competency:**   The site supervisor will ensure that affected employees and contractors are trained on the impact of the change   * 1. **Check list:**   The suggested Management of Change checklist should be used in the initial and appraisal stage to ensure that all aspects are covered and no omissions have been made, the form is in **Appendix -1.**   * 1. **Registration:**   A register will be maintained through a table will contains all the details relevant management of change issues, the form is given in BSA-ECDC-HS-CL-O007-02-MOC Register v1.0 Exclusions Normal maintenance work, where parts or equipment are replaced by an identical part or equipment of an identical make and model, is not covered by this procedure.  Minor Process or work procedure changes (modifications) are also excluded.  Urgently needed changes for an emergency are excluded from this process. However, MOC must then be processed 'after the event', approvals obtained and all other MOC actions initiated and completed. Control The requirements in this procedure are subject to audit, as part of the ECDC Internal Procedures to ensure the management of change requirements are being complied with.  8． Record  8.1 ECDC-QHSE-FM-86-1-Management of Change template v1.0  8.2 BSA-ECDC-HS-CL-O007-02-MOC Register v1.0 |  |

# Appendix 1 - Management of Change Procedure Checklist Guidelines

|  |  |
| --- | --- |
| **Main Item** | **Details** |
| 1. Location - evaluation |  |
|  | Explosion/fire |
|  | Noise |
|  | Utilities available |
|  | Ground stability - foundation |
|  | Drainage |
|  | Neighbouring activities |
|  | Mobile crane and FLT accessibility |
|  | site traffic control |
|  | Third party risks |
|  | Soil contamination |
| 2. Equipment selection specifications |  |
|  | meeting design criteria |
|  | meeting work scope criteria |
|  | meeting work environment criteria |
| 3. Material selection specifications |  |
|  | Compatibility with product use |
|  | Meeting/exceeding wall thickness and/or desired pressure |
|  | Electrical motors, panels, components and wiring conform to standards |
|  | Fitness for intended purpose |
| 4. Codes |  |
|  | do equipment and/or processes comply with applicable codes |
|  | Pressure vessel and piping codes |
|  | Fire protection |
|  | Electrical |
|  | Noise |
|  | Emissions (air, water) |
| 5. Welding/ testing procedures |  |
|  | Special welding requirement with regard to materials, procedures or operating conditions |
|  | Welding certificate |
|  | weld specification / qualification |
|  | welding rod certification |
|  | Inspection requirement |
|  | Non-destructive testing requirement |
|  | Welders qualifications |
| 6. Pressure testing |  |
|  | Approval test procedures available |
|  | Recording of testing done |
|  | Pre-tested piping used - certificates yes/no |
|  | Safety distances |
|  | Certification by official bodies |
| 7. Pressure protection |  |
|  | Relief valves / bursting disc required due to pressure - temperature |
|  | Relief valve in cryogenic piping between isolation points |
|  | Relief devices on liquefied gas lines |
|  | Over-protection pressure gauges |
|  | Pressure protection vacuum system |
|  | Under pressure protection system |
|  | are pressure protection relief and bursting discs suitably sized + safety routed/vented |
| 8. Temperature protection |  |
|  | safeguard personnel from hot/cold surfaces |
|  | Alarms provided for high/low temperature in process |
|  | Low temperature embrittlement of materials possible |
|  | Materials protected against high temperature |
| 9. Electrical system |  |
|  | Electrical system conforms to regulations |
|  | grounding protection |
|  | Identification voltage |
|  | Main shut-off switch |
|  | lock/out capability |
|  | Emergency switch |
|  | Remote start/stop switches |
|  | Electrical isolation considered |
|  | Back-up system |
|  | overload protection electrical equipment |
|  | HV-transformers and cabling adequately isolated |
|  | Equipment adequate protected against collision damage |
| 10 Process of equipment isolation |  |
|  | Easy access to manual isolation valves |
|  | fail safe isolation requirements met |
| 11. Fire protection |  |
|  | Hydrant available/accessible |
|  | Fire hose lengths adequate to reach equipment area |
|  | Fire extinguishers |
|  | Alarm system at or near equipment area |
|  | Automatic systems required |
|  | Fire detectors |
| 12. Equipment guards - protective shields/barriers |  |
|  | Machine guards on rotating equipment |
|  | guard rails |
|  | Bumper posts |
|  | Oxygen flash protective shields/barriers |
|  | - Noise reduction |
| 13. Ventilation/air monitoring |  |
|  | Release of inert/toxic flammable gases possible |
|  | Present natural ventilation sufficient |
|  | forced ventilation required |
|  | monitoring required (e.g. 02 levels) |
|  | Local aspiration required |
| 14. Access to control equipment |  |
|  | locate to be maintained easily |
|  | install stationary ladder, platform, and guardrails |
| 15. Labelling (piping, panels, etc.) |  |
|  | Process identification by labelling |
|  | Chemical lines |
|  | Process piping |
|  | High voltage identification |
|  | Flammable storage |
|  | Toxic storage |
| 16. Drawing updates |  |
|  | Construction drawing |
|  | P&I diagrams |
|  | Electrical diagrams |
|  | Instrument loop diagrams |
|  | Fire protection diagrams |
| 17. Warning signs/warning devices |  |
|  | Mandatory signs in place: atmospheric hazard warning chemical hazard warning flammable |
|  | Product warning automatic machine start warning |
|  | Back-up (power, instrument air) |
|  | Alarms and signalisation |
| 18. Environmental emissions/ Permits |  |
|  | Noise within limit (industrial residential) |
|  | Air emissions control/testing; required permits available |
|  | Water discharge |
|  | Contamination municipal sewer possible contamination canals, etc. possible |
|  | Permits available |
|  | Contaminations of soil or groundwater possible |
|  | Control of combustion equipment (boilers, etc.) |
|  | Spillage Control |
| 19. Hazardous waste |  |
|  | Waste accumulation and quantity |
|  | Permits required |
|  | Storage and disposal procedures |
|  | Disposal route according law |
|  | Disposal of non hazardous |
| 20. Product control measures |  |
|  | MSDS for Chemicals available. |
|  |  |
| 21. Access and Egress |  |
|  | Exit doors not blocked by equipment or piping |
|  | Equipment room doors equipped with panic bar |
|  | Area lighting adequate, emergency lighting available |
|  | eliminate tripping hazards on exit routes |
|  | Where required, stairs and/or permanent ladders provided to aid egress |
|  | Two exits where necessary |
| 22. Tripping hazards |  |
|  | conduits, pipes, valves, etc. not located in walkways |
|  | eliminate tripping potential |
|  | Floor opening covers level with grade |
|  | storage does not protrude into walkways |
| 23. Sharp edges - Protruding obstacles |  |
|  | round off sharp edges or give protection |
|  | Clearance on overhead pipes etc. |
|  | Valve handle direction away from persons |
| 25. Equipment lockout capability |  |
|  | Electrical |
|  | Mechanical |
| 24. Emergency shower/eve wash |  |
|  | Chemicals used requiring special wash |
| 25. Emergency procedure |  |
|  | Emergency plans to be revised |
|  | Special training required |
| 26. Operating procedure |  |
|  | operating procedure to be revised |
|  | Additional job training necessary |
|  | Safety aspects recognized |
|  | Revision of pre-start and post stop instructions |
|  | Workplace risk assessments/Job Safety Analysis available or completed. |
| 27. Contractors |  |
|  | Selection |
|  | Training |
|  | Co-ordination |
|  | Supervision |
|  | work permits |
| 28. Operators training |  |
|  | Training should include but is not limited to: |
|  | Start - up/shutdown procedure |
|  | Instrumentation control method |
|  | operating temperatures and pressures |
|  | Alarms and shutdowns |
|  | Vibration control |
|  | Electrical isolation procedure |
|  | Normal log control - i.e. daily temperatures/pressures, etc. |
|  | Confined space entry procedure |
|  | Emergency procedures |
| 29. Personal protection equipment |  |
|  | Other than "normal" equipment required |
|  | Respirators |
|  | Fire resistant clothing |
|  | -Chemical protecting garments etc. |
| 30. Lifting devices - Lifting |  |
|  | - Well balanced eyebolt or similar on equipment |
|  | Warning: single point hoisting/lifting might overstress the lifting device, causing rupture |
|  | Control weight restrictions and movement. |
|  | FLT training |
| 31. Control of constructors |  |
|  | Introduction training, incl. asphyxiation- and fire hazards |
|  | Work permit |
|  | Control of cranes |
|  | Product hazards |
|  | digging operation/excavations |
| 32. - Spare Parts Identified and ordered. |  |
|  |  |