Risk Assessment & Disaster Management Plan for International Shipbuilding and Repair Complex

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Abstract— Risk assessment provides a structured basis for identifying hazards and to ensure that all risks which have been are reduced to an appropriate level in a effective and efficient manner. The project lists down the various risks involved in building a new Shipbuilding and Repair Complex and the ways and means with which risks can be reduced to an acceptable level. Health Safety & Environmental aspects become a major factor of importance for evaluation of Shipyards by design firms and ship owners for deciding to award their vessels for building or repairs. New developments in safety systems of shipyards today is the requirement to not only deal with safety problems but also to address, at an early stage, the risks, their importance, their severity, frequency of occurrence, impact on the environment etc. and take the appropriate steps to reduce or eliminate them through a Risk Assessment System. Based on risk assessment conducted, Disaster Management Plan has been framed for the construction and operation phase of the project. This disaster management plan will set out procedures and plans to be adopted in the event of emergency, loss of containment and consequence thereof in the proposed new complex.

Key words: International Shipbuilding, Risk Assessment & Disaster Management Plan for International Shipbuilding

I. INTRODUCTION

A major accident has the potential to cause serious injury or loss of life and extensive damages to environment or property or serious disruption outside the shipyard. The project will involve an in-depth examination of different activities involved in the construction and operation of new shipbuilding and repair complex.

This section covers the Risk Assessment and Disaster Management/ Emergency Control Plan for the New International Shipbuilding and Repair Complex.

The risk assessment covers

- Hazard identification and selection of risk scenarios.
- Decisive examination of hazard prone operations / units with an accent on quantification of hazard and its evaluation.
- Assessment of risk on the basis of the above evaluation against the risk acceptability criteria relevant to the situation.
- Identification of loss of containment scenarios.

The disaster management plan sets out the procedures and measures to be taken in the event of emergency, loss of containment and consequence thereof on the proposed complex.

II. METHODOLOGY

A. Hazard Identification

During construction and operation of the complex various hazards will be associated, which can create danger for human, health, life and property in an unlikely event of emergency. The hazard identification and risk assessment have been carried out for following stages for this project:

- During construction phase
- During operation phase

B. Quantitative Risk Assessment

The methodology for qualitative risk assessment is the structured process to address issues by achieving clarity on the specific hazards involved in construction and operation of the complex. The initial step in this process is to get the understanding of activities. Hazards and associated risks are then identified on the basis for a qualitative assessment of internal and external factors impacting the activities. To carry out qualitative risk assessment, following questions are evaluated in systematic order:

- What are the steps in various activities?
- What hazards exist (if any) for each step in the identified activities?
- What is the likelihood of an hazard occurring?
- What are the consequences if the hazard identified does occur?
- What controls and mitigation measures are required to reduce or eliminate the hazards and their consequences?

C. Disaster Management Plan for the Complex

This disaster management plan sets out the procedures and steps to be taken in the event of an emergency, loss of containment and consequence thereof in the complex.

This DMP provides the following information:

1) Objectives, basis and capabilities of this DMP.
2) Definitions of key terms and concepts used in DMP.
3) Details regarding emergency organization proposed to handle disasters including identification of incident controller, site main controller, essential workers, assembly points, Emergency Control Centre.
4) Details of arrangements provided to control fire and toxicity.
5) Details of Medical arrangements, Transport and evacuation arrangements and Pollution control arrangements available on-site.
6) Details of the communication system available to declare an emergency to jetty workers, administrative employees, visitors, neighboring factories and the general public.
7) Details of correlated activities to be undertaken during pre-emergency, emergency as well as post-emergency.

8) Details of controlling emergencies as a result of flammable and toxic releases.
9) Details of action to be taken during an emergency such as evacuation of ship, jetty, mutual aid, intimation and involvement of external authorities, accounting for personnel, access to records, public relations, and rehabilitation.
10) Details of off-site emergency plan.
11) Details on training and rehearsal of the emergency plan.

III. CONCLUSION

For the construction of new international shipbuilding and repair facility, risk assessments for the construction phase and operation phase is done to ensure that all risks associated with the construction and operation of the project has been identified and control measures implemented. Also disaster management plan for the new project is made and documented so that any emergency arising out of the project is dealt with minimum damage to life, property and environment.

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