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CASPIAN REGION

Document Title:

**AzSPU guidance on technical hazard and risk processes to be used within MOC
Appendix 1**

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Amendment Summary

Revision No	Review Date	Summary description of changes	eMOC Ref
A1		Initial draft	
A2		Revised draft	
A3	23 Aug 2010	Revised draft	
C1	06/10/2010	For issue	

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1 Purpose

This document is intended to mandate the minimum level of hazard assessment required within the MOC process. It is not intended to be a comprehensive list of all the studies and analysis required for hazard identification and evaluation.

This document will be replaced in the future when AZSPU-HSSE-DOC-00252-2 is updated with this specific guidance

2 Accountability

AzSPU process safety TA is accountable for the content of this document

3 Scope

This document provides guidance on the hazard and risk processes to be used by BP within the AzSPU in Azerbaijan, Georgia and Turkey when implementing permanent / temporary / emergency changes.

4 Selection of Hazards Evaluation and Risk assessment Techniques

4.1.1 Hazard Assessment Selection

Within the MOC work flow process it is the responsibility of the key Verifier to confirm the risk level for the MOC. In many cases, an eMOC will be the result of an earlier EQ and so a level of hazard assessment should already be in place to enable a risk ranking to be assigned at the initiate stage. There are also cases where an eMOC has no associated EQ, and in such cases the risk ranking may be done at a later stage in the eMOC workflow and the risk ranking left blank initially.

The primary Hazard and Risk Assessment techniques to be used within the eMOC process are What-if and HAZOP. All eMOCs shall be subject to a What-if assessment and certain eMOCs shall also require a HAZOP study, based on the ruleset defined below. Other techniques may still be required, such as Consequence Analysis and FMEA, however these represent the minority of eMOCs and such additional studies will be identified on a project-by-project basis. The Verifier is responsible for identifying any additional studies or assessments which may be required in addition to the primary assessments, and all those involved in the eMOC may request that a particular assessment be conducted should they perceive a requirement.

4.1.2 Hazard Assessment and Reviewer Competency Requirements

It is the responsibility of the Verifier at the Verify stage to identify the engineering disciplines whose expertise is needed for safe and efficient implementation and operation of the facility change. Additional disciplines may be identified by any stakeholder in the change as the modification proceeds. For each discipline identified:

- An engineer at DRE competency level or higher shall be a participant in the primary assessment(s)
- An engineer at DRE competency shall be added as an MOC reviewer

Where a discipline is identified subsequent to the hazard assessment(s) having been completed, the eMOC coordinator shall meet with the newly added discipline(s) to review the assessment and understand whether it is valid, requires to be revised, or whether the assessment needs to be repeated in full. A revised or repeated assessment shall be added as an attachment to the eMOC.

In cases where the risk level has been defined from an EQ, and the risk level is deemed to fall in the Blue or Purple risk zones (as per GDP 3.1-0001), adjustments to the above guidance shall be made in line with the table below. Note that this guidance is in respect to the engineering discipline requirements only:

Hazard Assessment Competency Minimum Requirements			
	Primary Assessment Participants	Engineering Reviewers	Engineering Approvers
Risk Level 1 - White	DRE	DRE	Engineering Manager
Risk Level 2 - Turquoise	DRE	DRE	Engineering Manager
Risk Level 3 - Blue	DRE	Both DRE and TA	Engineering Manager
Risk Level 4 - Purple	DRE level with TA(s) for "primary" disciplines also present	Both DRE and TA	Engineering Manager and SPU EA

4.1.3 What-if assessment and HAZOP

An AzSPU STP governing the application of the What-if technique is currently being drafted and, once issued, will set the requirements for the use of this technique. An AzSPU STP governing the application of HAZOP is in place and shall be used in conjunction with the HAZOP GP 48-02.

For modifications where a HAZOP is required, the assessment of process hazards may be omitted from the What-if review.

For modifications where a HAZOP is required, the What-if assessment may be condensed to consider potential non-process hazards only, and may be run concurrently with, and recorded within, the HAZOP.

4.1.4 When to perform HAZOP

A HAZOP shall be conducted for any modification to a process (i.e. to a system where fluids are contained within a pressure envelope – full definition is given below) which meets one or more of the following criteria:

- adds new equipment beyond a like-for-like change
- removes or physically alters existing plant and equipment beyond a like-for-like change
- which changes the duty or design rating of existing equipment.

For modifications which alter the operation of existing equipment, but don't meet the above definitions, another technique may be selected, in line with the table above. Such changes could include:

- a change beyond an established equipment Safe Operating Envelope boundary
- a change which impacts either the Upper or Lower Alarm Zone
- a change not involving a process system

Note: The Az SPU Process Safety Technical Authority shall be added as a reviewer to all MoCs of risk level 3 or 4 which include a HAZOP

4.1.5 HAZOP: definitions and exclusions

A HAZOP shall be conducted for any modification to a process. A "process" is production, distribution, storage, utilities or pilot plant facilities used in the manufacture of petrochemical and petroleum refining products, distribution terminals, pipeline activities (where operated by BP) and exploration and production activities including drilling. This includes process equipment (e.g. reactors, vessels, piping, furnaces, boilers, pumps, compressors, exchangers, cooling towers, refrigeration systems, etc.), storage tanks, ancillary support areas (e.g. boiler houses and waste water treatment plants), and distribution piping under control of the company.

Applicability:

The following facilities/operations are excluded from the above requirement for HAZOP but remain subject to the above tabulated hazard evaluation:

1. Process modifications which are limited to the addition/removal/alteration of a valve or DBB assembly to a vent or drain point, which do not form part of a flow path (i.e. which do not attach to a drains system), do not require to be HAZOP'd. For such changes, a What-if or checklist assessment may be used.
2. Equipment change-outs on the drillstring / coil tubing string during the normal process of drilling and well intervention. These shall be subject to prior hazard and risk assessment as defined by the DC&I TA and WEA organization. NOTE: drilling topsides equipment changes are not excluded from the above HAZOP requirements.
3. Marine transport operations, except when the vessel is connected to the facility for the purposes of crude or product transfer
4. Truck and/or rail operations, except when the truck or rail car is connected to the facility for the purposes of crude, product or chemical transfer
5. Vacuum truck operations, except when the truck is on-site and servicing the process
6. Office building equipment
7. Quality Assurance (QA), Quality Control (QC) and Research and Development (R&D) laboratories (pilot plants are included)

5 Reference documents

Document number	Document title	comment
What IF	STP currently being drafted	
GP 48-02	Hazard and Operability (HAZOP) study	Engineering Technical practice
AZ-GP-48-02-1	AZSPU STP HAZOP	SITE TECHNICAL PRACTICE
GRP 3.1-0001	SELECTION OF HAZARD Evaluation and Risk Assessment techniques	OMS DOCUMENT
AZSPU-HSSE-DOC-00252-2	AZ SPU PRACTICE FOR ASSESSMENT PRIORITIZATION AND MANAGEMENT OF RISKS	AZ SPU DOCUMENT