

Structured Health, Safety, Security and Environment Approach in Projects

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Mir Kazim Ali
S: HSSE Manager
Corporate Project Management
OMV Aktiengesellschaft



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OMV Group HSSE Policy



Sustainability:HSSE* is a line management responsibility with equal importance as all other business processes.

- ▶ Our line managers are expected to demonstrate commitment and leadership.
- ▶ We require all our employees, partners and contractors to adhere to this policy and our management system.
- ▶ We establish specific goals, measure and benchmark our progress, and we strive for continuous improvement.
- ▶ We hold ourselves accountable for our systems, products and actions.

Everyone who works with OMV Group should return home in good mental and physical health.

- ▶ We promote the health of our employees by continuous improvement of their working conditions.

All workplaces and processes must be safe and secure for us, our stakeholders and the environment.

- ▶ All accidents can be prevented: keeping risks as low as reasonably practicable is a priority.
- ▶ We apply the best available economically viable technology.

A precautionary approach and proactive environmental management secure resources for the future.

- ▶ We actively strive to minimize our impacts on the environment.
- ▶ We reduce the carbon intensity of our portfolio and support renewable energy sources.

Stakeholder trust is critical to OMV Group's sustained economic success and to keep the license to operate.

- ▶ We actively engage in stakeholder dialogue, and we minimize the social impacts and risks of our activities.
- ▶ We are committed to protect human rights within our sphere of influence.

Our Group-wide Sustainability:HSSE standards go beyond legal compliance.

- ▶ Where ever we operate, we comply with all relevant legislation and we meet the OMV Group standards.

* HSSE = Health, safety, security and environment







Vienna, April 2011

Move & More.  **OMV**

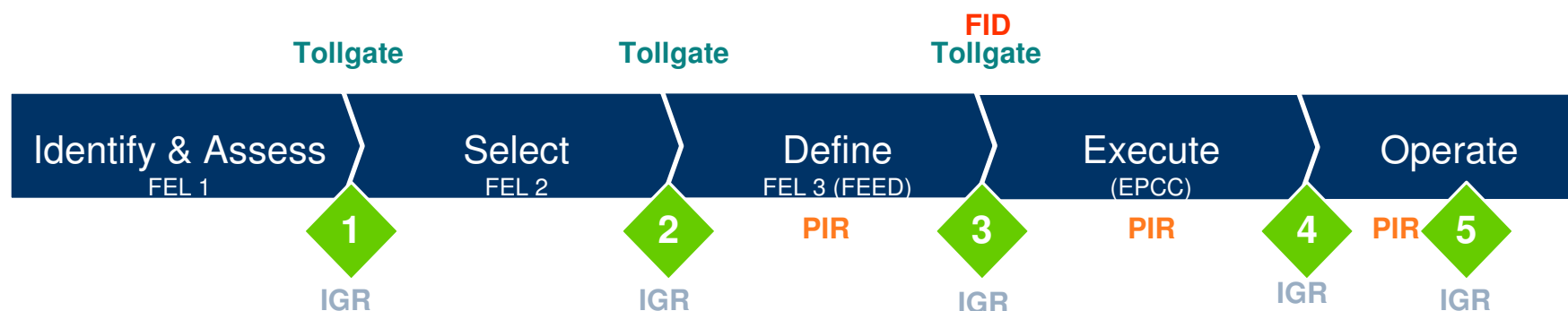
Attachment to Corporate Policy "Sustainability:HSSE Policy" effective as of April 1, 2011





Project Life Cycle

Five distinct and consecutive phases of Capital Project Management



- ▶ FEL: Front end loading
- ▶ FEED: Front end engineering design
- ▶ FID: Final investment decision
- ▶ EPCC: Detailed design engineering, procurement, construction, commissioning
- ▶ IGR: Independent gate reviews
- ▶ PIR: Post implementation review (project health checks)



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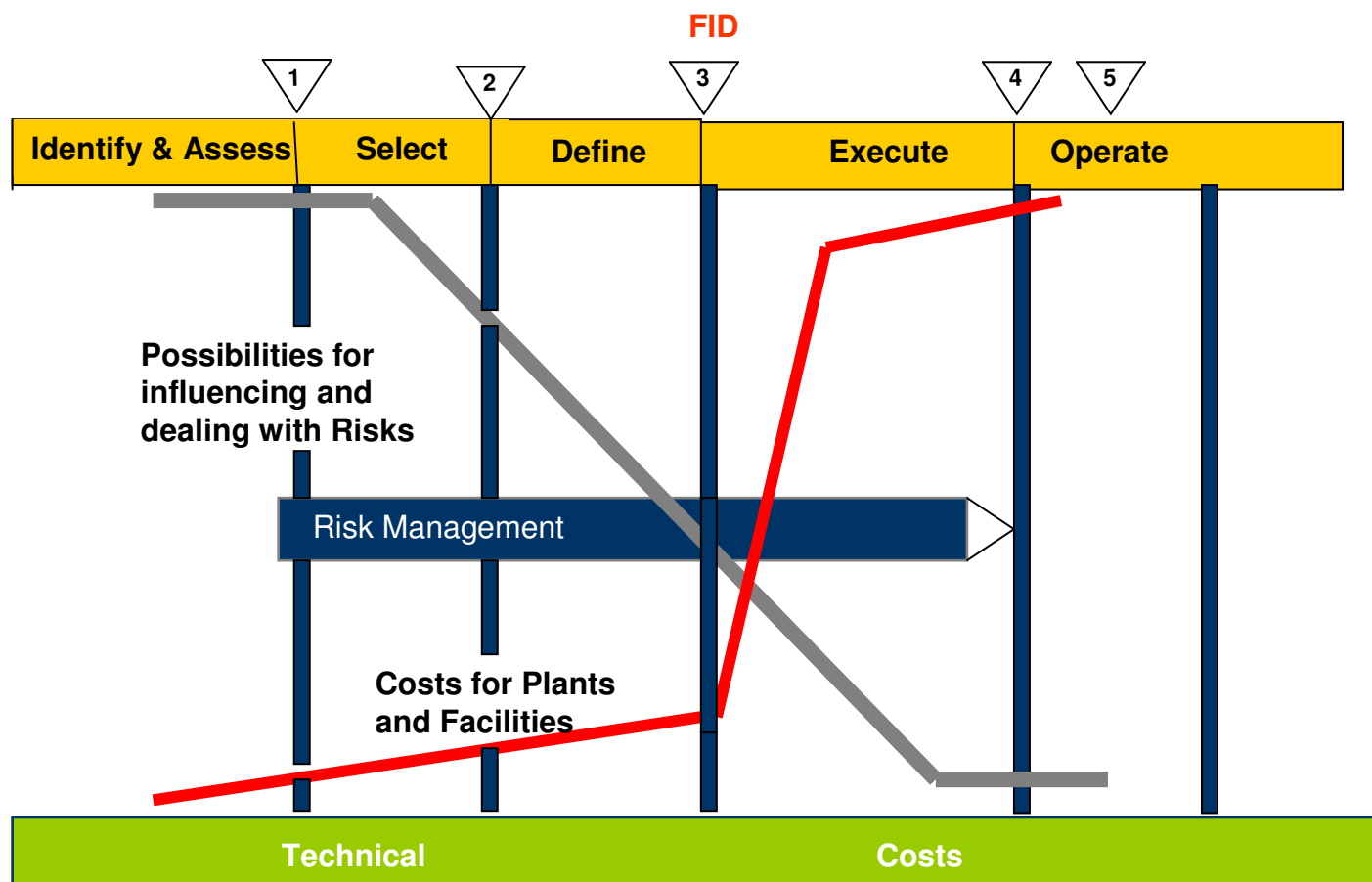
HSSE in Project Life Cycle

Why Front End Loading of HSSE in Projects?





Front End Loading (FEL)





HSSE in Project Life Cycle

Overview:

- ▶ Clear HSSE deliverables for the project
- ▶ Competent project manager and integrated project team
- ▶ HSSE resources (people, budget and time) for the project
- ▶ Effective HSSE management of the contractors
- ▶ Hazard identification and risk assessment in each phase of the project
- ▶ Project action tracking register (ATR)
- ▶ Legal compliance register
- ▶ Project specific HSSE risk register and risk management
- ▶ Management of change (MOC)
- ▶ Integration of process safety, safety engineering and technical integrity in appropriate project phases
- ▶ Project HSE Reviews (1-5)
- ▶ ALARP (as low as reasonably practical) demonstration through risk reduction measures
- ▶ Pre-startup safety review (fit for the purpose and safe to operate)
- ▶ Operations readiness & assurance review (OR&A)
- ▶ Handover protocol



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Identify & Assess Phase

Opportunity is identified, business case is spelled out duly aligned with corporate strategy and options for further pursuit are assessed.

Key Activities:

- ▶ HSSE integration in the Project Assurance Plan/Project Execution Plan (PAP/PEP)
- ▶ Environmental & Social Impact Assessment (E&SIA)
- ▶ Legislative screening for permits and approvals
- ▶ Stakeholders identification and management plan (i.e. communities, NGOs, regulators, authorities etc.)

PAP/PEP:

The plan shall articulate the business case and list the mandatory and discretionary deliverables and reviews (for e.g. IGR,PIR,PHSER, etc.) and shall be kept current by the project team throughout life cycle of the project



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Select Phase

Final technical alternative is chosen and endorsed at the appropriate levels of organisation.

Key Activities:

- ▶ Screening and selection of best available technology (BATNEEC)
- ▶ HSSE evaluation and risk assessment report
- ▶ Security risk assessment report
- ▶ Legal compliance register
- ▶ Project HSSE plan
- ▶ Project Quality plan



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Define Phase

Project specifications are drawn up and all other deliverables are defined for FEED.

Key Activities:

- ▶ HSSE input in the basis of design for FEED
- ▶ Listing of all applicable HSSE standards, safety design philosophies, guidelines for the project
- ▶ HSSE scope of work, specifications and deliverables in ITT for Define phase
- ▶ Prequalification and selection of contractors
- ▶ Bid evaluation for award of FEED contract
- ▶ Project HSE review (PHSER) -1



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Define Phase

Deliverables:

- ▶ Hazard identification workshop and risk register
- ▶ ENVID workshop and environmental aspects register
- ▶ Occupational health risk assessment
- ▶ Security risk assessment
- ▶ Coarse hazards and operability (HAZOP) study
- ▶ High level reliability, availability and maintainability (RAM) analysis
- ▶ Emission and emergency vent study
- ▶ Effluent schedule/report
- ▶ Plot plan review
- ▶ Identification of safety critical elements (SCE)
- ▶ Design HSE Case report and demonstration of ALARP



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Define Phase

Deliverables:

(safety engineering studies)

- ▶ Active and passive protection assessment
- ▶ Fire water hydraulic study
- ▶ Fire and gas detection system analysis
- ▶ Flare system study
- ▶ Frequency and consequence analysis
- ▶ Quantitative risk assessment (QRA)
- ▶ Vapour cloud and gas dispersion analysis
- ▶ Fire and explosion analysis and risks contours
- ▶ Occupied building risk assessment
- ▶ Emergency system survivability analysis (ESSA)
- ▶ Escape, evacuation and rescue analysis (EERA)



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Execute Phase

Project promise is delivered

(EPCC & handover of the project)

Key Activities:

- ▶ Prequalification and selection of contractors
- ▶ HSSE scope of work, specifications and applicable codes & standards in ITT
- ▶ HSSE deliverables for all EPCC stages
- ▶ Bids evaluation for award of EPCC contract
- ▶ Review and update of project HSSE Plan
- ▶ Review and update of project Quality Plan
- ▶ PHSER stage -2,3 and 4



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Execute Phase (detailed engineering stage)

Deliverables :

- ▶ HAZID workshop and review and update of risk register
- ▶ Bowtie diagrams for all major accident hazards (MAH)
- ▶ Detailed HAZOP, actions closeout and as-build P&IDs
- ▶ Safety integrity level (SIL) study
- ▶ Operability and maintainability analysis - 3D modeling
- ▶ Ergonomics review report
- ▶ Review and update of plot plant and fire plan drawings
- ▶ Review and update of RAM analysis
- ▶ Review and update of hazardous area classification drawings
- ▶ Review and update of emission and effluent report
- ▶ Noise study and Illumination study
- ▶ Environmental risk management in design
- ▶ Review and update of SCE
- ▶ Development of performance standard (PS) for SCE
- ▶ Scheme of examination & verification for SCE in Computerised Maintenance Management System (CMMS)
- ▶ Operations HSSE Case and demonstration of ALARP
- ▶ PHSER stage - 2



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Execute Phase (detailed engineering stage)

Deliverables:

(review and update of safety engineering studies)

- ▶ Active and passive fire protection assessment
- ▶ Frequency and consequence analysis
- ▶ Fire water hydraulic study
- ▶ Fire and gas detection system analysis
- ▶ Flare system study
- ▶ Quantitative risk assessment (QRA)
- ▶ Vapour cloud and gas dispersion analysis
- ▶ Fire and explosion analysis and risks Contours
- ▶ Occupied building risk assessment
- ▶ Emergency system survivability analysis (ESSA)
- ▶ Escape, evacuation and rescue analysis (EERA)



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Execute (procurement stage)

Key Activities:

- ▶ HSSE prequalification and selection of suppliers and sub-contractors
- ▶ Reliability and integrity requirements included in equipment specifications
- ▶ Third party inspections during manufacturing and construction
- ▶ Factory acceptance test
- ▶ Pre-shipment inspections of supplies and equipment
- ▶ Site acceptance test
- ▶ PHSER stage - 2



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Execute (construction stage)

Key Activities:

- ▶ Competent HSE organisation (HSE manager, inspectors)
- ▶ Contractor HSE procedures
- ▶ HAZID, risk assessment and risk management
- ▶ Job safety assessment (JSA) for safety critical jobs
- ▶ HSE management plan for construction (SiGe Plan)
- ▶ Site security plan
- ▶ Site Clinic and doctor/medic
- ▶ Community relations plan
- ▶ Environmental management plan (as per environmental aspect register)
- ▶ Health and hygiene inspection
- ▶ HSE audits
- ▶ PHSER stage - 3



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Execute (commissioning stage)

Key Activities:

- ▶ Integrated commissioning organisation
- ▶ Commissioning procedures
- ▶ Operational staff trainings in plant and vendor packages
- ▶ Permit to Work (PTW) system
- ▶ Hazardous chemicals storage and handling
- ▶ Emergency response plan and drills
- ▶ Simultaneous operation plan (SIMOPS)
- ▶ Pre-startup safety review prior to introduction of hydrocarbon or energize
- ▶ Operations readiness & assurance review (OR&A)
- ▶ PHSER stage - 4



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Operate Phase

Establishing stable operations and evaluation of the business case and learning from lessons learned.

Key Activities:

- ▶ Close out of open actions in ATR
- ▶ Capture and implementation of lessons learned
- ▶ Competent operational HSSE organisation
- ▶ HSSE operations/business plan
- ▶ Trainings and ERP drills
- ▶ Procedures (HSSE, operations, maintenance, etc.)
- ▶ Incident and accident reporting and investigation
- ▶ Permit to Work (PTW) system
- ▶ Process safety and technical integrity management
- ▶ Environmental management
- ▶ Community relations and development plan
- ▶ Management of Change
- ▶ Audits and reviews
- ▶ Operations HSE Case as a living document in day to day business
- ▶ PHSER Stage – 5 (post six month of steady operations)



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HSSE Reviews and Audits

Key Activities:

- ▶ Project HSE Reviews (Stages 1 to 5)
- ▶ Internal HSE audits
- ▶ Health and hygiene inspections
- ▶ Quality Audits
- ▶ Third party audits (independent, regulator, partners, etc.)
- ▶ Pre-startup safety review prior to introduction of hydrocarbon or energize
- ▶ Independent verification of formal safety assessment (FSA) part of Operations HSE Case (applicable for EP business division only)



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Management of Process Safety and TI

Key Activities:

- ▶ Setting-up of Process Safety and TI KPIs
- ▶ MOC
- ▶ Reporting and investigating process safety related incidents
- ▶ Identification of Safety Critical Elements (SCE)
- ▶ Development of performance standards (PS) for SCE
- ▶ Development of scheme of examination & verification SE&V for SCE
- ▶ Integration of for SCE in CMMS
- ▶ Reporting and investigating deviations from inspection & maintenance schedule for SCE
- ▶ Risk management of process safety and TI related MAH bowties



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HSE CASE

WHAT IS HSE CASE?

The HSE Case process is considered as a powerful and E&P industry accepted proactive method for managing the major accident hazards.

It consist of detailed assessment and documentation to demonstrate that risks to the environment, workforce and general public are effectively controlled and that emergency plans are in place to manage all credible major accidents through out the life cycle of the plant & facilities.

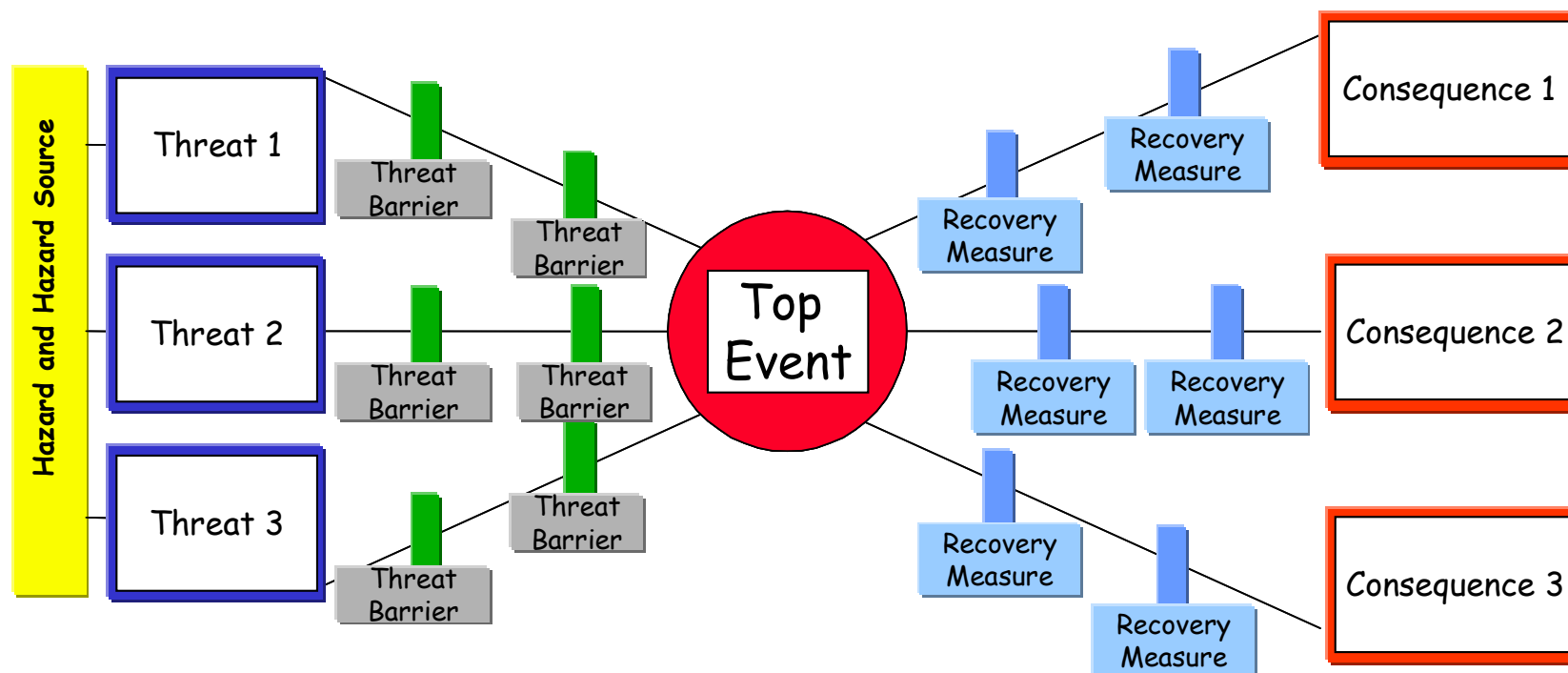
Five parts:

- ▶ Executive summary
- ▶ Introduction
- ▶ Facilities Description
- ▶ HSEQ Management System
- ▶ Formal Safety Assessment
- ▶ Emergency Response
- ▶ Risk reduction plan risk ALARP region



Bowties

For each identified MAH (Major Accident Hazard) “bow ties” are used as a framework for documenting, controls, training, auditing and incident investigation



What could cause it to go wrong

What could go wrong

What could happen if it does go wrong