


Petroleum	Health, Safety & Environment Management System Job Risk Assessment	
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PETROLEUM CSG


HSE MANAGEMENT SYSTEM PROCEDURE

JOB RISK ASSESSMENT

Petroleum HSEC Procedure No: PP03.02	
Reference: HSE Management Standard 3 - Risk and Change Management	
Date: July 1, 2008	Revision: 0
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1.0 PURPOSE

The purpose of this procedure is to provide a common approach to a Petroleum-wide Job Risk Assessment (JRA) process. This procedure will detail the process by which the systematic identification, analysis and management of potential hazards can be developed and documented to ensure suitable and sufficient controls are in place to enable individual worksopes or tasks can be carried out safely and effectively at all BHP Billiton Petroleum facilities.

2.0 SCOPE

This procedure applies to all BHP Billiton Petroleum personnel (employees and contractors) working on or visiting controlled activities. A variance form for this procedure shall be signed by the responsible Petroleum Leadership Team member if the site is unable to fully comply with this procedure.

When Exploration or Development controlled activities are located on contractor or 3rd party facilities (seismic, drilling and construction), this procedure shall apply or an equivalent contractor procedure and corresponding bridging documentation shall be in place. The requirements of this procedure shall be detailed in contractual documents.


All monitored activities should have an equivalent system in place that meets the intent of this procedure.

3.0 REFERENCES

This procedure should be used in conjunction with:

- [HSEC Standard 3 – Risk and Change Management](#)
- [HSEC Standard 10 – Operations and Maintenance](#)
- [HSEC Guideline G19 – HSEC Risk Management](#)
- [HSEC Toolkit T04 – Task Analysis](#)
- [BHP Billiton Petroleum PR10.03 – Permit to Work Procedure](#)
- BHPB Petroleum Isolation Procedure (applicable to all locations)


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4.0 DEFINITIONS

FRCP	Fatal Risk Control Protocols – A BHP Billiton-wide set of Protocols to manage risk in areas that have been identified as having a high potential for Fatalities.
HSEC	Health, Safety, Environment and Community
JRA	Job Risk Assessment - A process where hazards associated with each step of a job are identified and control measures are put in place to minimize the risk to personnel, property and environment.
MAE	Major Accident Event - In the context of a Job Risk Assessment, is considered as, “any incident with the potential to lead to a fatality or serious medium term environmental effects”.
PPE	Personal Protective Equipment. Equipment that provides protection for an individual. This can take the form of clothing, equipment or other physical means.
PTW	Permit to Work – The process (normally procedural) that manages and controls work at a location to ensure adequate controls are in place for individual work-scopes to be conducted safely and to ensure centralised control of all work-scopes for that location.
“Shall” or “Must”	Means a mandatory requirement.
Should	Means a guideline which is strongly recommended.
SIMOPS	Simultaneous Operations – Considered as where the activity of conducting multiple operations, has the potential to create inter-action or interface between each of the individual operations. One example of simultaneous operations being normal production operations and Drilling Operations on the same installation.
TWI	Temporary Work Instruction – A formalised process to ensure that, where temporary conditions exist requiring modification to standing procedures/controls, suitable processes are in place to manage and communicate temporary change to a procedure

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5.0 PROCEDURE(S)

5.1 Requirements

A JRA shall be used for all work where the need to identify and control hazards exists and communication of these hazards to the work team is required.


Certain circumstances may exist where a significant hazard and subsequent risk is identified (consequence of Level 3 or higher). In these circumstances and, regardless of additional formal risk assessment processes, a JRA shall still be prepared and used for all work where these significant risks have been identified (this should also normally include any job that requires a Permit to Work).

Such jobs may be identified as follows:

- Incident History: Jobs that have a history of incidents or fall within the corporate Fatal Risk Control Protocols.
- New Jobs: Jobs that have not been conducted before and consequently no established practice exist for the task.
- Revised Jobs: Existing jobs may also be substantially altered through changes in tools, equipment or procedures used.
- Hazards in existing Jobs: Jobs that may not have a history of incidents, however, experience may indicate that the work involves hazards with significant risks.
- New Teams: Jobs being conducted that may involve a new team or person within the team.
- SIMOPS (Simultaneous Operations) Cross Functional Jobs: Jobs that involve a number of functional groups or disciplines.

When completed, each JRA will be attached to the corresponding work permit and discussed at the toolbox meeting.

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The following list is designed to assist in determining the requirement for a JRA and contains jobs that are considered DO NOT require a JRA. This list is not exhaustive and should be used as a general guide for determining JRA requirements:

Production Work Team Routine Operations:

- Radiation surveys using the radiation survey meter
- Weekly line of sight gas detector cleaning (under control of an Isolation Certificate)
- Removal and installation of temperature gauges from welded thermowells for calibration
- Draining displacers and still wells
- Lube oil top offs
- Taking water / oil samples (LP process)
- Draining of sight glasses (to prove levels)
- Laboratory work
- Topping off the glycol surge tank with glycol
- Greasing LP and HP HPU pumps
- Inventorying activities
- Topping off tempered water tank
- Compressor lubricator rate check
- Greasing production chokes
- Draining liquids from compressors
- Bleeding swivel pressures
- Sigrist line flushing
- Solenoid leakage checks
- Housekeeping
- Testing export gas H₂S levels
- Offloading skid operation including sample system
- Removal and installation of non-hydrocarbon pressure gauges for calibration from block and bleeds
- Removal and installation of hydrocarbon pressure gauges for calibration from block and bleeds
- Checking oil levels on LEWA chemical pumps and topping off
- Decant chemicals from tote bins to tote bins
- Backflush process seawater strainers
- Drills


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Maintenance Work Team Routine Operations:

- Operation of inert gas system
- Operation of deck wash pumps
- Use of the ultrasonic cleaner
- Washing inert gas scrubber and fans
- Pumping bilges to holding tank (not slop tank)
- Transferring fuel bunkers internally
- Washing gas turbine compressors
- Starting / stopping gas turbine
- Internal visual gas turbine inspections
- Changing over pumps, compressors, boilers and evaporators
- Housekeeping
- Test running emergency generator, black start generator, fire pumps, lifeboat engine
- Test running standby machinery
- Use of machinery space crane
- Topping off of oil and water in machinery
- Boiler water tests
- Use of workshop machinery (workshop permit conditions apply)
- Use of hydraulic press
- Dosing sewage system
- Changing lamps in accommodation
- Portable equipment testing in non-hazardous areas
- Electrical workshop activities
- Charging of batteries in thruster room
- Topping off fuel gas blanketing
- Adding refrigerant
- Cleaning bilge strainers
- Helicopter refueling
- Routine checking of electric motors as defined by relevant work instruction only
- Safety rounds including:
 - Bilge alarms
 - Instanta valves
 - Foam system checks forward and aft
 - CO₂ room checks not including opening release stations
 - CO₂ paint store checks
 - Black start generator
 - Black start air compressor
 - Emergency generator

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- Fire pumps
- Emergency fire pumps, and
- Foam pumps
- Operation of cathodic protection
- Operation of marine growth prevention system
- Visual inspection of 440 volt MCC's prior to resetting overloads
- Monthly checks of thrusters
- Lube oil sampling
- Foam sampling
- Cleaning turbine main fuel duplex filter
- Inspection of Crane hoist

Marine Work Team Routine Operations:

- Manual sampling / ullaging of tanks
- Sampling of gas and liquids in tanks
- Helicopter operations
- Housekeeping / washdown of decks
- Lifeboat davit maintenance
- Ropework / splicing, etc.
- General stowage of equipment and lashing
- Inspection of LSFA equipment except lifeboat inspection
- Operation of deck machinery (hydraulic and air powered winches)
- Discharge of produced water overboard from slops
- Venting of tanks
- Operating facility cranes for non-critical lifts
- Operation of ballast and cargo systems
- General routine greasing except where working over water or at height
- Supply boat operations except bunker operations
- Personal basket transfers

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5.2 Relationship to Permit to Work System

A JRA is intended to provide a structured approach to identifying hazards and incorporating controls measures for those hazards.

Generally, JRA's are required for any task performed under a Permit to Work (PTW). The JRA is cross referenced onto the PTW and JRA Worksheets attached to the PTW. There may be exceptions, where it is considered a JRA is not required. In these cases, the rationale for not conducting a JRA should be clearly stated on the PTW application.

In addition, JRA's may be utilised for standard jobs/tasks for which a PTW may not be required. If deemed necessary, during the course of developing a JRA, it is identified that a Permit to Work is required then an appropriate Permit to Work shall be developed.

5.3 JRA Development Team


Involved Persons

The person facilitating the JRA shall assemble a team of people who will be involved in the task being evaluated or who routinely carry out the task. The Facilitator (JRA Leader) shall have completed the Workplace Risk Assessment CBTA module before facilitating a JRA.

Cross Representation

Where all persons performing the task are not present for the JRA, at a minimum one representative from every discipline or contractor should be represented during the JRA. However, the task cannot commence until all of JRA team members have reviewed the JRA.

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5.4 Methods of Conducting a JRA

Group Discussion

The group discussion is useful for planning larger jobs/tasks and allows full exploration of the tasks required for a job and provides a multi-disciplinary approach to hazard identification.

The JRA Leader will facilitate the process and lead the team that should be composed of personnel who are familiar with the job thereby drawing on their collective experience. It is essential that direct observation is used to review the JRA while the task is performed.

Direct Observation of Task (For reviewing/revising previously completed JRA's)

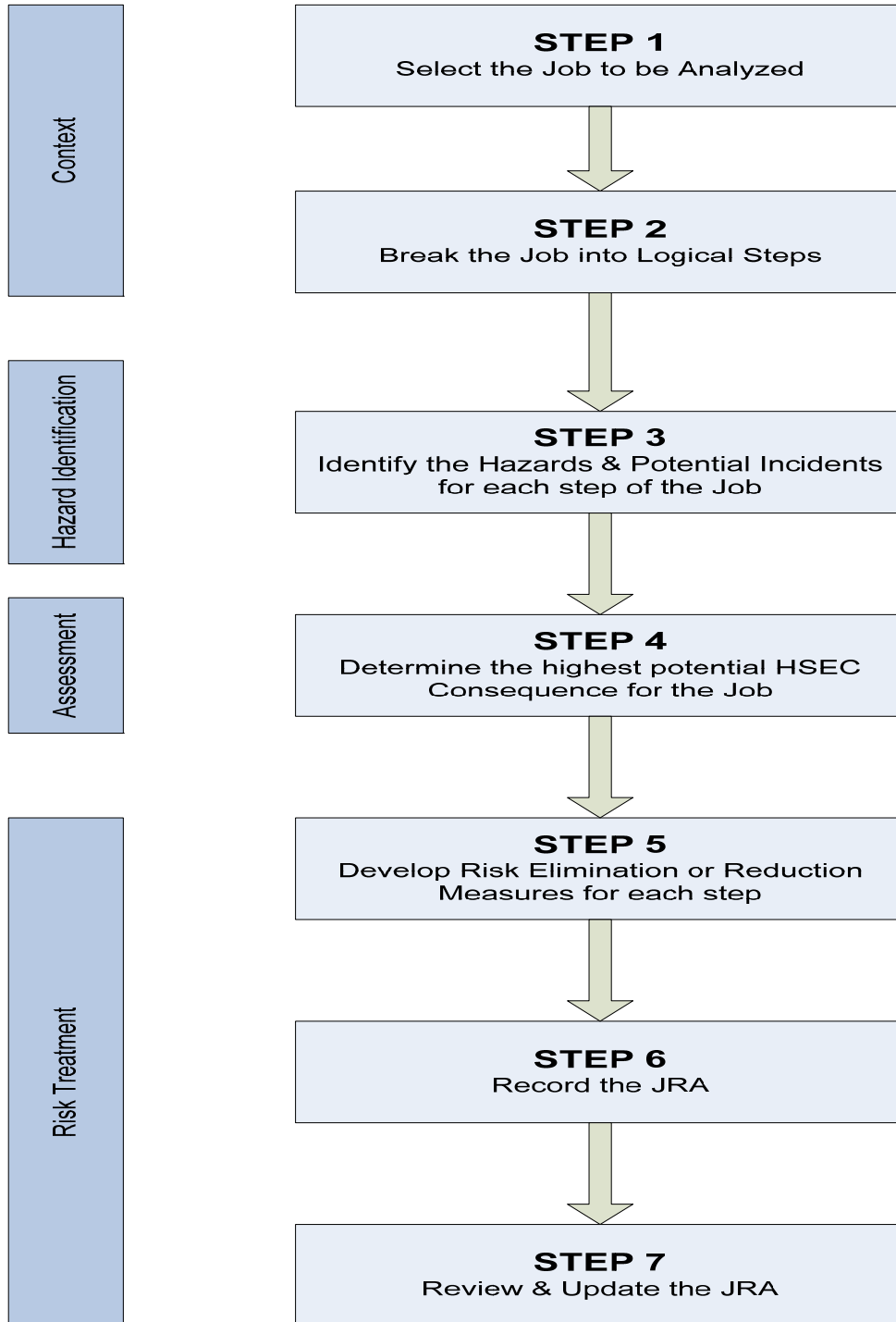
This can be used for frequent and repeated tasks. Generally this is the preferred method for reviewing, as observation stimulates ideas, encourages interaction and promotes learning.


Task Recall and Check

The Supervisor prepares a preliminary version of the JRA on the basis of recall from previous experience, rather than by direct observation. The Supervisor shall then finalize this preliminary version through discussion with task team, followed up with direct observation.

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5.5 Overview of Steps to Complete a JRA



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5.6 Step 1 – Establish the Context

Allocate JRA Number


Locate the last JRA number from the JRA index and assign the next sequential number to the new JRA Worksheet to be completed. Write a brief description in the JRA index of the task being analyzed. A prefix shall be assigned for the type of operation or location, e.g. Platform Name/Number, Facility Designation.

Establish the Context of the JRA

Establish the context of the scope of work required by the JRA:

Complete Section of the JRA Worksheet:	
Job Description	<ul style="list-style-type: none"> - <i>What will be done?</i> State the specific job to be performed that may have a history of potential for injury, incidents, safety critical, new jobs, jobs changed, new personnel performing job.
Location	<ul style="list-style-type: none"> - <i>Where?</i> Identify the location where the work will be conducted.
JRA Date	<ul style="list-style-type: none"> - <i>When?</i> Record the date that the JRA is being recorded.
JRA Number	<ul style="list-style-type: none"> - <i>As specified above (Allocate JRA Number)</i>
JRA Leader	<ul style="list-style-type: none"> - <i>Who facilitated the JRA?</i> Record the name of the person who facilitated the JRA.
Scribe	<ul style="list-style-type: none"> - <i>Person completing the JRA Forms/Documentation</i>
Review Team	<ul style="list-style-type: none"> - <i>Who will be involved?</i> Record details of the Department, responsible Job Supervisor for the work and the names of JRA participants.
List Associated Procedures, Work Instructions or Temporary WI's	<ul style="list-style-type: none"> - <i>Relevant documentation to be referenced?</i> List the associated Procedures Work Instructions, Temporary Work Instructions (TWI's) associated with the task.
Hazard Checklist & FRCP's	<ul style="list-style-type: none"> - <i>Identify applicable Hazards from list</i> - <i>Have relevant Fatal Risk Control Protocols been considered?</i> List the FRCP's that potentially could be impacted by this job.

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5.7 Step 2 – Break the Job into Logical Steps

Divide each job into simple steps. Number these and describe what is to be done and in what order. Ensure steps are not too complicated or too simple.


Complete Section of the JRA Worksheet:	
Step No.	- <i>How many steps can the job be broken into?</i> Number the steps of the job, i.e. 1,2,3 etc.
Job Step	- <i>What shall be done at each step?</i> Against each step number, briefly describe what is to be done in order of the work to be conducted.
Consider these in each step	
<p><i>Are there safer methods to achieve the same results?</i></p> <p><i>Are there alternative methods such as avoiding confined space entries via remote device, removing task from a hazardous area, shutting in the process (consider hierarchy of controls, pg.12).</i></p>	

5.8 Step 3 - Identify the Hazards and Potential Incidents in Each Step (Hazard Identification)

For each step of the job, identify all significant hazards associated with the work, whether they are part of the employee's task or part of the job surroundings. For each of these hazards, identify the potential incident that may occur. Also identify any potential control measures that may fail as a result of the activities conducted during the job.

Complete Section of the JRA Worksheet:	
Hazard	- <i>What potential hazards exist with this specific Job Step?</i> A checklist is provided with this procedure as an "Aide Memoire".
Hazard Effect	- <i>What can happen at each step?</i> - <i>What are the potential incidents that could occur from each of the Job Steps?</i> - <i>Are there any potential failures of existing controls that could occur as a result of the Job Step?</i> Identify the hazard for each step of the job and the potential incident that may occur. Identify any existing control measures that may be impacted or compromised by the job.

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A checklist is provided with this procedure as an “Aide Memoire”. Certain hazards are well known and controlled by existing procedures. These procedures shall be referenced in the “Hazard Controls” column of the JRA Worksheet.

5.9 Step 4 – Develop Hazard/Risk Elimination or Reduction Measures (Hazard Controls)

Once the hazards have been identified, hazard/risk reduction or elimination measures shall be developed. When adopting measures to control a hazard, the hierarchy given in the following table (Table 1) should be followed. Review each Hazard Control for acceptability and confirm status (Y/N). It is recommended that an individual person is identified as responsible for each hazard control.

Complete Section of the JRA Worksheet:	
Hazard Controls	<ul style="list-style-type: none"> - <i>What is or will be in place to manage or remove the hazards?</i> For each step of the job, identify the controls in place to manage or remove the hazard. Use the hierarchy of control, i.e. elimination, substitution, redesign, separate, administrate, PPE - <i>Are the controls listed specific and complete?</i> All of the controls shall be implemented before the job commences, complex controls may not be able to be implemented before commencement of the job – this will require further interim controls to be in place before commencing the job. - <i>Have all the hazards and controls been identified from previous times that this job was completed?</i> Review any previous JRA Worksheet for this job, ensuring any relevant hazards and controls are included in this JRA worksheet
Controls Acceptable Y/N	<ul style="list-style-type: none"> - <i>What is the potential HSE consequence with the controls specified in the JRA worksheet in place?</i> Record the highest level of risk over the entire total job with all identified controls in the JRA implemented.


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Table 1

In preferred order, the hierarchy of measures to control a hazard is:

Elimination
Removal of the hazard by eliminating the process will also eliminate the risks associated with the hazard.
Substitution
If the process cannot be eliminated, consider substituting the substance or hazardous process with one known to be less harmful to health or safety.
Redesign
Engineering type controls include changing processes, equipment or tools to reduce risk. For example: <ul style="list-style-type: none"> • Reduction at source of noise or vibration through various known engineering controls. • Isolating or enclosing the hazard, for example, fume cupboards or sound enclosure booths. • Use of ventilation to remove fumes and dusts. • Use of mechanical aids to minimize manual handling injuries.
Separation
Separation of personnel from the hazards by isolation or guards
Administrative Controls
Administrative controls involve introducing and maintaining work practices that reduce risk by limiting the exposure of an employee to the hazard. For example: <ul style="list-style-type: none"> • Reduce the time of exposure. • Limit the number of employees exposed. • Modify procedures.
Personal Protective Equipment (PPE)
Personal Protective Equipment should be used only when other measures have not been able to protect the employee against the hazard or risk of exposure to the hazard. Where PPE is used, the employer should ensure that it fits the employee correctly, training is provided in its need and use, and that the equipment is maintained and serviced regularly. Additional PPE shall be detailed and reviewed.

Note: Depending on the size and nature of the task, there may be a mix of hazard control/ mitigation strategies used. Once the control(s) have been selected, it shall be put into practice.

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5.10 Step 5 – Record the JRA

The Job Risk Assessment shall be used to record the JRA.

Details shall be recorded directly onto the JRA worksheet during the meeting, ensuring the information is repeated back to participants at each step to maintain accuracy. This is typically done by hand, however it is preferable to input the data electronically.

Complete Section of the JRA Worksheet:	
Alternatives Considered	<ul style="list-style-type: none"> - <i>Are there alternative means of conducting the specified job</i> Review alternative suggestions to eliminate parts of the job task, or replace Job Steps with less hazardous Job Steps.
Contingency Plans	<ul style="list-style-type: none"> - <i>Specify equipment or other procedural controls that are required to support the job and individual tasks within the job</i> This could relate to determining specific PPE requirements, Emergency Response requirements, back-up equipment for possible spills etc
Hazard Controls in place and Effective	<ul style="list-style-type: none"> - <i>Justification that the hazards are identified, assessed and controls are in place and effective for accepting the final job tasks as acceptable</i>
Sign Offs	<ul style="list-style-type: none"> - <i>Has the JRA been approved by the JRA Leader?</i> Record name, date and signature of participants and JRA Leader.

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5.11 Step 6 – Review and Update the JRA

Once a JRA has been completed it should be subject to a “Pre-Job Review and, once utilised on a job subject to a “Post-Job Review. The best-prepared JRA can fail to identify factors, which may alter the way the job was done, or create hazards, which were not identified on the original JRA. The “Post-Job Review is therefore, essential to ensure experiences and information gained are not lost and to foster continual improvement.

Complete Section of the JRA Worksheet:	
Review Date	- <i>When did the review take place?</i> Record the date the JRA was reviewed.
Review Leader and Attendees	- <i>Who was involved in the review?</i> Record the names of the persons involved in the review.
Review Comments	- <i>Any additional comments to be added to the JRA?</i> Identify any further considerations required for the next time the job is conducted, i.e. factors not considered previously.

Completed JRA's should be used to:


- Create or update a work procedure.
- Ensure existing or new workers are familiar with the content and apply it to the job, i.e. presented at toolbox meetings
- Attach to a work permit for reference during the job.

Completed JRA worksheets shall be reviewed the next time the job is performed, and when the job changes due to equipment or procedure.

5.12 JRA Completion

Review the JRA with the entire work team prior to starting the job.

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5.13 Change to JRA

Where there is a requirement to modify or update an existing JRA, or it is required to revise and modify a JRA during the job itself (due to changes in scope, or further identification of hazards not identified during the original JRA process), the JRA form shall be updated, and any additional information incorporated into the master copy of the revised JRA. All workplace/controlled copies of the JRA shall also be updated and re-issued.

The updated JRA Form shall be signed by the Area Supervisor where the work is to be conducted and attached to the Master and all work/controlled copies of the revised JRA.

6.0 RESPONSIBILITIES

The department or group intending to conduct the work-scope shall be responsible for the development of the JRA for work activities carried out by its own personnel.

Where the work activities to be conducted are outside department/groups normal work areas, the JRA shall be prepared by the department performing the task and verified by the owner of the work area.


Where work activities involve more than one department, the JRA shall be compiled by the department-in-charge of the task, even though the discussion may be led by another department.

The responsibilities for the implementation of this procedure are as follows:

Installation Manager (Offshore Installation Manager, Terminal Manager or similar)

- Shall be accountable for the successful implementation of this procedure through their subordinates.
- Shall be responsible to ensure this procedure is implemented within their work area.
- Interface with various Departments including contractors to form cross-functional group when the work activities require the formulation of a JRA.
- Ensure all JRA and JRA Audit reports are properly documented and filed for reference and verification.

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Authorized Permit Authorizer and Responsible Person

- Identify, review, update and maintain proper document control for all approved JRA/JRA Audit reports.
- Authorised to approve new and updated JRA's within their work area.
- Participate and assign personnel who are conversant with the job details to form work group to draft JRA as required.
- Vet the proposed or updated JRA for the final submission to the Operations Department for approval.
- Participate in JRA cross functional group discussion as assigned.
- Coach the employees on the method of doing the JRA and the proper document control.
- Use the approved JRA as a coaching tool. For JRA that is not possible to perform on the run, tabletop-coaching exercise shall be used.
- Disseminate approved JRA and JRA Audit report to their subordinates.

Work Team

- Responsible to ensure the job activities and practices are carried out in a manner as stipulated in the approved JRA.
- Analyze and prepare draft JRA.
- Update JRA after JRA Audit as required.
- Submit draft and updated JRA to Supervisor for review.
- Stop work activities and review JRA with Supervisor and/or work group when employees foresee any hazard during the course of work.
- Participate in work group activities on JRA and JRA Audit.
- Ensure that all their employees and subcontractors are familiar with the approved JRA steps and abide by it.
- Ensure that work activities are stopped as and when hazards / risks are encountered. Seek concurrence from a BHP Billiton Representatives to restart work only after the approved JRA is reviewed.

7.0 UPDATES TO THIS DOCUMENT

This is a Petroleum HSE Controlled Document. Requests for updates to Petroleum HSE Controlled Documents shall be documented on the Petroleum HSE Document – Update Request Form and sent to the **Petroleum HSE Systems Support** email in the GAL.

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