



7TH NATURAL GAS OPERATION AND MAINTENANCE, O&M, CONFERENCE

NATURAL GAS SOCIETY

Risk and Barrier Management in Pipeline Industry

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MANAGING RISK

How do we Manage Risk

Significance of a Risk Register

Identifying Risk and barrier owner

Benefits of barrier management

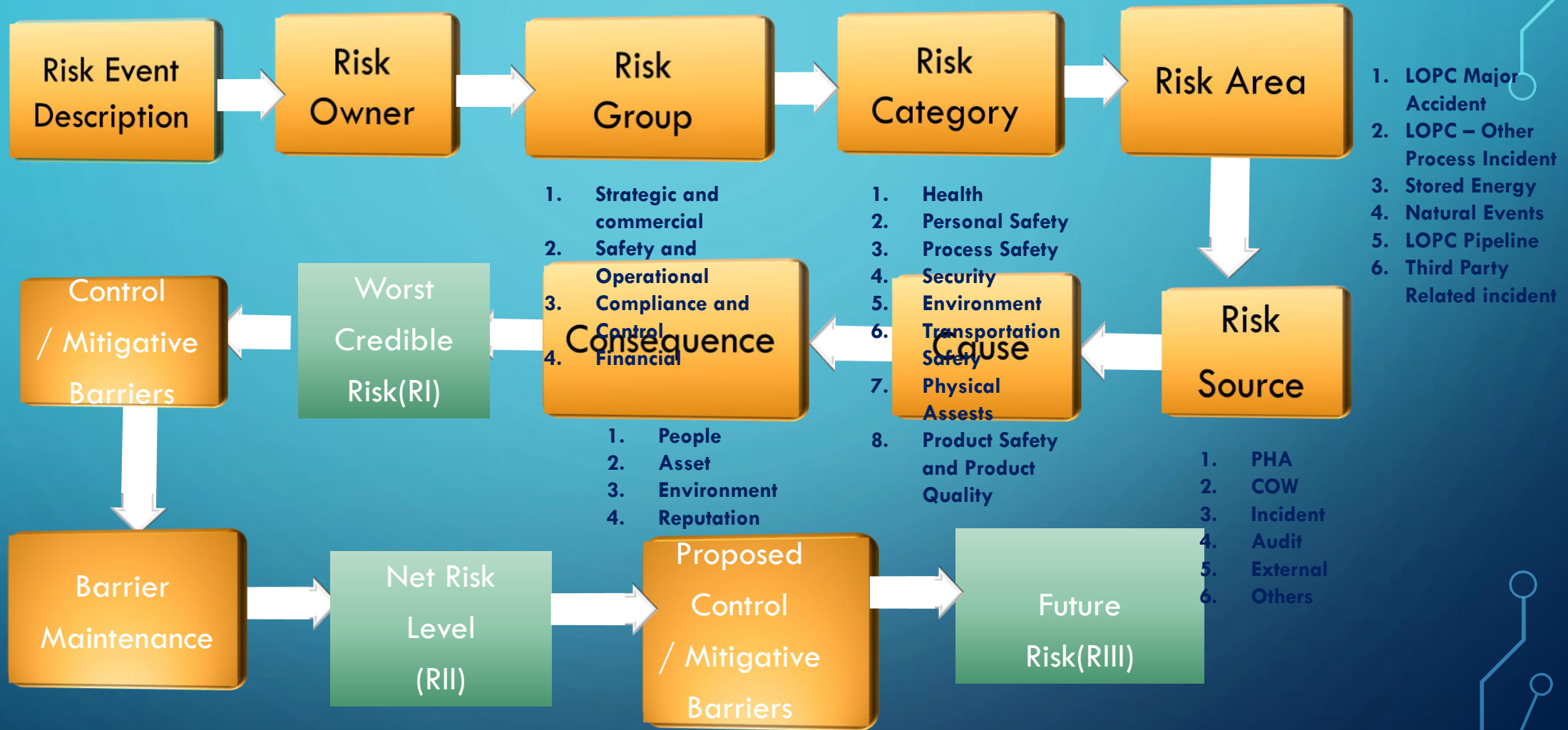


Risk Management is a process of identifying the Risk, analyzing its impact and developing strategies to mitigate / minimize the risks.

A prime focus of risk management is on the prevention of incidents by the introduction of appropriate layers of control measures.

Risk assessment is a process approachable, understandable, manageable incorporation of the physical processes potentially acting on a pipeline: external forces, corrosion, cracking, human errors, material changes, etc.

RISK REGISTER FLOW



BASIC STEPS OF RISK REGISTER

1

Identify risk

2

Define Risk
Event.

3

Assign Risk
owners for
each Risk.

4

Estimate the
likelihood and
consequence

5

Create a risk
response plan.

6

Effective
barrier
Management
Program/ Plan



STEPS FOR RISK REGISTER

Identify Risk

Risk identification is a process that involves all cross functional team who are experts in relevant discipline. It is important to analyse all past incidents, MOCs, PHA Studies , operational constraints

Define the Risk Event

Describing the risk event is important as the Risk itself as it shall mention the cause of the event specific to the functional location and the consequence on its occurrence.



STEPS FOR RISK REGISTER

Assigning Risk Owners

It is important to do the mapping of the Risk to the actual Risk owners. Risk owners are the personnel who is associated with department or function related to that Risk and is best placed to understand the Risk. First has limited severity to an individual and the latter can be of large severity

Estimate the probability and consequence of risks.

Proper Judgement is important when doing the analysis for eg., the risks attendant on transporting radioactive waste are perceived by some people as far greater than the risks attendant on transporting hydrocarbon in tank trucks, when in fact the latter are considerably larger.



STEPS FOR RISK REGISTER

Create a risk response plan.

Risk response Plan or the barrier management is very important in reducing the risk to desired ALARP level. Barriers as the risk response shall be Big, Strong and fast to act when the event occurs. In the layers of protection, the main focus is on the preventive

KEY DEFINITIONS

Worst Credible Risk (RI) – Risk considering ultimate consequence severity considering failure of barriers or protection layers

Net Risk (RII) – Risk considering credit for barriers or protection layers (by applying judgement and barrier credit rules)

Future Risk (RIII) – Residual risk after implementation of recommendations considering revised consequence (if impacted) and likelihood

BARRIER SELECTION

PREVENTIVE /
MITIGATIVE BARRIERS

DESIGN: DOES THE
PROPOSED DESIGN
OF THE BARRIER MEET
THE INTENDED
PURPOSE?

INSTALLATION: HAS
THE BARRIER BEEN
INSTALLED
CORRECTLY?

OPERATIONAL : IS
THE BARRIER CAPABLE
OF OPERATING
WITHIN ESTABLISHED
LIMITS?

PERFORMANCE :
DOES THE BARRIER
PERFORM
EFFECTIVELY AND
REPRODUCIBLY?

BARRIER OWNER

- Understands all barrier's functionalities
- Driving barrier life cycle activities
- Ensuring the barriers are installed as per the design
- Key role in identification of required activities for barrier maintenance
- Facilitating and ensuring barrier maintenance activities in the required frequencies
- Developing and maintaining the relevant procedures for maintenance
- Overall management of the barrier and quality assurance
- Providing information for decision making regarding changes to the barrier
- Integrate with risk owner and provide updates on the barrier health
- Maintaining Records

RISK CHAMPION



Driving risk management activities

Key role in driving risk governance and reporting

Facilitating risk notification & endorsement and compilation of entity risk information for annual review

Help entity management assess & report emerging risks

Facilitate sharing and communication of key updates on risk across entity

Developing and maintaining the relevant section of LOMS

Overall management of the risk register and quality assurance

Providing information for decision making



BARRIER MANAGEMENT

Effective Barrier management minimizes the potential of Risk and helps preventing a major accident.

Helps identifying any unhealthy barrier thereby identifying any fault in the system

If there are any changes in the barriers w.r.t MOC or maintenance issue, barrier management helps in identifying the same

It emphasizes combination of multiple barriers, such as engineering controls, administrative procedures, and personal protective equipment, to provide a layered defense against risks.

Barrier management helps organizations align with regulatory requirements and industry standards.

It allows managing barrier health that enables managing the Risk across the facility lifecycle including the design operating phase including the mothballing and commissioning phase.

SUMMARY



Communicate Risk and barrier at Each stage



Ensure Unhealthy barriers are addressed and rectified



Barrier Based Auditing to check the effectiveness of the Barrier



Barrier Awareness Programme



Scheduled review of barrier Maintenance activities

Thank You

