



HSE STUDIES FOR CONSTRUCTION OF NEW ROAD NEAR PIPELINE CORRIDOR AT HIGHWAY AREA

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ABSTRACT:

To improve the infrastructure consequent to the expansion of highways located pipeline corridor towards the city. The proposed expansion consists of construction of a new road near pipeline corridor at highway area and related services and infrastructure during study of this project. The purpose of the study is to present the outcome of the HAZID / ENVID / OHRA workshops conducted for this project.

KEYWORDS: Hazard Identification (HAZID), Environmental Identification (ENVID), Occupational Health Risk Assessment (OHRA), Simultaneous Operations Study (SIMOPS), As Low As Reasonably Practicable (ALARP), Emergency Response Plan (ERP), Personal Protective Equipment (PPE).

1. INTRODUCTION

The proposed new alignment of the access road will start from the city, Crossing the sand dunes and pipeline. The road will be a 40m wide motorway, with four lanes for 400 km long distance, separated by concrete and landscaped median. The road barrier/fencing will be provided along the both side of the road. The road will cross many pipelines and service cables along its route. Adequate protection shall be provided for all pipelines and service lines. Culverts and bridges shall be provided wherever is required. All elevated areas shall be provided with appropriate slope protection and an effective surface drainage. The roads shall be provided with street lighting.

The purpose of the study is to present the outcome of the HAZID / ENVID / OHRA workshops for this study.

2. OBJECTIVES

The primary objective of HAZID / ENVID / OHRA workshop is to systematically identify potential safety, environmental, and health hazards associated with the Project development.

The objectives of the FEED phase HAZID / ENVID / OHRA study include:

- Identification of potential hazardous events, both internal and external, that on realization can endanger personnel, assets and environment;
- Assess qualitatively the hazardous consequences and likelihood of occurrence of the identified hazard events;
- Evaluate the safety measures provided in preventing / mitigating / controlling the hazardous outcomes;
- Identification of the residual hazardous events that need to be further quantitatively assessed and analyzed and
- Identification of safety, health and environmental impacts associated with the PROJECT.

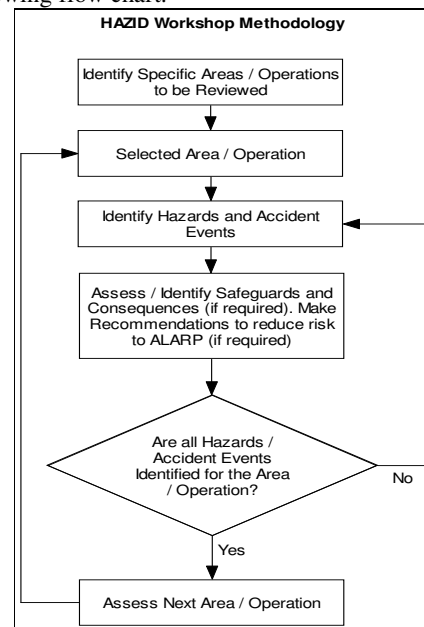
3. METHODOLOGY

The HAZID / ENVID / OHRA workshop shall be conducted based on the HAZID / ENVID / OHRA procedure developed as part of the study in accordance with International guidelines for HAZID / ENVID / OHRA procedure.

The HAZID / ENVID / OHRA study involves a systematic analysis of the potential hazards induced by the new facility.

The HAZID / ENVID / OHRA session will start with an introduction of the team, the Project, and the HAZID / ENVID / OHRA methodology. Then the hazards associated to the implementation of the study will be discussed based on the set of guidewords established for the Project. For each relevant hazard, possible causes and consequences are identified along with the possible safeguards considered in the design. In case the risk is considered as low as reasonably practicable (ALARP) no further recommendations are made. Otherwise recommendations will be made to ensure the risk is ALARP.

The HAZID workshop process is presented in the following flow chart.



3.1 Documents Requirement

In general HAZID / ENVID / OHRA session will be supported with an overall Plot Plan/Equipment layout and Process Flow Diagram (PFD) of the facilities to be discussed.

3.2 Checklist Development

The hazards shall be discussed in the HAZID / ENVID / OHRA session shall be based on the International guidewords stated in the HAZID / ENVID / OHRA Standard.

In case relevant hazards are missing, the software should be used will facilitate an easy addition of hazards during the HAZID / ENVID / OHRA session. In case hazards are considered not relevant

by the team, they will be referred to as “Not Applicable” or “No credible causes identified”.

3.3 Risk Ranking

During the HAZID / ENVID / OHRA workshop, Health, Safety, and Environmental hazards shall be ranked as per the COMPANY Risk Assessment Matrix (RAM).

This qualitative risk ranking assesses the likelihood and consequence of the hazards to derive the significance of the hazard. The initial risk ranking is assigned on the assumption that no control / mitigation measures are in place.

3.4 Brain Storming

The established guidewords checklist will be used as prompt for the team to brainstorm. The chairmen shall encourage debate between participants and ensure that everyone has the opportunity to contribute and provide inputs. The team knowledge and creativity will be used to identify credible causes and applicability of hazards. The team shall not try to solve any problems identified during the session rather will raise actions to address the issues outside the meeting.

3.5 Recording

A scribe will be made available to record the discussions of the HAZID / ENVID / OHRA session. The records will be made using a dedicated software package, PHA PRO 8. The minutes will be filled out on HAZID / ENVID / OHRA worksheets. These sheets are projected on a large screen during the session. The projection enables the team members to check and discuss the items on the records.

4. REPORT

The HAZID / ENVID / OHRA session findings, which are recorded in the HAZID / ENVID / OHRA worksheets, and proceedings will be summarised in the HAZID / ENVID / OHRA Report. This report will contain the following chapters.

Introduction;

Objectives and Scope of the HAZID / ENVID / OHRA Study;

HAZID / ENVID / OHRA Study Methodology;

HAZID / ENVID / OHRA Study Timing;

HAZID / ENVID / OHRA Team Composition;

HAZID / ENVID / OHRA Study Recommendations.

5. RISK ASSESSMENT MATRICES

COMPANY QUALITATIVE RISK ASSESSMENT MATRIX (RAM)						PROBABILITY				
POTENTIAL CONSEQUENCES						A	B	C	D	E
Severity	Injury to People	Loss or Damage to Assets	Effect on the Environment	Impact on Reputation		Improbable	Remote	Occasional	Probable	Frequent
5 Catastrophic	Multiple fatalities	Extensive	Massive	International						
4 Severe	Single fatality	Major	Major	National						
3 Critical	Major injury	Local	Localized	Considerable						
2 Marginal	Minor injury	Minor	Minor	Minor						
1 Negligible	Slight injury	Slight	Slight	Slight						

■ Low Risk
■ Medium Risk (ALARP)
■ High Risk

- Use of existing defined pipeline corridors by respective authorities
- Minimum disturbance to agricultural land.
- Safety to people, wild animals (while crossing forest area) and property
- Avoidance of rocky terrain
- Flexibility of future expansion.
- The Topographical & Geotechnical surveys shall be carried out.
- Design of the shell shading structure around the toll gate building shall be as per the applicable seismic zone.
- Include provision of onsite portable gas monitoring / escape sets
- Include the requirement of verification of cable or underground service protection
- To schedule the works to minimize the traffic impact nearby main road.
- All design should be as per ergonomic requirement.
- Paint containing hazardous harmful health effects is not used in the project.

REFERENCES

1. ISO 31000- ISO 31000 provides principles and generic guidelines on risk management
2. ISO 17776:2000(en)- Petroleum and natural gas industries — Offshore production installations — Guidelines on tools and techniques for hazard identification and risk assessment
3. ISO/TC 67, Materials, equipment and offshore structures for petroleum and natural gas industries S.O.1533(E),[14/09/06] - Environmental Impact Assessment Notification, 2006
5. International guidelines for HAZID/ENVID/OHRA

6. CONCLUSION

