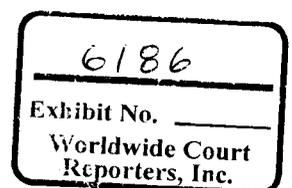


From: Skelton, Cindi K
Sent: Thu Jan 15 21:59:17 2009
To: Cramond, Neil
Subject: FW: SPU Policy for Operating Procedures: 2030-T2-CN-PL-000001
Importance: Normal
Attachments: 2030-T2-CN-PL-000001_2.doc

Cindi Skelton
OMS/IM Manager, GoM SPU
Off (281)366-5426
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From: Hausler, Todd A
Sent: Thursday, January 15, 2009 3:57 PM
To: Skelton, Cindi K
Subject: SPU Policy for Operating Procedures: 2030-T2-CN-PL-000001
Cindi, as requested. Thanks, Todd
<<...>>



CONFIDENTIAL

BP-HZN-2179MDL01119751

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Documentum #: 2030-T2-CN-PL-000001

Owner: Todd Hauser

Issued: 13 November 2008

Next Review Date: 13 November 2011

AUTHORIZATION FOR USE

SPU Operating Authority _____ Date _____

Revision	Date	Description	Prepared		Approved	
			By	Date	By	Date
0	11-13-08	Issued for GoM Use	RBL	10-15-08	TAH	11-01-08

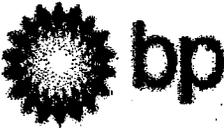
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1.0 Introduction

1.1 SPU Operating Policy

The Purpose of this document is to define the Accountabilities, Responsibilities and Control Processes for Development, Review, Update, Approval and Authorization of Operating Procedures / Practices (OPs) within the DW GoM SPU.

GoM SPU Scope:

The scope of this Operating Policy within the GoM SPU shall include (where appropriate) all Operating Procedures / Practices in the areas of:

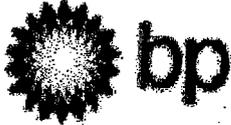
- Production Operations
- Marine Operations
- Well Operations and Interventions
- Logistics Operations
- Plant Inspection, Testing and Maintenance
- Laboratory Activities,
- Emergency Response

1.2 Roles, Accountabilities & Responsibilities

- The **SPU Operating Authority (OA)** is the position within the SPU who is accountable for defining the Operating Policy which covers the preparation, approval, use and review of Operating Procedures and verifying adherence to the Operating Policy across the SPU. The **OA** is a functional role rather than part of the SPU/BU Line Management. Within the DW GoM SPU this shall be the **Operations Director**.
- The **Asset Operating Authority (AOA)** is the position that is accountable for the compliance with the DW GoM SPU Policy for Operating Procedures. This position is part of the SPU/BU Line Management and for the DW GoM SPU shall be considered the **Asset Manager** or **Performance Unit Leader (PUL)**, or **designee**, where applicable. The **AOA** shall be accountable for:
 - ensuring that end users are involved in the creation and review of Operating Procedures;
 - establishing a process to provide feedback on the use of the procedures and receive a timely response to their comments;
 - establishing a system to authorize Operating Procedures prior to use;
 - authorizing the use of approved procedures;
 - authorizing deviations from this Operating Policy;

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- o documenting the reason for any deviations from the Operating Policy, and determine whether a plan to correct the deviation is required;
 - o establishing a program of activities to verify that the Operating Policy is being followed;
 - o assigning responsibility for the following functions regarding Operating Procedures for their respective Asset
 - Facility Engineering Management
 - Operations Management
 - First Level Supervisors
 - Technical Approver
 - End Users
 - o assigning a **Single Point of Accountability (SPA)** for Operating Procedures that shall be responsible for.:
 - coordinating all activities required to maintain and manage the master controlled copies of all Operating Procedures up to date in the official document repository
 - Coordinating efforts for the development of new Operating Procedures,
 - Managing the repository for Operating Procedures with respect to the SPU MOC process to ensure procedures are catalogued and tracked properly between Documentum and BizFlow.
-
- > **Facility Engineering Management** is the position accountable for the technical accuracy of the Operating Procedures from an Engineering and process safety perspective. This position is part of the SPU/BU Line Management assigned to each facility and is over any other Engineering disciplines assigned to that facility. The **Facility Engineering Management** function shall be accountable for:
 - o ensuring competent Engineers are available and involved in the initial technical review of procedures and as Technical Approvers in the final review and approval of Operating Procedures;
 - o ensuring that Operating Procedures receive appropriate scrutiny from the relevant discipline competent Technical Approvers.
 - > **Operations Management** is those staff in line management positions above First Level Supervisor. In the DW GoM SPU it is recommended that this position be

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defined as the **Offshore Installation Manager (OIM)** or **Offshore Platform Manager (OPM)** as appropriate. Regarding procedures, this position shall be accountable for the implementation and use of this SPU Policy for Operating Procedures on site and shall:

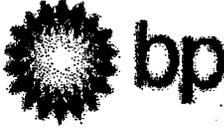
- o Verify that Operating Procedures are up to date and regular reviews are carried out;
- o Ensure sufficient resources are available to support creation, review, approval and use of high quality Operating Procedures, and that appropriate training is provided for the staff using the procedures;
- o Verify that Operating Procedures are followed by end users;
- o Manage the process for initiating and approving deviations from approved procedures,
- o Manage the process for initiating and approving Temporary Procedures,
- o Ensure that validation of procedures is carried out in accordance with the specified program, as agreed with the AOA.

In addition, **Operations Management** shall:

- o Promote the requirement to develop and maintain high quality procedures by defining and resourcing the necessary work program, setting appropriate priority for this work as compared to other ongoing activities, monitoring progress and controlling against the work program;
- o Enable employees to set aside appropriate time ahead of each review date to allow proper scrutiny of the procedure. The site Maintenance Management System should be used to schedule and allocate resources for procedure review activities;
- o Incorporate the need for procedures within the work planning process for the site, and support the postponement of tasks if procedures are not complete;
- o Support First Level Supervisors (Team Leads) in their roles as described below;
- o Demonstrate their personal commitment to the use of procedures during safety tours, safety meetings and site inspections;
- o Recognize exemplary performance of First Level Supervisors, Engineers and Technical Approvers (TA's) in the development or application of procedures, for the purposes of Spot Recognition Awards and Annual Performance Appraisals;

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- o Identify, then coach, underperforming Supervisors or TA's in the need for procedures, the techniques required to prepare good quality procedures and how to use procedures effectively;
 - o Arrange an appropriate level of investigation for any occasions when procedures were not followed, in order that lessons are learned to prevent recurrence;
 - o Initiate disciplinary action against one or more employees, where failure to comply with procedures is persistent, reckless or negligent.
- **First Level Supervisors** are those staff that report to Operations Management and are directly responsible for the day- to-day operation and maintenance of the facility and facility systems. For the DW GoM SPU, it is recommended that this function be defined as the **Team Leads**. This position is responsible for verifying that operating procedures are utilized for all situations and that the procedures are accurate. **First Level Supervisors** shall:
- o Be designated the Owner/Custodian of the Operating Procedures and as such be required to sign off on all procedures as the Owner/Custodian indicating their approval of the procedure before the procedure is authorized for use by the Asset Operating Authority.
 - o Coordinate efforts and be the driving force for the review, validation, and update of all OPs within their prescribed time frame and maintain auditable documentation,
 - o Ensure that procedure updates are communicated to end users and that end users are trained on the revised procedure(s).
 - o Verify that authorized procedures are in place before work starts and are relevant to the task and the prevailing situation of the plant or equipment;
 - o Verify end users understand and follow the procedures;
 - o Verify procedures are actually being used by observing the performance of procedures and validating that the procedure is sufficient for the task required;
 - o Be an active participant in the review and approval of relevant Operating Procedures.
- In addition to these accountabilities, **First Level Supervisors** should:
- o Request clarification from the relevant Technical Approvers if the procedure appears inaccurate or incomplete. If this emerges during the use of the procedure, then wherever possible the work should be stopped while clarification is sought. If this is not possible, a risk assessment should be completed by the OIM/OPM and **First Level Supervisors** and approved by the AOA prior to

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continuing, and an update to the procedure should be initiated within 24 hours of completion of the activities concerned;

- o Retain signed copies of checklists (where these are included in the Procedures). These should be kept for a period of three (3) years, in order to demonstrate compliance;
 - o Recognize exemplary performance of their team members in the development or application of procedures, for the purposes of Spot Recognition Awards and Annual Performance Appraisals;
 - o Identify, then coach, underperforming team members in the need for procedures, the techniques required to prepare good quality procedures, and how to use procedures effectively;
 - o Identify and report any occasions when procedures were not followed, in order that the reasons may be investigated and lessons learned to prevent recurrence.
- **Technical Approver (TA)** is a competent Engineer, delegated by Facility Engineering Management to review and approve operating procedures for a specific facility, from the viewpoint of that particular engineering discipline.
- o It is recommended to utilize a workshop environment to obtain user and technical input for the final review and approval of new or revised procedures. The participants for this review should come from an appropriate group of Operations Technicians, End Users and Technical Approvers, selected according to the complexity of the system and the disciplines involved. Inclusion of the Technical Approvers in this forum is strongly recommended to facilitate immediate discussion and resolution of points raised facilitating timely approval. The SPA or competent external technical author should be used to facilitate this process.
 - o The TA shall sign the cover sheet of the procedure in the approval section after the procedure is finalized following final review for approval.
- **End Users** shall be accountable for using approved procedures, and shall sign off where indicated in the procedures to confirm the procedure has been followed. End users shall feedback to First Level Supervisors any errors, omissions or opportunities for improvement in the procedure.
- Participation in creation, review, and revision of procedures should be included in team performance contracts and, where applicable, in the annual performance objectives for individual technicians.
- Comments from users highlighting perceived errors, omissions or areas for improvement, shall be reviewed by the appropriate Team Lead who will respond to the originator within twenty-one (21) days as to the validity of the end user comments

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with recommendations regarding the disposition of the procedure.. If an update to the procedure is agreed, this should be implemented within a maximum of 90 days from the date the comment was raised. Procedures deemed Safety Critical shall be updated within thirty (30) Days from the date of comments and a Temporary Procedure shall be written, approved and authorized for use during the interim period the permanent procedure is being updated.

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2.0 Definitions

2.1 Context

Regarding Operating Procedures (OPs) within the Gulf of Mexico (GoM) SPU the following definitions have been developed for use in the assessment, development, and revision of all OPs:

2.2 Definitions

Language:

'Shall' is used where a provision is mandatory.

'Should' is used where a provision or action is preferred.

'May' is used where appropriate alternatives are equally acceptable

Operating Procedure:

An **Operating Procedure (OP)** is a step by step set of instructions to enable a competent person to safely accomplish a task. The degree of detail in the Operating Procedure will reflect the risks and complexity of the task to be performed.

Normal Operating Procedure:

Normal Operating Procedures describe the regular routines and checks performed by an operator while equipment is in service. Step by step procedures for monitoring, adjusting equipment performance, and/or operating activities that are required during the normal operation of the system/equipment will also be included in this section. **NOTE:** Refer to **Appendix 4** for a list of **Normal Operating Procedures** that are currently in use on multiple facilities across the SPU. Each facility is unique and may require additional **Normal Operating Procedures** specific to their systems.

Temporary Operating Procedure:

A **Temporary Operating Procedure** covers a short term deviation from an existing procedure. This may be triggered by an unplanned event, change in operating condition outside operating limits, or equipment change that invalidates the existing procedure. A **Temporary Operating Procedure** shall be developed, risk assessed, approved, authorized for use and communicated to users prior to use and shall be valid for no more than ninety (90) days. All **Temporary Operating Procedures** shall be controlled through the **MOC** Process.

Initial Start-up Procedure:

An **Initial Start-up Procedure** covers the first start up of a new facility/system after handover from Projects. It includes additional steps relating to initial fill and pressurization of equipment or service tests, which would not be required for a normal start-up. In the GoM, this procedure will also be used upon return from a Hurricane Evacuation. It does not include pre-handover activities, for example; leak testing, punch list verifications, loop checks, etc... which would be located in a separate commissioning procedure.

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Normal Start-up Procedure:

Normal Start-Up Procedures shall describe re-start of a system or the facility following a Normal Shutdown or a Process/Emergency Shutdown, after the cause of the automatic shutdown has been determined and corrected. Separate sections may be required to address "hot start-up" or "cold start-up", to match the Normal Shutdown Procedures. Exceptional conditions such as "black-start" may also be included.

Normal Shutdown Procedure:

Normal Shutdown Procedures describe actions required for the planned shutdown of the facility or system. Normal Shutdown leaves the plant or system in a non-operating state and ready for re-start. This procedure DOES NOT address "Energy Isolation" of equipment or systems. That is addressed in the Preparation for Maintenance procedures.

Preparation for Maintenance:

Preparation for Maintenance Procedures describe the steps required (after a Normal Shutdown) to place equipment in a condition or state that is safe for maintenance activities to be performed.

NOTES:

1. This procedure will also include a table that is used for Lockout/Tagout (LOTO) as directed by the approved BP GoM Energy Isolation Lockout/Tagout Procedure.
2. The Preparation for Maintenance procedure will be referenced by the Maximo Job Plan and/or the Job work order and should become part of the work order Job Package that also includes the Permit to Work as directed by the approved BP GoM Permit to Work Guidance procedure.
3. Preparation for Maintenance Procedures are not part of the Maintenance Plan that is in Maximo.
4. JSEAs DO NOT meet the requirements of this definition for the following reasons:
 - A JSEA is not a procedure; it is a checklist to confirm all aspects of the impending work activity have been assessed with respect to the Safety and Environmental impacts.
 - JSEAs are not "Controlled Documents" and all OPs must be controlled documents.

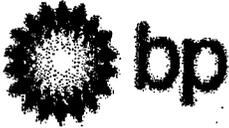
Re-instatement following Maintenance:

Reinstatement Following Maintenance Procedures describe the steps for de-isolation (clearing the LOTO and all work permits and placing the system or component in its Normal Operating configuration), leak testing and any other testing required to place the plant, system, or component to the status required to begin the Normal Start-Up Procedure.

NOTE:

1. Re-instatement of a system or component following maintenance is "un-doing" what was done in the Preparation for Maintenance procedure and placing the system in a "ready for startup and operation" state.

Control of Emergency:

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Control of Emergency (COE) or Emergency Shutdown Procedures describe how to shutdown the plant or equipment items without delay. The procedure will describe the conditions under which an emergency shutdown is required and assign responsibility for executing the shutdown to Competent Technicians.

NOTE:

1. For DW GoM, there will be one (1) COE procedure for each asset that will address two (2) scenarios; 1) Fire and, 2) Major Hydrocarbon Leak. This procedure shall support the Emergency Response Plan for these two conditions with more detailed criteria regarding immediate actions to take in specific situations. All other emergency scenarios should be addressed as Emergency Response Procedures or as Process Shutdowns handled by the facility Process Control System.

Safe Operating Limits (SOL):

Impact upon GoM:

Every process or monitored parameter has a "Normal Operating Range" in which the equipment is expected to operate. Outside of that range there may be protective systems in place to warn the operator of changes in the parameter (alarms) and, in many cases, primarily production systems, there are "Safety Trips" that will shutdown the equipment or system process to prevent exceeding the Safe Design Limits.

Safe Operating Limits, referred to as "Operating Limits" with respect to Operating Procedures (OPs), have been defined by the Global Process Safety Team as the **Safe Design Limits (SDLs)** of a component or system. This applies to pressures, temperatures, levels, flows, vessel inclination, mooring tension, casing pressures, storage temperatures, time, corrosion limits, etc....

Establishing and understanding Operating Limits of equipment and systems and identification of the consequences of deviating from these limits is required to conform to the IM Standard and is also good operating practice. The intent of establishing Operating Limits and subsequent Consequences of Deviation is to provide the personnel responsible for the safe operation and maintenance of the facilities guidance to re-establish parameters to their expected "Normal Operating" range in the event of any excursion, large or small.

Each GoM asset is required to identify the **Safe Operating Limits (SOL)** and **Consequences of Deviation (COD)** for all equipment and systems in the form of an SOL/COD table. **(Refer to Appendix 6)** In the GoM, most production systems and their major components are identified on the P&IDs and the design specifications (Safe Design Limits) for pressure and sometimes temperature are listed on the P&ID. In this case, with respect to SOLs, the SOL/COD Table should state the value of the Design Limit in the SOL column for the respective parameter. For those components that the Design Specifications are not listed on the P&IDs, Engineering studies, asset design data, Vendor Data and/or MOC information will be used to determine the Safe Design Limits. The Normal Operating Range will indicate the value(s) an Operator would expect to see for that parameter normal operating conditions within the range identified on the Range Charts, where they exist. Where Operating Range Charts are not available (e.g., Mooring Chain Tension, Hoist or Draw Works Lifting Capacities, Water or Moisture content, Corrosion Limits, etc.) OEM operating parameters or limits shall be used to define the Operating Limits for that component or system.

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Consequences of Deviation (COD):

With SOLs defined as Safe Design Limits, COD shall be defined as:

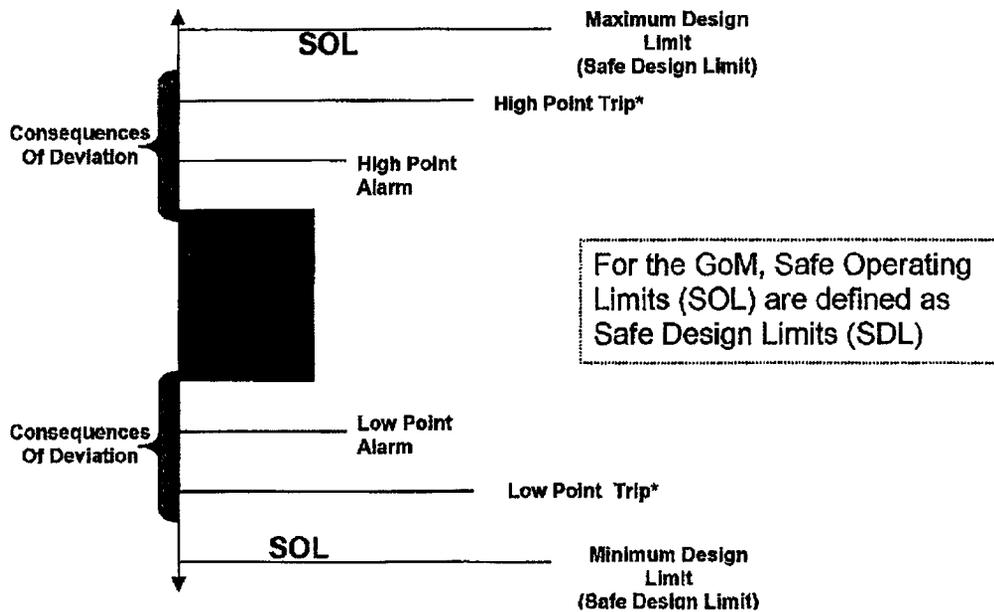
The identification of the possible cause for the deviation, the potential results if no action is taken, and the actions to take to correct or avoid exceeding these limits.

(1) Where Protective System Trips exist, COD shall:

- describe the deviation from the Normal Operating Range or Operating Envelope,
- describe the possible cause(s) of deviation,
- describe the consequence(s) of deviation when no action is taken,
- describe the actions required to avoid reaching the protective trip set point, and
- in the event the protective system trip actuates, verification that the Protective System functions properly and appropriate results are obtained from those actions.

(2) Where NO Protective System Trips exist, CODs shall:

- describe the deviation from the Normal Operating Range or Operating Envelope,
- describe the possible cause(s) of deviation,
- describe the consequence(s) of deviation when no action is taken, and
- describe the actions required to correct conditions to avoid exceeding the **Safe Design Limit**.



*where trips exist

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3.0 Procedure Contents, Style and Control

The contents, style, and structure of Operating Procedures are described to promote comprehensive, clearly written and consistent quality Operating Procedures across the DW GoM Operations.

3.1 Procedure Content

- Operating Procedures shall provide clear step-by-step instructions which shall address the following aspects (as appropriate):
 - Initial Start-up
 - Normal Operations
 - Normal Start-up
 - Normal Shutdown
 - Temporary Operation
 - Control of Emergencies, Including Emergency Shutdown
 - Preparation for Maintenance
 - Reinstatement After Maintenance
 - Safe Operating Limits (SOLs) shall be defined and documented for each system or section of the facility
 - Consequences of Deviation outside these limits and corrective actions to correct or avoid limits shall be stated.
- Operating Limits shall be defined and documented for each system or section of the facility. These Operating Limits, as defined for the DW GoM SPU as Design Limits, shall be tabled as an addendum to the system Operating Procedures in the form of the Safe Operating Limit (SOL) / Consequences of Deviation (COD) Table, in which case care shall be taken to keep them up to date. Safe Design Limits that are annotated on the appropriate system P&ID shall be referenced in the SOL/COD Table. The Consequences of Deviation outside Operating Limits shall be stated, along with the steps to avoid or recover from deviation or excursion towards these limits. Where Operating Limits are different during start-up and shutdown than in normal operation, this should be clearly explained in the SOL/COD Table as well.
- A Normal Operating Valve Lineup will be documented in a table as an addendum to the OPs with the procedures referencing changes to this normal valve line up. Refer to Appendix 6
- Operating Procedures shall be consistent with current Process Safety Information for the facility. This includes, but is not limited to Process Flow Diagrams (PFD), Piping

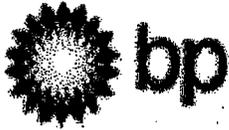
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and Instrument Drawings (P&ID), Electrical One-lines/Area Classification, Cause and Effect Diagrams and SAFE Charts.

- The level of detail in procedures should be sufficient to identify the steps necessary to safely perform the task, as agreed with the end users and Technical Approvers of the procedures.
- Each set of step-by-step instructions should include a clear indication of when the procedure is complete and, if appropriate, include a checklist of key points to check before the procedure is finished.
- All procedures should include a feedback form, so the end users can indicate any inaccuracies or opportunity for improvement.
- Where Operators are required to monitor process parameters, clear instructions shall be given and reference the SOL/COD Table which describes the acceptable upper and lower limits and the actions to be taken in the event of an excursion towards or outside those limits.

3.1.1 Risk Assessing Procedures

- A Risk Assessment of the Operating Procedures shall be conducted by First Level Supervisors and Technical Approvers while reviewing and approving procedures during the process of initial procedure development and as part of subsequent reviews or revisions of the procedures.
- The Risk Assessment shall include consideration of the inherent hazards of the procedural steps if carried out as intended, as well as the potential hazards arising due to deviations from the procedure steps. Human factors, such as fatigue, distraction, complexity or length of procedure should be considered in the risk assessment.
- On a production or processing plant, and where the correct use of the procedure itself is the control for a significant hazard, it may be appropriate to use the Hazard and Operability (HAZOP) methodology and identify in the "Remarks" section of the procedure the HAZOP identified hazard that the procedure is controlling.
- The Risk Assessment shall consider the potential impacts of the Operating Procedure with regard to safety, environmental impact, and any nearby activities that would qualify as a SIMOPS condition. Where a SIMOPS situation is identified by this risk assessment, a step shall be included to notify nearby personnel or to evacuate all non-essential personnel from the surrounding area prior to the execution of the procedure.

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- A **NOTE, CAUTION** or **DANGER** notice shall be integrated at the step level of the procedure that has significant potential to cause harm to people, damage to the environment or equipment, or loss of production.
- Key risk mitigations, special precautions and human factors shall be accurately defined to mitigate specific potential hazards involved in the procedure. These may include specific process hydrocarbons, utility fluids, chemicals or equipment which may cause loss of life, serious injury or which may adversely affect site operations.
- Actions to be taken in the event personnel are exposed to hazardous chemicals shall be described or referenced to site-wide documents.
- Certain risk categories shall require users to sign off upon completion of the whole procedure.

3.2 Procedure Style and Format

- The style, layout, format and content of an Operating Procedure in the DW GoM SPU are selected to promote clear and understandable conveyance of information and make the document easy to use. (See **Appendix 1** for Writing Style Guidelines and **Appendix 5** for the required format and content description for DW GoM SPU Operating Procedures).
- The procedure title shall accurately define the activity covered.
- The procedure document shall have a unique document number.
- The procedure shall clearly show the revision, expiry date, technical and operational approval and Authorization for Use signatures.
- The procedure shall be written in terms and level of language easily understood by qualified competent end users.

3.3 Procedure Control

Accessibility

- The Operating Procedures and any documents referenced within it shall be easily accessible to end users.
- The master copy of Operating Procedures shall be held in a single repository within the asset's document management system. For the DW GoM Operation, this single repository is defined as "Documentum". This copy shall be in an editable format (MS Word). This copy shall have access restrictions to only those with permission to "Check Out" the procedure for review and or revision. Replacement of this Master Copy into Documentum will require an approved MOC.

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- A PDF formatted copy shall also be placed in Documentum for access and use by the End Users.
- The repository shall be readily accessible to the end user to promote ease of reference to procedures and to avoid storage of local, uncontrolled copies;
- The location of the repository shall be clearly communicated to end users;
- An SPA shall be appointed to manage the repository in accordance with the site MOC process.
- Operating Procedures should be organized in a logical file structure, according to system. Each set of operating procedures for a given system shall be accessible through Documentum using a unique Documentum cataloguing number document the facility assigned procedure number. This number will be electronically "Tagged" to the Documentum catalogue number. This enables end users to locate quickly the specific document they need.

Title and Control Information

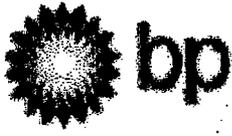
- To achieve consistency across the DW GoM SPU, the standard front page shall be used. The front page of the procedure shall include: (See Appendix 2).
 - Document Title including System and Name of the Procedure
 - Unique Document Number
 - Document Custodian (Owner)
 - Date of issue
 - Next Review Date
 - Job titles and signatures of the Asset Manager, along with the Marine Manager for Marine SOP's, authorizing the procedure for use;
 - The revision log for the procedure which includes:
 - Initials and date of the person(s) that prepared (wrote) the procedure,
 - Initials and date of end users who reviewed and validated the procedure,
 - Initials and date of the person(s) approving the procedure.
- The procedure shall include a header on each page to display the necessary procedure control information, defined as: (See Appendix 3).
 - Facility or unit name or identifier

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- o Procedure title, which should include the equipment / system concerned and the type of procedure (e.g. Normal Start-up).
 - o Unique document number
 - o Revision number
 - o Page number and total pages
- Where a procedure is printed from an electronic system, the footer should indicate the date it was printed, and carry the warning: 'Uncontrolled Copy' together with the date when copied.
 - Uncontrolled paper copies may be printed for ease of reference during execution of the procedure and are only valid for the specific work task. Upon completion of the procedure, uncontrolled paper copies shall be retained for audit until the same procedure is again required for that specific task, at which time the previously used hard copy shall be discarded.
 - For lengthy or complex procedures which extend beyond a shift change, outgoing and incoming shifts should both sign the procedure at the relevant step in order to confirm the status at handover.
 - Temporary Operating Procedures should be introduced to cover exceptional, unforeseen events. They shall have a limited validity of no greater than 90 days. If it is anticipated that the situation may arise again, or exceed the allowable duration for a temporary procedure, then the permanent operating procedure(s) shall be revised using the Procedure Work Flow Process described in this SPU Policy for Operating Procedures.
 - Temporary operating procedures should only be introduced after a decision has been made and documented that adequate safeguards are in place to continue operation. Any temporary safeguards or new operating limits shall be communicated to all affected employees. A temporary operating procedure shall then be progressed through the MOC process.
 - A register of temporary procedures shall be kept in Documentum and periodically audited to ensure that expired procedures have been withdrawn.

Key Reference Documents

- Documents referenced within the Operating Procedure should be latest versions and readily accessible to the users. Hyperlinks should be avoided as they may become disconnected over time.
- Reference documents used in the development of procedures shall be listed in the appropriate section of the procedures.

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- Key documents will vary according to the subject and level of detail required in the procedure, but may include:
 - Risk assessment
 - Process Flow Diagrams / Basis of Design documentation
 - Piping and Instrumentation Diagrams (P&IDs)
 - Operations / Maintenance / Vendor manuals
 - Logic narratives for complex control or shutdown systems
 - Cause and effect diagrams
 - System design specifications
 - Register of Safety Related Devices (RSRD)
 - Material Safety Data Sheets (MSDS)
 - Register of Environmentally Related Devices
 - References to Regulatory Codes

Pre-requisites, Special tools & Equipment

- Each Operating Procedure shall identify the **Pre-requisites** that must be met prior to the execution of the procedure. These will describe plant or other systems status which is required to execute the procedure to achieve its objective. These will include, but are not limited to things such as:
 - System status, initial alignment of process units, utility or support systems and associated equipment involved in the procedure, should be stated to an appropriate level of detail for the task concerned;
 - Any special tools, equipment or chemicals required to be available in order to perform the procedure
 - Specific PPE requirements
 - Contingency and emergency response measures that may need to be in place
 - Communication to other affected parties
- The number of personnel required to perform the procedure satisfactorily should be stated, together with competency requirement for each role as described in the site's competency management system. For example:

This procedure requires:

1 X Production Technician competent on Export Gas Compression and

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1 X Electrical Technician competent on HV Switching.

- If appropriate, a sequential method may be used to show how equipment is to be set up and brought into operation. This may be either a pictorial flowchart or described in text.

Process Overview and Systems Description

- In the DW GoM SPU, Process System Descriptions, Major equipment descriptions, including control logics, system interlocks and safety shutdown logics and equipment shall be described in the System Operations Manual (SOM), **NOT** the Operating Procedures.
- References in the procedure back to the SOM or other reference materials are strongly recommended to assist in the proper execution of any procedure.

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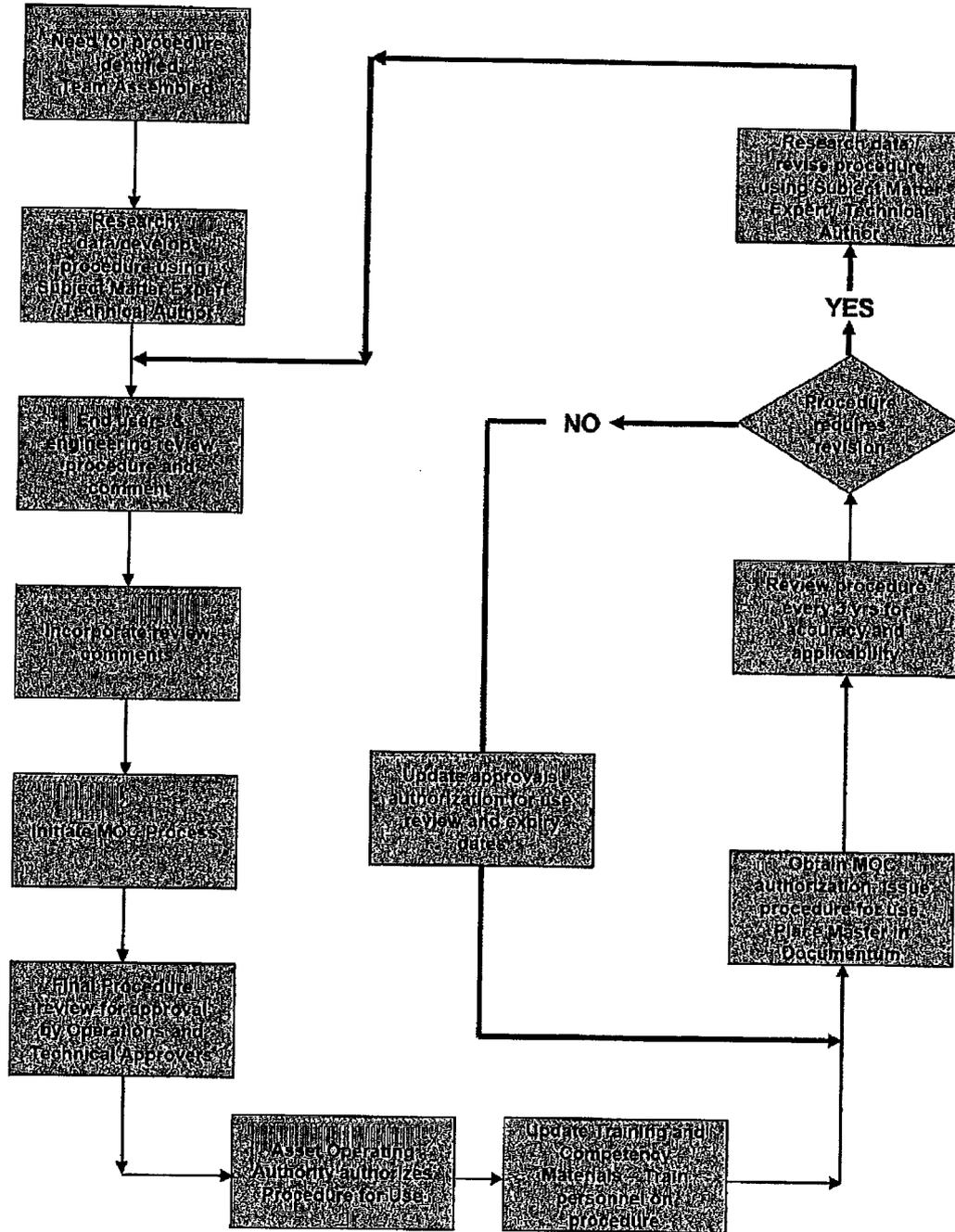
4.0 Creation, Review, Update, Approval & Authorization of Procedures

A specific system and process for the creation, review, update, approval and authorization of Operating Procedures is defined in this document. This system shall include involvement of end users for development and review of procedures and approval of the procedures by appropriate Operations and/or Technical Approvers, prior to Facility Management authorizing the procedures for use. Refer to Figure 4.0.1 Procedure Work Flow Process.

4.1 General Requirements

- Operating Procedures shall be approved by Operations Management, or their Designee, and an appropriate Technical Approver. The review and approval process shall take into account the risk, complexity and frequency of use of each Operating Procedure.
- Operating Procedures shall be authorized for use by the Asset Operating Authority (AOA) prior to use.
- Once Authorized for Use, the procedure shall be used for the training of technicians in the tasks described and be used as the basis for competency assessment.
- Technicians shall demonstrate their competency in applying the procedure and this should be recorded in the site's Competency Management Assurance System (CMAS).
- All GoM SPU Operating Procedures shall be reviewed once every three years and updated as required.. Updates shall also be triggered by the Management of Change (MOC) process, lessons learned or, feedback from users.
- A tracking system with an assigned SPA shall be in place to drive the review of procedures at the appropriate frequency and maintain auditable documentation.
- Any update to an Operating Procedure shall go through the Management of Change (MOC) Process. This includes the 3 year review, even if there are no revisions to the procedure, to ensure that the approval and authorization is updated along with the review date and expiry date.
- Revisions to procedures shall be documented to ensure there is an auditable trail of changes that were made to the procedure. These shall be retained in Documentum for a period of three (3) years.

Figure 4.0.1 Procedure Work Flow Process



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4.2 Creating Procedures

Process for Writing and Approving Procedures

- The initial development of Operating Procedures shall be carried out by qualified, competent technicians or end users considered to be Subject Matter Experts (SMEs), that have significant experience in the operation or maintenance of the equipment and system the procedure will cover. Technical authors (writers) may be used to ensure appropriate format, language, etc. is used.
- These person(s) shall perform the research required to develop and review the operating procedures using their experience, engineering and control specifications, manufacturers recommended practices, operability and hazards assessments and safety guidelines during the development and review processes.
- Upon completion of the draft procedure, an early review and walk through shall be undertaken by one or more end users and should be carried out by both Operations and Engineering staff that were not involved in the development of the draft procedure.. This review or walk through should take place on site to check practical aspects (for example, accessibility of valves and visibility of instruments) and not just be confined to a table top exercise. The Review Team should validate the procedure and sign off each step as correct during this walk through.
- In general It is expected that both hitches offshore will have the opportunity to review the procedures prior to approval and issue for use. One method of accomplishing this in a timely manner is for one crew to perform the initial review and the other crew be involved with the final review for approval.
- Reviews shall involve the red-lining of the procedure and review of the applicable P&IDs, and any other reference document that was used for the development or revision of the procedure. The red-lined procedure and/or drawing(s) should then be verified by First Level Supervision (FLS) before the comments are incorporated into the procedures.
- After the review comments are incorporated into the draft procedure the document is prepared for the final Operations and Engineering Approval review.
- Following the initial review of a new or updated procedure, the MOC Process shall be initiated to outline and track the progress of procedure approval, authorization for use, updating of training and competency assessment materials, training the end users, and issuing the new procedure for use.
- A review team including End Users, Operations Approvers and Technical Approvers shall then walk through the procedure step-by-step as a final review for approval of the procedure. This review shall confirm that hazards identification and

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mitigations and the level of detail in the procedure are appropriate and that all the comments are valid and correctly understandable. Any issues that arise from this review shall be resolved before the procedure is approved.

- In some cases a further review by other working groups such as HSSE, Process Safety, or alternate hitches may be required, depending on the nature or complexity of the procedure.

Authorization for Use

- As the accountable person with respect to the operation and engineering aspects of the facility, the **Asset Operating Authority** shall sign each procedure (New or Revised) following its final review and approval by Operations and Technical Approvers, authorizing the procedure for use. The new or revised procedure shall then be incorporated into the Training and Competency Materials and end users trained on the procedure prior to its use in the field.
- If a procedure is revised for any reason, the **AOA** must sign and date the revised document authorizing its use.

4.3 Training and Competency

- The SPA for Procedures shall ensure that all end users are trained on the new procedure(s) prior to the end user using the procedure on the facility.
- Training and competency materials shall be updated to encompass a new or updated procedure prior to that procedure being issued through Documentum for use.
- Training of end users shall be conducted before new or revised procedures are issued through Documentum
- Authorized operating procedures should be used as the basis for training and competency assessment of end users. An individual's competency should be recorded in the site Competency Management Assurance System (CMAS).
- Training and competency assessment material should be kept up to date to reflect changes in the procedures, plant, equipment, regulatory requirements and process safety information

In addition to the requirements above:

- Personnel involved in the creation, review, approval and use of Operating Procedures shall receive awareness training to ensure they are familiar with the requirements of this SPU Site Operating Policy to the extent needed to perform their roles.
- This training should include:

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- o Engagement in the need to develop and use procedures;
- o Use of the document repository and the methods to access authorized, up to date documents;
- o Use of the route for feedback of users' comments on an Operating Procedure.

4.4 MOC Authorization and Procedure Issue

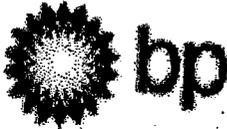
- > The MOC initiated for the development or revision of the procedure(s) shall be authorized and closed out once all the procedure(s) are Authorized for Use and the end users trained on the new procedure(s).
- > The Master Copy of the new procedure shall be placed in Documentum in an editable format (MS Word) and a PDF formatted copy placed in Documentum for access and use by the end users.
- > Access to the Master editable copy of the procedure shall be restricted to only those persons granted permission to "Check Out" a procedure for review and/or revision.

4.5 Review of Operating Procedures

As a requirement for Operating Procedures in IM Element 6, the guidelines of the E&P Recommended Practice for Operating Procedures and, in the spirit of Continuous Improvement, all Operating Procedures applicable to the GoM SPU shall be reviewed for correctness of content, applicability and usability as required by the following conditions:

Elapsed Time

- > At a minimum, all Operating Procedures in use in the GoM SPU shall be reviewed at a frequency of every three (3) years. It is highly recommended that an equal portion (33%) of the procedures be reviewed annually to satisfy this requirement over a three year period. The Three year review of Operating Procedures should cover the following:
 - o Identify if there have been any MOCs initiated for the system the procedure applies to and that the appropriate revisions were made to the procedure(s),
 - o Verify that any simplified drawings used in the procedure reflect the "As-is" configuration as depicted on the latest approved P&IDs,
 - o Verify that the procedure has been validated through documented use and observation by **First Level Supervisors**,
 - o Verify the all references to other documents such as System Operations Manuals (SOMs), P&IDs, Vendor manuals. Safe Charts, Cause and

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Effects Tables, etc are still valid and up to date with respect to revision number, name or title, document reference number, etc...

- Procedures shall be reviewed and revised, as applicable, as the result of the facility five (5) year HAZOP review. Only those procedures identified during the HAZOP review as the mechanism for mitigation of a specific hazard need be reviewed.
- If results of the five (5) year HAZOP review requires a full review of a particular procedure, this review may be counted as a three (3) year elapsed time review. If however, only certain sections of the procedure are reviewed and revised under these circumstances, the procedure(s) as a whole should stay on their existing three (3) year review cycle.
- Even if the three (3) year review indicates changes are not required to the content of the procedure, the review of the procedure must be covered by an MOC to track that the procedure was reviewed at the required frequency, the review date and expiry date updated, and the procedure re-authorized for use.
- All procedures in use or developed within the first year of operation of a new facility, or a new system on the facility, shall be reviewed after the first year of operation.
- The review frequency of procedures should take into account the potential hazards of the activities covered. Facility management may specify the use of a risk matrix to identify those systems and associated procedures with the highest level of risk and review those procedures more frequently than every three (3) years.
- Reviews should be scheduled and tracked within a recognized database, such as Traction, Documentum, or the Site Maintenance Management System (Maximo)..

Management of Change (MOC) Process

- All changes to Operating Procedures shall be controlled through the site MOC process.
- Any change in equipment, system or process parameters as indicated through the Management of Change (MOC) process shall require a review of related operating procedure(s) to establish whether an update is required. The MOC process for this type of change shall address changes to P&IDs, any referenced drawings in Operating Procedures and any Operating Procedures pertaining to the modified equipment, system or interconnecting systems as part of the control process.
- MOCs that cover P&ID changes only shall require that Operating Procedures which contain simplified drawings for use during the execution of the procedure be reviewed and revised as required based upon the P&ID change.

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- An MOC requiring Operating Procedure review shall not be closed out until the operating procedure review / update is complete, the procedure re-authorized for use, and the end users trained on the revised procedure.
- Care should be taken to verify that the appropriate document number is referenced in the MOC.
- An MOC should be used to retire a procedure if the operations to which it relates are no longer applicable.
- If an MOC requires a full review of a particular procedure this may be counted as an elapsed time review. If only certain sections of the procedure are reviewed, the procedures as a whole should stay on the review cycle.

As a result of lessons learned

- After first use of the procedure, any lessons learned or improvements should be captured and incorporated into the procedure, following which it should undergo approval and re-authorization.
- Opportunities to improve may be identified by feedback from end users or new technical knowledge emerging from sources such as the Technical Authorities or Production Upset Reports
- A procedure may require update as a result of a High Potential Incident (HIPO) or Major Incident Announcement (MIA) either at the Asset or elsewhere

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5.0 Utilization of Procedures

The proper utilization of approved and authorized procedures is imperative to assure the safe and effective operation and maintenance of facility equipment and systems. All facility staff are responsible for using approved procedures in the execution of their day-to-day operating activities. **Operations Management** is responsible for verifying that procedures are used and followed.

5.1 Verifying use of procedures

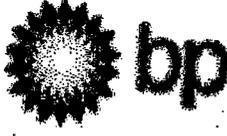
- Operations Management and First Level Supervisors shall develop methodologies for verifying the proper utilization of procedures by end users.
- Activities to verify that Operating Procedures are being used and are valid should be carried out by Supervisors, Operations Management, Technical Authorities and Technical Approvers as appropriate and should include, but not be limited to:
 - discussing procedures during toolbox or tailgate safety meetings and JSEA reviews,
 - safety walkarounds and Safety Observation Conversations,
 - observing the performance of procedures in the field.
- Results of the discussions and observations shall be documented by the observer and kept on file at the facility.
- The number of user comments on procedures shall be tracked as evidence that the procedures are being applied and to demonstrate continuous improvement in their quality.
- Where a task is carried out requiring the end user to sign off the procedure, the completed signed copy should be passed to the First Line Supervisor and be retained for one (1) year.

6.0 Policy Verification

- The **Operating Authority** shall verify through formal audit processes that all facilities in the SPU comply with the requirements of the DW GoM Policy for Operating Procedures every three (3) years.
- Verification activities shall be recorded, findings documented and resulting actions tracked to closure through Tr@ction.
- An audit of the procedures and procedure control processes shall verify the following:

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- o 1) Consistent usage of procedures,
 - o 2) Regularly scheduled procedure reviews and
 - o 3) changes and deviations in the MOC system.
- > Tr@ction will provide the mechanism for recording, managing and demonstrating closeout of actions. The site Maximo System may be used to schedule and resource all activities for the closeout of findings from the verification audit.
 - > Verification results shall be communicated through the **OA** to the **Asset Operating Authority**.
 - > The **OA** should identify items arising which may require action at other SPUs, and should communicate to other **OA's** as appropriate.

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Appendix 1 Writing Style Guidelines

Writing Style Guidelines

- The Writing Style Guidelines are recommended best practices to ensure the procedure will be clear for the end users.

Formats

- Caution and Danger Notices shall be identified through bold text and placed within a distinct shaded box in the body of the procedure.
- Any three letter acronyms and abbreviations shall be defined in the definitions section of the procedure.

Language

- Active language should be used, e.g. 'Press reset button to clear screen' not 'To clear screen, press reset button'.
- Positive statements should be used, e.g. 'When TI-01 reaches 25 deg C, open valve B' rather than 'Open valve B when temperature at TI-01 reaches 25 deg C'.
- Process variables should be stated in the units they are actually read or measured, and consistent terminology should be used throughout. Double negatives and commonly confused words shall be avoided.
- For clarity and to assist in avoiding mistakes, it is recommended not to use equipment tags alone. Equipment names should also be quoted.

Procedure Steps

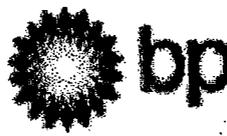
- Procedure steps should be written in short concise sentences, in unambiguous language, and should contain only essential information. Each sentence should contain only one action statement, two at the most, unless unusual situations dictate.
- The ideal step should contain an action verb and the object of the action, e.g. **STOP** (action verb) the pump (object of the action). However to enhance understanding, action limits may be used, e.g. '**OPEN** valve A to 30%'.
- Procedures that specify alignment such as valve positions, pipe and spool configurations should identify each item with its unique number, and specify the position in which the item is to be placed, e.g. **OPEN** PCV-1310.
- If a step contains more than two items, they are to be listed as bullets for ease of reading rather than being buried in a long string of text.

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- Branching may be used to send a user to another location in the same procedure because a clearly defined condition has been met or to another procedure or reference. However, branching within a procedure and especially to other procedures shall be minimized to avoid confusion.
- Simple drawings or graphics can assist the user to understand the procedure. These should be positioned near the relevant steps of the procedure to facilitate cross-referencing. DO NOT use extracts from the PFD or P&ID because of the need to keep updating the procedure; instead the user should be referred to the location of the master copies of those drawings. Simple drawings shall not however replace P&IDs for the purposes of preparing isolations or permits to work.
- All information necessary to perform the procedure, including for example, limits of operation, ramping rates for flowrate, pressure, temperature,, shall be presented in clear quantitative terms. The limits shall not be described qualitatively as that leaves room for interpretation. Plus or minus limits (+/-) shall not be used since these require mental calculation which may waste time or lead to error.
- Conditional instructions should be easy to understand. If more than one condition requires the same sequence of actions, each condition shall be listed separately rather than being hidden in a string of text.

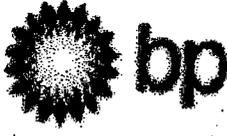
Calculations

- When a procedure requires calculations, the calculations shall be clear and understandable. In order to ensure accuracy for complicated or critical calculations, a formula, table or graph should be included in the procedure or on a referenced calculation sheet together with all other necessary information to perform the calculation. Any assumptions made in the calculation method should be stated so that they can be confirmed to be valid. Space for recording the result shall be provided in the procedure next to the signature box for that step.
- Graphs, charts, and tables in procedures should be designed so that values can be easily understood and accurately accessed. Information in tables and graphs should be minimized to present only the information necessary to perform the required action.

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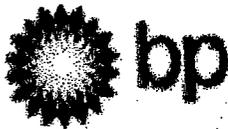
Appendix 3 Header Example

	<p align="center">System Operating Procedures</p> <p align="center">OIL TREATING</p>	<p>Revision : A Issue Date: 31 Aug 07 Expiry Date: 31 Aug 10</p>
<p>DW GoM Thunderhorse</p>	<p>Doc Number: xxxx123456789</p>	<p align="right">Page of</p>

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Appendix 4 Samples of Normal Operating Procedures

Well Clean-up System	Out of Service Mode Well Cleanup Mode Dead Oil Displacement Mode Monitoring
Open Drains & Sump	Seal Loop Filling Weekly Production Sump Treating Bi-Weekly Flush of the Emergency Sump Monitoring
Oil Treating Systems	Monitoring Sampling
Heat Media System	Monitoring Sampling Filling steam drum Replenishing Water in Expansion Tank
Test System	Testing wells Monitoring Sampling
Fuel and Blanket Gas System	Switching Generator Turbine Fuel Gas Coalescing Filters While in Operation Changing Filter Elements in a Generator Turbine Fuel Gas Coalescing Filter Monitoring
Produced Water Treating System	Skimming oil from the Centrifuge Surge Tank Skimming oil from Monosep/Velrsep Monitoring Sampling
Relief and Flare System	Draining Liquids from Relief Header low points Monitoring

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Chemical System	Fill Chemical Injection Storage Tanks Monitor pump rates
Fresh Water Storage System	Fill Fresh Water Storage Tanks
Diesel Storage System	Fill Diesel Storage Tanks
Ballast System	Filling Ballast Water Transfer Ballast from Tank to Sea De-ballast Tank with Bilge Pump
Flow Assurance	Fill a Ballast Tank from the Seachest Back flush the Seachest Gravity fill a Ballast Tank Manually sound a Ballast Tank Sending and Receiving Pigs

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1.0 Purpose & Scope

A general description of the purpose of the contained procedures and the scope of this document regarding the different procedures in this set of procedures.

- Normal Operations
- Start Up
- Shutdown
- Control of Emergency
- Preparation for Maintenance
- Return from Maintenance
- Safe Operating Limits and Consequences of Deviation

2.0 Acronyms & Definitions

Acronyms and definitions of terms specific to the procedures for the applicable system

3.0 Safety and Environmental Precautions

- Reference to BP safety guidelines.
- PPE
- MSDSs
- Etc...

4.0 Requirements / Tools / Materials

- Minimum number and qualifications of personnel to execute
- Notifications (start or stop of procedure)

5.0 Procedures *(start on a new page)*

5.1 Normal Operations

5.1.1 System Monitoring

5.1.2 Replenishing Expansion Tank Level

5.1.3 Adding Chemicals

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5.2 System Start Up *(start on a new page)*

Procedure Template and explanation:

<p align="center">1</p>	<p>This column is where the task to be performed is written. This statement should be as brief and concise as possible and should always begin with an "Action" word, i.e. OPEN, CLOSE, VERIFY, INITIATE, START, STOP, ADJUST, etc... followed by the name and/or nomenclature of the equipment to which the "Action" is being applied.</p>	<ul style="list-style-type: none"> • This column is reserved for supporting information pertinent to the "Action" or the equipment/component to which the action applies. • The remarks column is used to add clarification for the operator relative to information that may be important to the event that is taking place. • <u>IT IS NOT MEANT TO DUPLICATE THE ENTIRE OPS MANUAL INFORMATION REGARDING THE SYSTEM AND/OR IT'S CONTROLS OR PROTECTIVE DEVICES</u>
<p align="center">2</p>	<p>All action words should be in all "CAPS" to bring attention to what action is about to take place. You may also want to BOLD these words. Just be consistent in the manner in which the "Task" statements are written for all of your procedures.</p>	<p align="center"><u>WARNING or CAUTION</u></p> <ul style="list-style-type: none"> • This column is also used for writing "WARNING" or "CAUTION" statements applicable to the task. • These statements should have the entire cell highlighted in this "Yellow" with the word WARNING or CAUTION in bold print and <u>underlined</u> • These statements are meant to make the operator aware of possible dangers associated with the execution of the particular step or sequence of steps, such as MSDS information, other actions that may be required prior to accomplishing this particular step, possible perturbations of the system as a result of completing the task, etc...



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3	<p>If the "Task" statement contains more than two (2) components that need to be manipulated in sequence, the components must be listed in "alpha" sequence or written as separate Task statements with unique step numbers. Example: OPEN the following valves ½ turn in the following sequence: a. HV-403-2 b. HV-403-4 c. HV-403-6 d. HV-403-7 <u>OR</u>, the task can be written as separate tasks as below</p>	<ul style="list-style-type: none"> • The text in this "Remarks" column should be <i>italicized or distinguished in some manner different than the "Task" statement.</i> • This column can also include references to specific information pertinent to the task that may be contained in another section of the procedure or another document, ie P&ID, HAZOP items referenced by number, OEM Manual, etc...
4	<p>OPEN HV-403-2</p>	<ul style="list-style-type: none"> • Each entry in the "Remarks" column should be preceded by a bullet. • This format provides for "ease of reading" the statements
5	<p>OPEN HV-403-4</p>	
6	<p>If the Task statement contains more than two (2) components pertinent to the task that DO NOT require a specific sequence, these components can be listed as Bullets. Example: OPEN the following valves: <ul style="list-style-type: none"> • HV-403-2 • HV-403-4 • HV-403-6 • HV-403-7 <u>OR</u>, a task for each valve manipulation can be written as a separate task.</p>	<p style="text-align: center;">CAUTION</p> <ul style="list-style-type: none"> • DO NOT get carried away with writing a task with multiple valves in a bulleted format. It becomes nothing more than a valve position list and not a concise action statement. • DO NOT bullet more than four (4) items per task.
7	<p>END OF PROCEDURE</p>	

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5.3 System Shutdown *(start on a new page)*

5.4 Preparation for Maintenance *(start on a new page)*

5.4.1 Prepare "XYZ" pump for maintenance

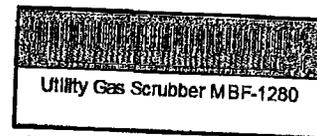
5.5 Return from Maintenance *(start on a new page)*

5.5.1 Return "XYZ" pump from maintenance

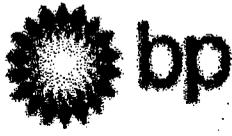
6.0 Appendices *(start on a new page)*

6.1 Appendix A - SOL/COD Table

Parameter	Normal Range	High Alarm	Low Alarm	High Trip	Low Trip
Pressure (psig)		350	93	427	
Temperature (°F)		110	90	125	
Level (%)		50	30	65	



Alarm	Possible Cause(s)	Potential Consequence(s)	Recommended Action(s)
High Pressure	<ul style="list-style-type: none"> PIC-1280A malfunction PIC-1280B malfunction 	<ul style="list-style-type: none"> Release to HP Flare at PSV-1280 	<ul style="list-style-type: none"> Troubleshoot and adjust PIC-1280A Troubleshoot and adjust PIC-1280B
Low Pressure	<ul style="list-style-type: none"> PIC-1280A malfunction PIC-1280B malfunction SDV-4120 closed Excessive utility gas usage 	<ul style="list-style-type: none"> Booster Gas Compressor shutdown Turbine Generator shutdown 	<ul style="list-style-type: none"> Troubleshoot and adjust PIC-1280A Troubleshoot and adjust PIC-1280B
High Temperature	<ul style="list-style-type: none"> Malfunction at Gas/Glycol Exchanger 	<ul style="list-style-type: none"> NA 	
Low Temperature	<ul style="list-style-type: none"> Malfunction at Gas/Glycol Exchanger 	<ul style="list-style-type: none"> NA 	
High Level	<ul style="list-style-type: none"> LIC-1280 malfunction SDV-1280 closed 	<ul style="list-style-type: none"> Liquid to users 	<ul style="list-style-type: none"> Troubleshoot and adjust LIC-1280 Verify SDV-1280 is open
Low Level	<ul style="list-style-type: none"> LIC-1280 malfunction 	<ul style="list-style-type: none"> NA 	<ul style="list-style-type: none"> Verify LIC-1280 is closed

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6.2 Appendix B - Normal Operating Valve Alignment Table (start on a new page)

Valve Alignment Table Template

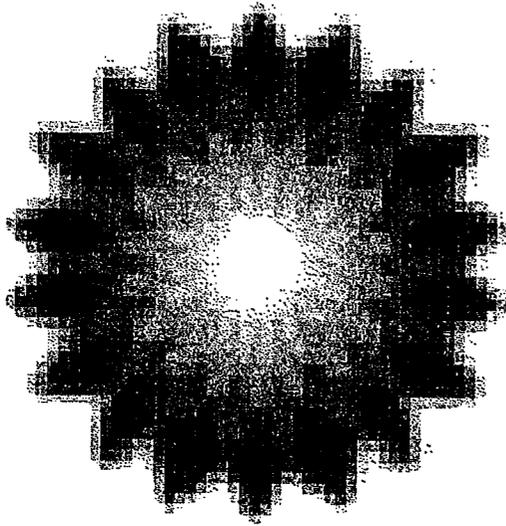
Valve Alignment for Normal Operations			
Valve Tag & Size	Valve Description	P&ID	Position
Centrifuge Surge Tank ABJ-406			
6" HV-406-01	VBF-153W – Water Outlet	661T	OPEN
2" HV-406-02	VBF-152W – ABJ-406 inlet from recycle water from recycle pumps	661AA2	OPEN
2" HV-406-03	VBF-152W – ABJ-406 oil skim	661AA2	OPEN
2" HV-406-04	VBF-152W – ABJ-406 oil skim	661AA2	CLOSED
2" HV-406-05	VBF-152W – ABJ-406 oil skim	661AA2	CLOSED
2" HV-406-07	VBF-152W – LX-406B	661AA2	OPEN
2" HV-406-08	VBF-152W – LX-406B	661AA2	OPEN
2" HV-406-09	VBF-152W – LSX-406	661AA2	OPEN
2" HV-406-10	VBF-152W – LSX-406	661AA2	OPEN
2" HV-406-11	VBF-152W – LX-406	661AA2	OPEN
2" HV-406-12	VBF-152W – LX-406	661AA2	OPEN
2" HV-406-13	VBF-152W – Equalizing line – Gravity feed to Veirsep	661AA2	OPEN
2" HV-406-14	VBF-152W – Spare	661AA2	CLOSED
Centrifuge Surge Tank Recycle Pumps PBE-437/PBE-438 (ABJ-406)			
3" VBF-152	Upstream FE-437	661AA3	OPEN
3" HV-437-02	Upstream PBE-437	661AA3	OPEN
1"	Upstream PSV-437	661AA3	OPEN
3" VBF-152	Downstream PBE-437	661AA3	OPEN
3" VBF-152	Upstream FE-438	661AA3	OPEN
3" HV-437-02	Upstream PBE-438	661AA3	OPEN
1"	Upstream PSV-438	661AA3	OPEN
3" VBF-152	Downstream PBE-438	661AA3	OPEN
3" VBF-152	Downstream PBE-438	661AA3	OPEN
Centrifuge Surge Tank Wet Oil Pump PBA-409 (ABJ-406)			
1" HV-409-01	PBA-409 power gas supply	661AA2	OPEN
1" HV-409-02	PBA-409 power gas supply	661AA2	OPEN
1" HV-409-03	PBA-409 power gas discharge	661AA2	OPEN
2" HV-409-04	PBA-409 pump discharge to Wet Oil Tank	661AA2	OPEN
2" HV-409-05	PBA-409 pump discharge to Dry Oil Tank	661AA2	OPEN

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Valve Alignment for Normal Operations			
Valve Tag & Size	Valve Description	P&ID	Position
1" SDV-409	SDV for Power Gas Inlet to PBA-409	661AA2	OPEN
Monosep/Ventsep/ABM-420			
6" SDV-420A	SDV-420A Inlet Valve ABM-420	661-AA4	OPEN
1" SDV-420B	SDV-420B Blanket Gas Valve	661-AA4	OPEN
6" SDV-420C	SDV-420C Water Outlet	661-AA4	OPEN
6" HV-420-01	Downstream SDV-420A	661-AA4	OPEN
6" HV-420-02	Downstream LCV-420A	661-AA4	OPEN
2" HV-420A-01	Bridle Isolation Ball Valve	661-AA4	OPEN
2" HV-420A-02	Bridle Isolation Ball Valve	661-AA4	OPEN

6.3 Appendix C – References *(start on a new page)*

List all references used in the development and/or revision of any procedure contained in the SOPs. Make sure to include the revision number and revision date of the reference document. DO NOT HYPERLINK REFERENCES



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