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GP 48-01

HSSE Review of Projects (PHSSER)

This Group Defined ETP has been approved by the GVP Safety and Operations for implementation across the BP Group.

**BP GROUP
ENGINEERING TECHNICAL PRACTICES**

Foreword

This Group Engineering Technical Practice ETP GP 48-01 was initially published in April, 2001. This version incorporates the following changes:

- Modifications to align with framework and terminology of Group Defined Practices.
- Clarification of accountabilities and responsibilities for PHSSERs.
- Establishing the role of Project PHSSER Coordinator who has responsibility for application of this GP within the operation.

These changes were so extensive that revisions have not been indicated in the margin as is normal practice.

BP is committed to providing BP employees and those employees of other companies working on BP premises with a safe and secure work environment in which no one is subject to unnecessary risk. BP recognises that safe operations depend on projects getting the design right, providing reliable equipment, and constructing facilities according to specifications. BP also relies on competent people and an active HSSE culture. No project activity is so important that it cannot be done safely.

BP projects need to enable BP businesses to comply with a variety of HSSE requirements including international treaties and conventions, country/state laws and regulations, regional directives, local ordinances, lender agreements, industry commitments, and BP standards. Failure to meet these requirements can adversely affect BP business, significantly damage BP reputation, and result in severe civil, administrative, or criminal penalties.

In addition to fully complying with legal requirements, BP projects strive to reduce the environmental and health impact of BP operations through proper design that ensures responsible use of natural resources and the reduction of waste and emissions. These challenges apply to all parts of BP's business and to all facilities, plants, refineries and offices, wherever BP operates in the world.

This GP defines BP's process for project HSSE reviews. The overall objective of the PHSSER process is to ensure the client BP Operation that HSSE sensitive issues have been identified and the appropriate project, HSSE, engineering, and operational systems have been or will be developed to prevent, mitigate, or control the identified risks. Assurance is provided by reviewing projects at various key stages in their development.

PHSSERs are an essential element of a project's HSSE Plan and PHSSER reports are an important element of the Decision Support Packages (DSP) required at each gate of the Capital Value Process (CVP). PHSSERs heighten the awareness of HSSE risks and help make HSSE an integral part of the gated decision and approval processes for projects within CVP.

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1. Scope

- a. This GP defines the process and detailed procedures for the conduct of Project HSSE Reviews (PHSSERs).
- b. The PHSSER process consists of up to seven formal reviews scheduled near the conclusion of each CVP stage and major project milestones in the Execute stage.
- c. These reviews are conducted by a team of specialists, independent of the project, whose objectives are to verify that the project has identified and fully addressed all aspects of HSSE and process safety relevant to the project and CVP stage.
- d. This GP applies to major projects as required by E&P Major Projects Common Process (MPcp) and R&M Projects Common Process (Pcp) [15]. Application to other projects and modifications to existing facilities is to be defined by the segment engineering authority (EA).

2. Normative references

None.

3. Terms and definitions

For the purposes of this GP, the following terms and definitions apply:

Action plan

A formal, documented plan prepared by the BP Operations team in response to each accepted PHSSER recommendation developed by the PHSSER Team. The action plan describes the action to be taken, person accountable, and required completion date.

Actions (high priority)

High priority actions are those that need to be completed before a project can proceed to the next stage of CVP or the next major milestone in the Execute stage.

Asset leverage early risk team (ALERT)

A structured and facilitated session designed to discuss the risk and uncertainties of a project. ALERT is usually conducted in the Appraise stage of project development to enable early management intervention and to promote development of effective risk management and opportunity capture plans.

Appraisal plan

The appraisal plan is a formal document that outlines scope of activities and estimated expenditure in the Appraise and Select stages. The focus of the appraisal plan is to enable an informed decision on project viability and concept selection.

Basis of design (BOD)

The BOD document defines the respective technical basis for the project. It represents conversion of business requirements (given in the statement of requirements) into a technical basis for the project.

Biodiversity

Variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems, and ecological complexes of which they are part. This includes diversity within species, between species, and of ecosystems. It is also about people and our need for food security, medicines, fresh air and water, shelter, and a clean and healthy environment in which to live.



BP Operations

BP Strategic Performance Units, Business Units, projects, facilities, sites and operations.

Brownfield

Site previously and/or currently developed for which development activities have substantially changed the natural character of the site. Brownfields include industrial sites or complexes and other sites with the presence or potential presence of a hazardous substance, pollutant, or contaminant. Brownfields are also characterised by an existing infrastructure that will interface with the project.

Capital value process (CVP)

BP gated business process used to frame its business decisions. CVP is a structured and integrated approach to project selection, development, and execution that results in enhanced capital productivity. CVP provides a dual focus of “choosing the right project” and “developing and delivering the project right”.

Compliance matrix

A systematic method to identify:

- a. Applicable HSSE regulatory, contractual, or other agreement requirements.
- b. Required tasks to meet the applicable requirements.
- c. Accountable person to complete the task.
- d. Operating control (e.g., operating procedure or document that provides details on successfully completing the task).

Construction HSSE plan

The construction HSSE plan outlines the HSSE organisation, policies, procedures, etc. that will be implemented to manage HSSE risks associated with construction activities.

Constructability review

Constructability reviews are a systematic review of the project with the goal to optimise the use of construction knowledge and experience in planning, engineering, design, fabrication, and installation to achieve overall project and safety objectives. These reviews typically include items, such as:

- a. Equipment and personnel access to the work site.
- b. Equipment layout.
- c. Seasonal construction considerations.
- d. Tie in points.
- e. Installation sequence.
- f. Fabrication methodology.
- g. Energy isolation.
- h. Pre-shutdown and post-shutdown work.

Decision support package (DSP)

A supporting element of the CVP process, the DSP is a compilation of key project information and is used to document project team recommendations and their rationale to the approving authority to support the case for proceeding through the CVP stage gate. A key element of the DSP is the business case, that may include as attachments an “authority to negotiate” or a financial memorandum.



Entity (BP entity or Operating entity)

Whilst these terms are not used in this GP they have a specific meaning in OMS. If this GP refers to BP Operation it should be interpreted as BP Entity or Operating Entity when working to OMS.

Environmental impact assessment (EIA)/Environmental and social impact assessment (ESIA)

A formal process used to predict environmental and social consequences of the stages of any development project. A process that attempts to identify, predict, and assess the likely consequences of proposed development activities. EIA (or ESIA) ensures that potential problems are foreseen and addressed at an early stage in project planning and design.

Environmental identification (ENVID)

A structured process for identifying environmental concerns.

Exclusion zones

A perimeter established for an operating site or project in which non-essential personnel are evacuated during periods of higher risk operation, such as startups, shutdowns, and process upsets.

Failure modes and effects analysis (FMEA)

A hazard identification technique in which known failure modes of components or features of a system are considered in turn and undesired outcomes are noted.

Finding

A finding is made if there is an apparent gap between practice and any BP standards, practices, expectations, regulations, or site procedures.

Front end loading (FEL)

FEL comprises the activities that occur prior to sanction that are intended to fully define requirements to be performed.

Gatekeeper

Designated individual responsible and accountable for the decision made at the end of each CVP stage. This person also secures resources and funds for the next CVP stage of a project once it is approved or sanctioned to move forward.

Greenfield

Land not previously developed beyond that of agriculture or forestry use. Virgin land and land on which no urban development has previously taken place. Often is on the periphery of an existing builtup area or marine areas that have not been subject to offshore oil or gas development. Areas that lack infrastructure, such as water, power, pipelines, and roads. Another characteristic is that a greenfield site will require development of the organisation and HSSE infrastructure to support operation of the facility.

Guidance on certification (GOC)

GOC defines procedural and certification requirements for inspection and test activities for fabrication, construction, precommissioning and commissioning, leading to “handover” of “works” to the operating authority.

Hazard

Condition or practice with the potential to cause harm to people, the environment, property, or BP’s reputation.



Hazard and operability (HAZOP) analysis [12]

A systematic, qualitative technique to identify and evaluate process hazards and potential operating problems. The methodology uses a series of guidewords to examine deviations from normal process conditions.

HAZID

A structured study performed on the process, typically early in design, to identify process hazards. HAZID studies are very broad in scope. The HAZID is sometimes called a preliminary hazard analysis.

Hazard/risk register [5]

A tool (spreadsheet or database) containing risks identified for a project, with a description of each risk, documentation of information relevant to ownership, assessment, and project response of each risk, and the appropriate level of safeguards to manage risks. The register should include significant hazards identified by the initial risk assessment/opportunities during the Appraise stage, Major Accident Risk (MAR) studies, project hazard analyses, and other project HSSE studies.

Health impact assessment (HIA)

HIA is a combination of procedures, methods, and tools by which a policy, program, or project may be judged as to potential effects on the health of a population and the distribution of those effects within the population.

Health risk assessment (HRA)

HRA, in an occupational context, considers the ways in which the work environment and actual tasks to be performed potentially affect health of workers. HRA may need to cover individual cases or may be generic for a group of people doing the same tasks in the same place. HRA should continue for the life of the project and needs to be appropriate for the degree and complexity of the activities being performed.

Inherently safer design (ISD) [9]

ISD is the design principle, the intent of which is described in GP 48-04, paragraph 5.1.a as follows: "The intent of inherently safer design (ISD) is to eliminate the hazard completely or reduce its magnitude sufficiently to eliminate the need for elaborate safety systems and procedures. Furthermore, this hazard elimination or reduction would be accomplished by means that were inherent in the process and thus permanent and inseparable from it."

Job safety analysis (JSA)/Job safety and environmental analysis (JSEA)

JSA and JSEA are techniques used to identify actual or potential safety/health (JSA) and environmental hazards (JSEA) associated with significant activities of a particular job. Once these conditions are identified, recommendations are developed and documented to provide workers an alert to safety/health and environmental hazards.

Layers of protection analysis (LOPA) [13]

Semi-quantitative method to assess adequacy of protection layers and determine performance requirements for SIS.

Life cycle assessment

A technique for assessing plant and hardware from the time of inception through design, construction, operation, and decommissioning. Also the same period of time from inception, through production, marketing, sale, and eventual disposal of products, including their reuse or recycling.



Lower tier subcontractor

A worker who performs actual tasks while under a lengthy contractual chain in which several tiers of subcontractors have been created by repeated subcontracting of the work.

Major accident hazard (MAH)

MAH is a hazard capable of causing a major accident, as defined in GP 48-50 [14]. MAH for PHSSER purposes include:

- a. Loss of containment of hydrocarbons and other hazardous materials.
- b. Logistics involving marine and helicopter operations.
- c. Structural failures and heavy lifting operations.
- d. Extreme weather conditions and earthquakes.
- e. Security, including terrorism, sabotage and theft.

Major accident risk (MAR) [14]

The combination of likelihood and consequence of major accidents, as defined in GP 48-50. This is usually expressed in graphical format as an F-N curve for risks to people and as an F-E curve for risk to the environment.

Major project

Any MPcp or Pcp project with a potential capital investment above a specified monetary threshold (BP net) or of strategic importance.

Major projects common process (MPcp)

An E&P Segment process designed to support major projects in pursuit of the goals to create distinctive projects and deliver them with world class execution.

Management of Change (MOC)

Formal, systematic program to document, evaluate, approve and communicate temporary and permanent changes to plant, process, products, services, compliance requirements, procedures, people and organization.

Noncompliance

Not in accordance with BP standards, practices, or expectations, site practices; or regulations.

Nonessential personnel

Personnel who are not identified by the site or project as essential personnel that need to be onsite during higher risk transient operations (i.e., startups, shutdowns, upsets, and emergencies) to ensure the safety of the operation.

PHSSER authority

Subject matter expert on project HSSE reviews identified by BP Operations leader to be the technical authority on matters associated with implementation and compliance with this GP.

Pre-mobilization construction review

A review conducted prior to a project or contractor mobilising to the field to commence work. The review examines project and contractor preparedness for construction, including a review of the construction HSSE plan that describes the HSSE organisation, HSSE procedures, policies, etc., that will be implemented to manage the construction activities and HSSE risks.



Pre-startup safety review (PSSR)

A system to confirm, before the introduction of hazardous materials, that new or modified facilities comply with design specifications; adequate procedures are in place; appropriate hazard analyses or management of change reviews have been conducted; and training of affected personnel has been completed.

Process hazard analysis (PHA)

A structured review of the process to identify potential undesired events that could lead to a hazard, and the analysis of the mechanisms by which these undesired events could occur, with the intent of preventing the event or reducing its consequences. PHA is typically used to reference the hazard identification study of an operating facility.

Process safety

Process safety is a disciplined framework for managing the integrity of hazardous operating systems and processes by applying good design principles, engineering and operating practices. Process safety deals with the prevention and control of incidents that have potential to release hazardous materials or energy. Such incidents can cause toxic effects, fire, or explosion and could ultimately result in serious injuries, property damage, lost production, and environmental impact.

Project

A project is defined as any development comprising:

- a. A process plant, manufacturing installation, pipelines and associated facilities.
- b. A Research and Development (R&D) installation.
- c. A ship or other floating offshore storage vessel.
- d. A planned modification to any of the above existing facilities or equipment.
- e. Decommissioning of any of the above existing facilities.
- f. Restart after mothball, or turnaround of a process unit.

Projects common process (Pcp)

An R&M Segment process which describes the way projects within the R&M Segment are managed and executed.

Project execution plan (PEP)

PEP describes plans and strategies put in place by a project management team to execute a project in Define and Execute.

Project HSSE plan

A plan developed by the project team that defines HSSE expectations, organisation, and processes to manage HSSE risks throughout project development and execution.

Project PHSSER coordinator

A person appointed by BP Operation leader who will be responsible for application of this GP within the Operation. The project PHSSER coordinator is typically the project HSSE manager, the project EA, or experienced project engineer that is responsible for coordination of PHSSER reviews and followup activities for the Operation.

Project response

The reply developed by the project team in response to a PHSSER finding/recommendation. If the finding/recommendation is accepted, this reply needs to include an action plan that describes actions to be taken, person accountable, and required completion date.



Public consultation and disclosure plan (PCDP)

A plan for the project stakeholders that sets out BP approach to consultation and communication that will be conducted throughout the EIA/ESIA process(es). It covers complete details regarding what information will be disclosed, in which relevant languages, by what means and at what time, and how the public comments will be addressed in project design and execution.

Quantified risk assessment (QRA)

The systematic engineering/mathematical technique to develop numerical estimates of potential risks based on expected frequency and/or consequence of potential accidents associated with a facility or operation.

Recommendation

Written and formal advice from the PHSSER team that, upon implementation, will resolve the PHSSER team concern (PHSSER finding).

Register of safety related devices (RSRD) or Register of protective devices (RPD)

Database used to record and manage design information for protective systems and other safety related devices.

Typically RSRD or RPD should include:

- a. Safety instrumented system (SIS) information, including all components.
- b. List of relief valves with their size, type, set pressure and design capacity.
- c. Relief summary table, including all relevant cases (i.e., not just the limiting case).
- d. Data pertinent to a relief system design (e.g., pump/compressor curves and the size, type, and fully open flow coefficient of limiting valves or orifices in every route between high and low pressure systems).
- e. List of equipment in which the relief design capacity has been reduced as a result of insulation.
- f. Piping and fittings data used in relief calculations (e.g., line lengths, diameters, and configurations for pressure drop calculations and safety critical check valves).

Risk management strategy

Overall set of processes used to identify hazards and assess HSSE risks and the design principles proposed to control hazards and manage risks.

Safety critical equipment (SCE)

SCE is equipment whose failure may result in a significant impact on safety. Identification of SCE facilitates prioritization of quality assurance tasks during equipment fabrication, installation, and operation. Quality assurance tasks include inspection, testing, and maintenance tasks and associated performance management.

Safety instrumented system (SIS) [10]

System composed of sensors, logic solvers, and final control elements for taking the process to a safe state if predetermined conditions are violated.

Safety integrity level (SIL) [13][10]

Discrete integrity level that is a measure of the entire SIS ability to achieve its design intent upon demand based on the probability of failure of each component of the SIS.



Sensitive areas [6]

Land and sea areas that have been designated or are generally recognized as being of particular biological, geological, topographical, historical, cultural, or spiritual importance or have particularly significant or unique socioeconomic conditions.

Stakeholder

A person, group, BP Operation, or external organisation that has a share or an interest in a particular activity, set of activities, project, or operation.

Statement of requirements (SOR)

The SOR describes the fundamental business requirements and success factors for the project and forms the basis upon which project objectives, technical definition, and execution planning are developed.

Unexploded ordnance (UXO) risk mitigation strategy [8]

A systematic process for identifying and assessing the risk posed by UXO to personnel and projects to determine and implement the most appropriate and proportionate means of mitigation. UXO provides quantifiable assurance that land and seabed is fit for purpose.

4. Symbols and abbreviations

For the purpose of this GP, the following symbols and abbreviations apply:

AFC	Approved for construction.
ALERT	Asset leverage early risk team.
BOD	Basis of design.
BU	Business unit.
CHAZOP	Control system hazard review.
CoW	Control of work.
CSE	Concept safety evaluation.
CVP	Capital value process.
DCS	Distributed control system.
DSP	Decision support package.
EA	Engineering authority.
EIA	Environmental impact assessment.
EMS	Environmental management system.
ENVID	Environmental identification.
ESIA	Environmental and social impact assessment.
FEL	Front end loading.



FMEA	Failure modes and effects analysis.
GOC	Guidance on certification.
HAZID	Hazard identification.
HAZOP	Hazard and operability study.
HIA	Health impact assessment.
HRA	Health risk assessment.
HSSE	Health, safety, security, and environmental.
HP	High pressure.
HRVOC	Highly reactive volatile organic compound.
ISD	Inherently safer design.
IM	Integrity management standard.
ISD	Inherently safer design.
JSA	Job safety analysis.
JSEA	Job safety and environmental analysis.
JVA	Joint venture agreements.
KPI	Key performance indicator.
LOPA	Layers of protection analysis.
LOTO	Lockout, tagout.
LP	Low pressure.
LT	Leadership team.
MAR	Major accident risk.
MOC	Management of change.
MPcp	(E&P) Major projects common process.
MSDS	Material safety data sheets.
NGO	Non-governmental organisations.
NOx	Nitrous oxides.
OMS	Operating management system.
P&ID	Piping and instrument diagram.
PCDP	Public consultation and disclosure plan.



Pcp	(R&M) Projects common process.
PEP	Project execution plan.
PFD	Process flow diagram.
PHA	Process hazard analysis.
PHSSER	Project health, safety, security, and environmental review.
PSA	Production sharing agreement.
PSSR	Pre-startup safety review.
QA	Quality Assurance.
QC	Quality Control.
QRA	Quantified risk assessment.
R&D	Research and development.
RPD	Register of protective devices.
RSRD	Register of safety related devices.
RV	Relief valve.
SCE	Safety critical environment.
SIL	Safety integrity level.
SIMOP	Simultaneous operations.
SIS	Safety instrumented system.
SOx	Sulphur oxides.
SPU	Strategic performance unit.
STP	Site technical practice.
SVA	Security vulnerability assessment.
UXO	Unexploded ordnance.
VOC	Volatile organic compound.

5. General application

- a. Projects shall embed HSSE principles of this GP throughout project appraisal, selection, design, and execution.

This enhances HSSE performance of the project and its subsequent operation and enables HSSE risks to be resolved at the most effective point in a project lifecycle.



- b. BP Operations leaders shall have accountability for implementation of this GP within BP Operations.
- c. Each BP Operation leader shall appoint a person who will have responsibility for application of this GP within the Operation. In this GP this role will be referenced as the project PHSSER coordinator.
- d. BP Operations leaders shall appoint a PHSSER authority to function as the subject matter expert and technical authority on matters associated with implementation and compliance with this GP.

PHSSER authority may be appointed at segment, SPU, or BU levels, depending on what is practical.

- e. Each BP Operation leader, with the guidance of the appropriate BP Operation EA, should define a strategy for application of this GP.
 - 1. Strategy should also address projects that fall outside the scope of this GP and define the process for HSSE review of those projects.

This recognises that project management framework for smaller projects can differ between sites and provides an option for sites to develop a strategy that consolidates or simplifies some of the formal HSSE reviews.
 - 2. Included in the strategy should be a definition of how such a site will provide HSSE assurance for simple plant and/or asset changes. This strategy should take into account the ability of the site MOC and PSSR process to ensure that the full range of HSSE issues, including potential new HSSE compliance obligations, are addressed.
 - 3. The appropriate BP Operations EA is responsible for approval of the strategy and should ensure that the strategy is appropriately applied.
 - 4. The appropriate BP Operations EA should consult with the PHSSER authority, as necessary, regarding application of this GP and development of the strategy for project HSSE reviews to ensure that potential HSSE risks are taken into consideration.
- f. BP Operations leaders shall apply this GP to ensure;
 - 1. Full understanding of HSSE hazard potential so that HSSE risks are effectively managed.
 - 2. Applicable HSSE compliance requirements and BP standards are met to deliver acceptable HSSE performance.
- g. Each BP Operation leader should decide how to best apply the PHSSER process to account for unique circumstances of the project.
- h. HSSE compliance requirements for projects shall be reviewed in the chosen PHSSER reviews.

6. PHSSER management

6.1. Review initiation

- a. BP Operations leader shall assign a project PHSSER coordinator who shall be responsible for ensuring that the PHSSER process is properly executed for each stage review.

Principal objectives of each PHSSER stage differ, and the coordinator of each stage may be different. For example, a project HSSE manager or EA may be the coordinator of the pre-sanction PHSSER. The Operations manager may be the coordinator of the pre-startup PHSSER and the appropriate EA for the Operate PHSSER.



- b. Project PHSSER coordinator should consult with the appropriate BP Operations EA, appoint a PHSSER leader, and ensure sufficient independence of the review team.
- c. Project team shall be accountable for providing sufficient lead time for the PHSSER leader to prepare and for supporting availability of adequate resources necessary for an effective PHSSER.

6.2. Terms of reference

- a. PHSSERs shall be performed against an agreed terms of reference that defines scope of work, study objectives, time scale, and team members.
Typical contents of terms of reference are shown in Annex D.
- b. The project PHSSER coordinator and PHSSER leader shall approve the terms of reference for the PHSSER.

6.3. PHSSER team

- a. PHSSER leader and PHSSER team membership shall be selected in accordance with requirements of each review stage and nature of the project.
- b. PHSSER team members shall be independent of the project to provide an objective and comprehensive HSSE review.
Representatives of the project being reviewed are not part of the PHSSER team, but their participation and sharing of information during the review are critical for an effective review.
- c. Project PHSSER coordinator, in conjunction with the PHSSER leader, shall select the PHSSER team. The team should be as small as possible but shall be consistent with possession of the following expertise:
 1. A full understanding of the development and its technology.
 2. A comprehensive appreciation of the host site and its existing activities.
 3. A full awareness of the BP Group, industry, regulatory, and HSSE contractual expectations.
 4. Sufficient expertise, as listed in Annex B, to conduct a credible and reliable HSSE review.
If practical, some continuity of the review team from one stage to the next is desirable.
Review members typically include project management, an operations representative, and HSSE specialist(s).
- d. Team members should be selected with the required expertise to support the terms of reference.
The required review team is generally different for each stage review. For example, the detailed engineering PHSSER requires construction safety expertise; whereas the pre-startup PHSSER requires commissioning, startup, and operations expertise.
- e. Project representatives should provide the PHSSER team with logistics, information gathering, and scheduling of review sessions and interviews.
- f. For developments with high environmental sensitivity, the PHSSER team should include the proper BP environmental expertise and discipline balance to confirm that environmental, regulatory, HSSE contractual, and reputation risks are being effectively managed consistent with BP environmental requirements. [6]
- g. The function of the PHSSER team is to identify potential problems and shortcomings.



For projects in some regions of the world, the PHSSER team may need to challenge the project whether local laws and regulations are sufficient or whether international standards should be applied.

- h. PHSSER team should not develop detailed technical solutions to any problems that it identifies.
- i. PHSSER leader should consult with appropriate specialists outside of the core PHSSER team if the experience of individuals on the review team is not sufficient to address an issue and specialist advice is needed.
- j. PHSSER team members may be contractors/consultants if BP expertise is not available.

6.4. PHSSER leader

- a. Project PHSSER coordinator shall select a PHSSER leader who is:
 - 1. Independent of the project and not directly associated with eventual operation of the development.
It is desirable for the leader to be familiar with the type of facility/process.
 - 2. Trained and/or practiced in the project HSSE review process.
 - 3. On the “list” of PHSSER leaders.
 - 4. An employee of BP.
 - 5. Capable of communicating critical findings to appropriate level of management.
- b. Project PHSSER coordinator should consult with the PHSSER authority to confirm the leader is trained and has skills and competencies to conduct the review.
A core competency of a PHSSER leader is to have the interpersonal skills to lead a multidiscipline team to achieve objectives of the study.
- c. Before the team is convened, the PHSSER leader should formulate a topic listing to act as the framework of review. This listing should take into account:
 - 1. PHSSER terms of reference.
 - 2. Nature and circumstances of the project.
 - 3. Stage objectives listed in Clauses 8 through 12 and detailed in Annex A.
A well researched project specific topic listing is essential for a good quality HSSE review. Team activities and supplemental guidewords, which can be used as a starting point for preparation of topic listings for each review stage, are included in Annex A. PHSSER leader has the flexibility to adjust review topics to consider unique HSSE aspects of the project and to ensure an effective review and alignment with the status of the project.
- d. PHSSER leader shall be accountable for:
 - 1. Delivery of a quality PHSSER review.
 - 2. Achieving the objectives outlined in the PHSSER terms of reference.

6.5. Information requirements

- a. Project PHSSER coordinator and the PHSSER leader should agree on information (including pre-read) that will be available at the PHSSER sessions.
Guidance for typical information that might be needed at each HSSE review stage is included in Annex A.
- b. Project team should make information available for PHSSER review.



- c. If key information is not available, PHSSER leader and team shall assess the importance of the information to the integrity of the PHSSER and decide whether to issue a recommendation to develop the information or postpone the PHSSER until the information is provided.

6.6. Notification for HSSE non-compliance

If in the course of a PHSSER review the PHSSER team identifies a potential non-compliance with legal requirements or HSSE contractual commitments, the PHSSER leader shall promptly notify the BP Operation leader and BP Legal.

6.7. PHSSER stage reports

- a. Upon completion of each project HSSE review, findings and recommendations shall be formally recorded in a written report addressed to the client (normally the BP Operations leader) and copied to project team and key stakeholders.
- b. Each final project HSSE review report shall be subject to approval by the PHSSER leader and sent to an agreed distribution list.
- c. Project PHSSER coordinator should provide guidance on distribution of reports within their BP Operation.
- d. Report should be prepared as a resource for the project team and the next stage review team.
- e. PHSSER report shall document scope of the review, project systems, and plans that address topic list items to an acceptable level, conclusions of review, findings, and recommendations of the review.
- f. Report should summarize the status of the project at the time of the review. Refer to Annex C.
- g. PHSSER reports shall be considered final only after the PHSSER leader and the project PHSSER coordinator have agreed upon final BP Operations responses in the form of an action plan. The appropriate BP Operations EA should be consulted for final resolution if an action plan cannot be agreed upon between the PHSSER leader and the project PHSSER coordinator.
- h. Stage reports shall be produced in time to allow recommendations to be addressed before the next review stage is initiated.

6.8. PHSSER findings

- a. PHSSER team shall prioritize PHSSER recommendations based on the targeted timing to complete the action item.
PHSSER findings may also be prioritized on the relative severity of the finding
- b. Project team shall develop a project response to each accepted PHSSER recommendation in the format of an action plan that describes actions to be taken, person accountable, and required completion date.
- c. Project PHSSER coordinator and the PHSSER leader shall agree on the action plan.
- d. BP Operation leader shall endorse the agreed action plan and followup with the project team. The BP Operations leader shall be accountable for ensuring that actions are completed by the required completion date and are fully documented.
- e. If an action plan cannot be agreed between the PHSSER Leader and the Project PHSSER coordinator, appropriate BP Operations EA shall be consulted for final resolution.
- f. High priority actions shall be resolved before a project can proceed to the next stage of CVP or the next major project milestone in the Execute stage.



- g. BP Operations leader shall engage the appropriate BP Operations EA and PHSSER leader to verify completion of high priority actions from the PHSSER review to ensure that the identified issues have been adequately addressed.
- h. Findings and conclusions of each project HSSE review shall be made available as input to the gatekeeper so that the status of HSSE issues is taken into consideration in the decision whether the project is ready to proceed to the next CVP stage.
- i. PHSSER recommendations subsequently rejected by the project should be subject to approval by the appropriate BP Operations EA and the rationale for rejection should be documented.
- j. Projects shall document completion of all agreed upon actions. Developing a plan for the action does not constitute completion of the action.
- k. Actions shall be reviewed in the subsequent stage PHSSERs to confirm appropriateness of the resolution.
- l. Subsequent PHSSER teams should review previous PHSSER reports to:
 - 1. Ensure continuity of the review process.
 - 2. Be able to ascertain relevant developments since the last review.
 - 3. Confirm that agreed upon actions have been adequately closed out.
- m. PHSSER leader should consult with previous PHSSER leader to clarify that actions have achieved the intent of the previous PHSSER team.
- n. Prior to startup, the BP Operation leader shall review PHSSER actions and confirm closure of those actions required to be completed prior to startup.

6.9. HSSE stage review records

- a. Each project HSSE stage review should include, as a part of its review record, a list of documents examined by the PHSSER team, including:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Calculations.
 - 4. Hazard and risk evaluations.
 - 5. HSSE plans and procedures.
- b. This list should reference document numbers and where the documents can be found in project files or handover dossier.

The full portfolio of project HSSE review reports and associated working files is an essential element of the project handover dossier.

7. PHSSER process

7.1. PHSSERs and CVP

- a. The PHSSER process consists of up to seven formal reviews scheduled near the conclusion of each CVP stage and major project milestones in the Execute stage as indicated in Figure 1 and Annex A.
- b. The full scope of PHSSER issues, detailed in the seven PHSSER stages, and relevant to the project, shall be covered in the PHSSER reviews of the project, unless the BP Operation leader has obtained and documented the approval of the appropriate BP Operation EA.



- c. The principal objectives from Annex A for each stage are included in Clauses 8 through 12. The study objectives can be accomplished by performing team activities detailed in Annex A.
- d. The objectives, list of team activities, and supplementary guidewords provided in Annex A are the framework for the review process.

The scale, circumstances, and HSSE impact potential of projects vary greatly, and the review strategy adopted for a particular project should acknowledge the nature of the development concerned. It is acceptable for review stages to be combined into a fewer number of reviews if the nature of the project warrants and if the full scope of PHSSER issues are addressed.

7.2. PHSSERs and timing of the project HAZOP studies

Timing of HAZOP studies should be declared in the project HSSE strategy and presented in the Select stage PHSSER. Subsequently, if endorsed, timing intentions should be declared at the end of Select peer review, together with the projected impact this will have on FEL.

Declaration of timing intentions for the project HAZOP allows both the peer review and the gatekeeper to have the opportunity to build this into their early expectations for FEL for the sanction case.

7.3. PHSSERs and MAR [14]

- a. GP 48-50 requires that certain activities and projects be assessed for potential MAR.
- b. The output from the project MAR assessment should be used at the Appraise and Select stages, and major accident potential should be a significant factor in the identification and selection of project options.
- c. If the lowest MAR option has not been selected, the reasons for this should be justified and documented.
- d. At the end of the Select stage, the project should be below the “Group Reporting Line” as defined for the project in accordance with GP 48-50.
- e. During Define and Execute, there will be opportunities to further reduce MAR as decisions are made on detailed aspects of design and operation.

8. Appraise stage

8.1. PHSSER objectives

- 1. To confirm that significant HSSE issues which could affect the viability of the potential project have been identified and that the information required to assess risks, liabilities, regulatory compliance, HSSE contractual commitments, and adverse impacts is either available or measures are in place to obtain it. Confirm that HSSE risks (including MAR) are taken into account in the evaluation of project options.
- 2. To confirm that an adequate risk management plan is in place which will assure compliance with regulations and BP policies and protect BP reputation.

8.2. PHSSER strategy

It is an option to combine the Appraise stage PHSSER with other project reviews such as the CVP Appraise stage peer review or Appraise ALERT session.

- a. If the Appraise stage PHSSER is combined with other project reviews, these reviews shall cover HSSE topics outlined in Annex A for the Appraise stage.
- b. The review team shall include members with appropriate HSSE expertise.

