

	Pre-Mobilization Risk Assessment (PMRA) Process NAPG-RA-SPI-0002	Revision	
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Vale North Atlantic Project Group

Pre-Mobilization Risk Assessment Process

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ISSUE/REVISION INDEX

Issue Code	Revision					Revision Details
	No.	By	Rev'd	App.	Date	
RI	01	JB	SC	DT	2021-03-26	Added user guide Appendix
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Issue Codes: RC = Released for Construction, RD = Released for Design, RF = Released for Fabrication, RI = Released for Information, RP = Released for Purchase, RQ = Released for Quotation, RR = Released for Review and Comments.

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1. INTRODUCTION

The North Atlantic Project Group (NAPG) developed a suite of risk management tools to identify hazards, risk scenarios, and the control measures to either prevent or mitigate harm. The tools are all designed to analyze “how” work will be completed through the lens of these four important questions:

- What could go wrong?
- How bad could it be?
- What must be done to manage the scenario?
- And is it enough?

The three tools: Pre-Mobilization Risk Assessment (PMRA), Job Hazard Analysis (JHA) and the Field Level Hazard Assessment (FLHA) are targeted at addressing consequence severity classifications with overlap on each tool.

<i>RISK MANAGEMENT TOOL</i>	<i>DESCRIPTION</i>
Pre-Mobilization Risk Assessment (PMRA)	PMRA highlights Catastrophic, Critical and Serious severity events.
Job Hazard Analysis (JHA)	The JHA incorporates the controls identified in the PMRA as well as highlighting the events with Serious and Moderate severity ratings. The JHA also acts as a communication tool at the start of shift line-up to inform workers of the hazards and necessary controls to manage the associated risk.
Field Level Hazard Assessment (FLHA)	The FLHA is a worker enabled tool to assess workplace conditions associated with the assigned work and risk management briefing supplied at the start of shift line-up. The intent of this tool is to provide workers with an ongoing process to continually assess the work environment for change thus avoiding harm. Deviations identified with the FLHA process that cannot be addressed by the worker are escalated to the supervisor.

Table 1.0: Risk Management Tools

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These tools incorporate the concept of continuous improvement by including learnings into the catalogs of risk scenarios and controls as well as identifying unsatisfactory workplace conditions that could harm people or property. The documents directing the use of the tools and containing the history of the various project contracts are “live” documents, meaning they are updated through routine reviews or as dictated through incidents, worker observation/feedback, or changes to work scope or environment. See Figure 1.

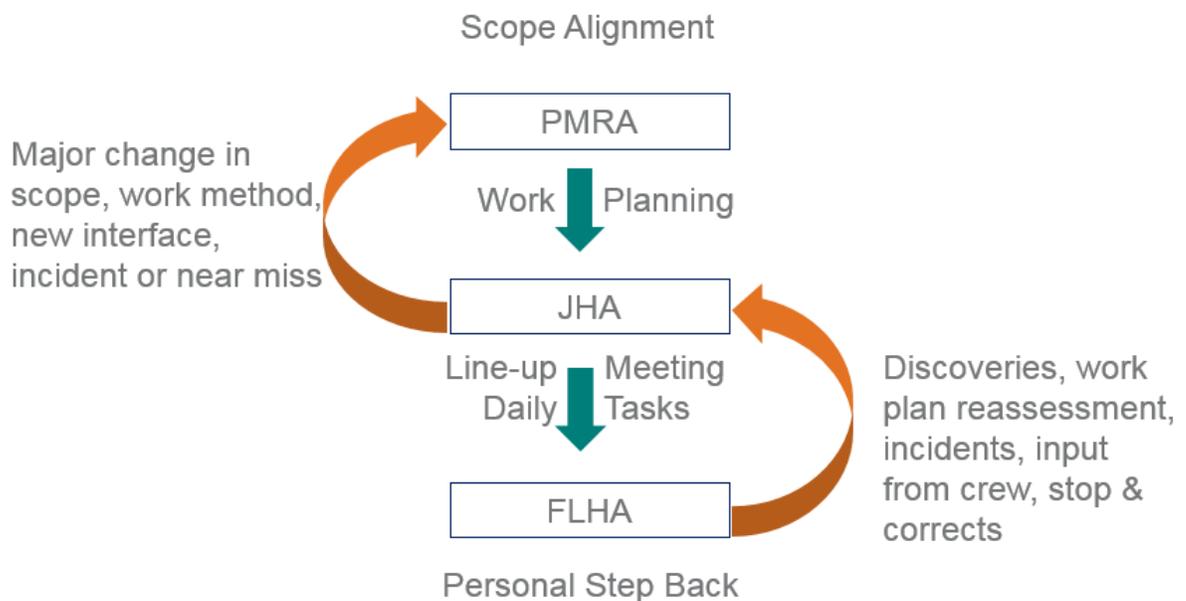


Figure 1-- Continuous Improvement of our Risk Management Tools

The North Atlantic Projects Group (NAPG) developed the Pre-Mobilization Risk Assessment (PMRA) program in place of Vale’s Process Hazard Review (PHR) program. This document establishes the process for implementing the PMRA for each contractor working under NAPG.

The implementation of the PMRA program is made up of two main facets:

- **Risk Assessment** – using the PMRA Development Tool
- **Data Management** – using the Field Risk Register

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1.1. Background

The Critical Activities Requirements (CARs) are minimum health and safety regulations established by Vale with the purpose of preserving people's lives during the performance of activities classified as critical. In the table below are the activities that register the most serious accidents and fatalities at Vale and in the mining industry. The purpose of this classification is to generate more rigid controls to prevent the reoccurrence of these critical activities.

Vale RAC <i>Vale's Critical Activity Requirements (CARs)</i>	
CAR-01:	Working at Heights
CAR-02:	Light Motor Vehicles
CAR-03:	Mobile Equipment Operation
CAR-04:	Lockout/Tag-out and No Power
CAR-05:	Lifting of Loads
CAR-06:	Confined Spaces
CAR-07:	Machinery Guarding
CAR-08:	Ground Stability
CAR-09:	Explosives
CAR-10:	Working with Electricity
CAR-11:	Molten Metal

Table 1.1: Critical Activity Requirements - RAC

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The Pre-Mobilization Risk Assessment (PMRA) program (and the previously used PHR program) were primarily established to identify, analyze, and treat risk to employees' health & safety. The PMRA program is structured in the context of the critical, as well as any "other" activities involved in the work method and related to the work environment from mobilization through to contract completion covering the whole contracted Scope of Work.

The PMRA also includes the use of a Risk Matrix established in the 2010 version of Vale's Operational Risk Management Normative Document (NORM-0007-G). A link to the Risk Matrix is provided in Appendix C, and it includes a severity scale with guidance on the selection of various impacts other than Health & Safety, such as Environmental, Reputational, Social, and Financial. The risk rankings allow the risk events to be filtered by these impact categories and then sorted according to "severity of consequence. The risk values are also used to produce visualizations of the risk assessment to better understand and communicate the risk profile.

Another key distinction is that unlike the PHR program, the PMRA is not intended to be reviewed and signed-off by each employee. Instead, the project utilizes the JHA process to evaluate and treat the risk for **all tasks which may be a different practice than what operations typically follows**. When developing their JHA's, the contractor is expected to reference their PMRA to ensure that the relevant control measures are included within a brown field (operating plant) site where project work is being carried out. Extracting the relevant input from the operation's representatives out of the PMRA is particularly important, since the operation's representatives are not typically involved in the JHA development and review for construction work. Also, personnel from operations are knowledgeable regarding plant operating conditions, emissions, and other inherent site hazards that could affect the work being done on behalf of the project.

1.2. When Is It Acceptable to Skip the PMRA?

The project's commissioning group may only produce a few JHAs for their work, which is often very short in duration. In this case, rather than producing a PMRA, it may be more effective to develop and review the JHAs with the stakeholders because of the higher level of detailed involved in the process. Therefore, many commissioning jobs and occasionally some very small scope construction jobs may skip the PMRA process and develop and review their JHAs with the stakeholders instead. This decision would ultimately be made by the Project Area Manager in consultation with the Project Health, Safety, Environmental, and Regulatory (HSER) Manager.

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2. RISK ASSESSMENT

2.1. Operating Plant Involvement in PMRA

Each contractor is assigned a designated interface coordinator who is responsible for communication between the operation's representatives and the project personnel. The interface coordinator will gather the names of those from the operations who should attend the PMRA meeting. They are required to do so 14 days (or agree upon time) in advance of the meeting to give adequate notice to the operation's representatives. The list of names is provided to the PMRA Lead, who is responsible for booking the meeting. The PMRA Lead in most cases will be the Project HSE Advisor assigned to the contract. For larger projects with multiple contracts there is a benefit to this being a separate role within the HSE Team.

Prior to the PMRA meeting with operations, the first official meeting that contractors have with project team is the kick-off meeting where they are informed about the project's on-boarding requirements, including the PMRA. At this meeting, a tentative date for the PMRA is discussed and the contractor's Project Manager(s) are advised to contact the PMRA Lead on the project to arrange for PMRA Prep (preparation) meeting.

2.2. No Involvement from Operating Plant in PMRA

At the greenfield site or where an operating plant has little or no effect on the project activities, the owner's team (those that represent project management) are tasked with passing on known site hazards and conditions that may affect the work being performed. This is because there can be hundreds of JHAs produced by the construction team, which is why the content structure of the PMRA is essential. It allows for quick reference according to critical and other activities—making the process of finding the relevant information easier.

Each contractor is assigned a designated contact person who gathers the names of who should attend the PMRA meeting. They are required to do so 14 days (or agreed upon time) in advance of the meeting. The list of names is provided to the PMRA lead, who is responsible for booking the meeting.

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2.3. PMRA Prep Meeting

The purpose of the PMRA Prep meeting is to establish the context of the risk assessment based on the scope of work and work method, and to identify the applicable risk events. The meeting lasts about two hours and includes representatives from both the project team and contractor. The table below describes the various roles required from each party.

Role	Company	Purpose at the Meeting	
PMRA Lead	Vale Project Team	Facilitator and scribe.	NOTE: Throughout this document these are shown as separate functions – this is dependent on the project size and number of contracts. These roles can be the same person and is typically coordinated from the HSE department.
HSE Advisor	Vale Project Team	Assist with risk identification.	
Supervisor (1 - 2)	Vale Project Team	Understand scope of work and identify known hazards, risk scenarios, and the controls for the location.	
Manager / Supervisor (1 - 4)	Contractor / Major Subcontractor(s)	Describe how the scope of work will be completed, and identify hazards, risk scenarios, and control measures to manage the risk.	
HSE Advisor / Administrator (1 - 2)	Contractor	Learn PMRA tool and assist with risk identification.	

Table 2.3: Roles and Responsibilities at the PMRA Prep Meeting

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It is essential that the non-HSE personnel who attend this meeting are highly knowledgeable in the scope of work and work method. HSE personnel do not play a significant role at this meeting. They are there to advise and to observe the functionality of the PMRA Development Tool, so that they can use it to complete the remainder of the assessment later.

The PMRA Development Tool is introduced at this meeting. It is a macro-enabled Excel file that consists of a title page to gather basic information, followed by several other pages of forms to be completed in a step-wise fashion. You can access the user guide for the PMRA Development Tool in Appendix A. Once the team has completed the required pages, the contractor is given several days to populate the controls page and Hierarchy of Controls page and submit their work to the project for an internal review of their draft document.

2.4. PMRA Draft Review

To conduct the internal draft review, it is recommended that copies of the PMRA are printed and distributed to the project personnel to mark-up with their comments. The printing and review process are outlined in the user guide for the PMRA Development Tool located in Appendix A.

The table below summarizes the objectives each reviewer may have according to their role. The user guide also provides a series of questions each reviewer may seek to answer based on their role on the project.

<i>Role</i>	<i>Review Perspective</i>
PMRA Lead	Provides quality control of the data/process.
HSE Advisor	Verifies accurate control measures are identified as per procedure and/or regulation.
Supervisor	Captures overall risk and work method.

Table 2.4: Roles and Responsibilities for Reviewing the Draft PMRA

Following the internal review, a second meeting with the contractor may be needed to discuss any of the lingering concerns or findings by the project team. The attendees are the same as the first meeting. The goal of the meeting will be to reach an agreement on any of the recommended changes to the assessment and subsequent risk prevention/mitigation control measures.

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3. DATA MANAGEMENT

3.1. PMRA Development Tool

The PMRA Development Tool is a systematic and step-wise set of forms used to construct the risk assessment Excel document in a consistent structure. It uses a built-in catalogue of risk events to choose from and customize as needed. The catalogue includes potential causes for each risk event and expected control measures based on the project's HSE program. Each risk event also has a default risk ranking unless the wording of the event is modified. Risk ranking values are added or modified as needed.

3.2. Field Risk Register

There are two macro-enabled Excel files used in the PMRA process. The first is the PMRA Development Tool, and the second is the Field Risk Register.

The Field Risk Register is a data management and analysis tool that contains:

- **Four Views of Data:** Master Register, Active Register, Risk Ranking, and Print
- **Two Data Visualization Graphs:** Heat Map and Risk Profile

Qualitative updates to the data are done on the Master Register page, while changes to the risk ranking are done on the Risk Ranking view. The Active Register view is used to filter, sort, and prioritize active risk events. The Print view page and graphs are used for generating reports.

Once a new risk assessment is prepared, the data must be imported from the PMRA Development Tool to the Field Risk Register. This process is described in a user guide for the Field Risk Register located in Appendix B.

3.3. PMRA Meeting

The PMRA meeting is the forum in which the contractor presents their scope of work and risk assessment to the stakeholders. The goal of the PMRA meeting is to obtain input from the stakeholders about any site hazards and potential interferences or any other conflicts that might arise in relation to the risk events listed in the assessment. Stakeholders can include personnel from a specific plant or mining facility that will be impacted by the project activities and members of Vale's Environmental and Occupational Health departments.

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The contact person will gather the names of those who should attend the PMRA meeting. The PMRA Lead will book the meeting with 14 days (or agreed upon timeframe) of advanced notice to the operation’s representatives.

The table below describes the various personnel roles that attend a PMRA meeting, and their purpose at the meeting.

<i>Role</i>	<i>Company</i>	<i>Purpose at the Meeting</i>
PMRA Lead	Vale Project Team	Facilitator and scribe. Describe PMRA process.
HSE Advisor	Vale Project Team	Elaborate on project HSE practices as needed.
Supervisor	Vale Project Team	Elaborate on scope of work as needed.
Manager / Supervisor	Contractor / Major Subcontractor(s)	Describe scope of work and PMRA overview.
HSE Advisor / Administrator (1 - 2)	Contractor	Elaborate on contractor HSE practices as needed.
Stakeholders/Operation’s Representatives (Worker Reps, Management, Support Roles – Process Tech, HSE, etc.)	Vale	Describe applicable plant hazards and potential interferences to production and/or other conflicts or plant requirements.
Supervisor	Other (work groups/ contractors)	Describe conflicts that could arise with new interface on established work fronts.

Table 3.3: Roles and Responsibilities at the PMRA Meeting

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The format of the PMRA meeting includes:

- **Introductions:** Attendees introduce themselves to the group.
- **Attendance:** Pass around an attendance sheet for all attendees to sign.
- **Handouts:** Provide each attendee with a printed copy of the risk assessment.
- **Background:** PMRA Lead broadly describes PMRA process.
- **Scope of Work:** Contractor's project manager/supervisor describes scope of work.
- **Assessment:** Contractor's project manager/supervisor reviews the risk assessment.

The PMRA Lead is responsible for printing copies of the risk assessments from the Print view of the Field Risk Register. The printing and review process are described in the user guide of the Field Risk Register located in Appendix B. When the contractor is going over their risk assessment, rather than reading the document verbatim, they should speak freely about how each critical or other activity applies in their scope of work and what their primary concerns and control measures will be.

Throughout the meeting the stakeholders will ask questions and make statements. Any time a discussion is being had, the PMRA Lead will record key details under the most appropriate risk event in the assessment. Such details include specific hazards and any additional requirements to manage their associated risk. Recording information during the PMRA meeting is described in the Master Register view section of the Field Risk Register User Guide located in Appendix B.

On occasion, a new risk event may be identified such that the information would not be appropriately captured as a comment. In the case of any new risk, either new causes could be entered an existing risk event, or an entirely new risk event may be added. It is also possible that a risk event discussed at the meeting is decidedly not applicable from when it was first identified in the PMRA. In this case, the risk would need to be retired or removed. This process is also described in the Master Register view section of the user guide of the Field Risk Register located in Appendix B. When a new risk event is identified and has a severity threshold of "critical" it is required to be entered in the PMRA. Otherwise risk events with a lesser severity rating should still be recorded during the meeting and must be addressed in the JHA Process.

Following the PMRA meeting, it is important to scan a copy of the attendance sheet and save as a PDF. The risk assessment and associated graphs should also be printed to PDF. Once all the files are saved under the same directory, they can be combined into one PDF file and distributed to the original meeting invite list, as well as any other personnel who attended the meeting. **NOTE:** It is essential that representatives from major subcontractors also attend the PMRA meeting.

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3.4. PMRA Review Post Mobilization

Every eight weeks (or agreed upon timeframe) after the mobilization date, the PMRA is reviewed internally among the project team and contractor. The PMRA Review is the forum in which each risk event is reflected and commented on, in the context of any relevant field observations, including past near misses and/or incidents. This information is recorded in the review comment section along with the date it was added. If it is noted that the risk event is no longer applicable to the work, then the risk event may be retired. The process of retiring a risk during the PMRA Review is described in the Master Register view section of Field Risk Register User Guide.

Unlike the original PMRA meeting, printouts are not required for the PMRA Review since the group is much smaller. Everyone should be able to follow along with a projector or Microsoft Teams meeting. It is also not necessary to review every control measure during a PMRA review. Instead, the focus is on understanding the extent to which each risk event has manifested in the field so far. This includes both leading indicators, such as near misses and general observations and lagging indicators, such as incidents.

The table below describes the various personnel roles that should attend a PMRA Review, and their purpose at the meeting. Re-occurring meeting invitations should be scheduled in Microsoft Outlook to ensure that these meetings take place.

Role	Company	Purpose at the Meeting
PMRA Lead	Vale Project Team	Facilitator and scribe. Describe PMRA process.
HSE Advisor	Vale Project Team	Elaborate on project HSE practices as needed.
Supervisor	Vale Project Team	Elaborate on scope of work as needed.
Project Manager / Supervisor (1 - 2)	Contractor / Major Subcontractor(s)	Describe scope of work and PMRA overview.
HSE Advisor / Administrator (1 - 2)	Contractor	Elaborate on contractor HSE practices as needed.

Table 3.4: Roles and Responsibilities at the Eight Week (or agreed upon timeframe) PMRA Review

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The format of the PMRA Review meeting is:

- **Attendance:** Pass around an attendance sheet for all attendees to sign.
- **Introduction:** PMRA Lead describes review process.
- **Risk Review:** PMRA Lead goes through each risk event and takes notes.
- **Upcoming Work:** Contractor's project manager or supervisor describes upcoming work.

The PMRA Lead is responsible for recording key field observations in the Master Register view of the Field Risk Register. Each comment should include the date the comment was added.

In the last part of the review process, the PMRA lead asks the contractor's project manager or supervisor about the upcoming work over the next eight-week period. The relevant risks for the upcoming work should then be reviewed and discussed. For example, suppose a 350-tonne crane will be mobilized in the next couple of weeks. It would be prudent to then review the risks related to cargo handling with the use of the crane.

In some cases, some aspects of the upcoming scope of work may not have been included in the original PMRA or the contractor could be moving into a new area. If they are moving into a new area, then another PMRA meeting with the new stakeholders should be coordinated to add their input to the risk assessment. If the work is similar and is under the same contract number, there may yet be some new risk events to add to the assessment. On the other hand, there may also be some risk events that no longer apply. A user's guide for adding and removing risk events is described in the Master Register view section located in Appendix B. In the case where the work is significantly different from their original scope and was awarded under a different contract number, the contractor must create an entirely new PMRA starting over with the development tool.

Following the review meeting, it is important to scan a copy of the attendance sheet and save as a PDF. The risk assessment and associated graphs should also be printed to PDF. The printing process is described in the print view section of the Field Risk Register User Guide located in Appendix B. Once all the files are saved under the same directory, they can be combined into one PDF file and distributed to the original meeting invite list, as well as any other personnel who attended the meeting. It is helpful to those receiving a copy to highlight the updates and comments using the highlight tool in the PDF.

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3.5. Prioritization Exercise

A mechanism for challenging the risk ranking has been built into the Field Risk Register. This is an optional function in the Active Register view. It allows the user to compare the order of risk events that results from their risk ranking to their impressions of what the order ought to be based on the sorting criteria. There is no set expectation as to when and how often to perform this prioritization exercise, but it is an available feature that can be used during a PMRA review. Steps in how to use this feature are provided in the Active Register section of the Field Risk Register User Guide.

3.6. Maintaining the Catalogue

Both the PMRA Development Tool and the Field Risk Register each contain a copy of the risk catalogue. The risk catalogue contained in the PMRA Development Tool is used to populate the drop-down selections and default settings, while the catalogue in the Field Risk Register is used to produce the risk profile comparison graph. From time to time, the PMRA Lead may wish to make an update to the catalogue. This could be a minor addition or removal of information, or it can be a formal HSE review. When an update is desired, it is accomplished via the Field Risk Register, and changes will automatically be mirrored in the PMRA Development Tool. There is no prescribed frequency to how often the catalogue is reviewed by the HSE team. The process of updating the catalogue is described in detail in the Field Risk Register User Guide located in Appendix B.

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4. **Appendix A – PMRA Development Tool User Guide**

Click the link below to access a step-by-step user guide of the PMRA Development Tool.

[PMRA Development Tool User Guide](#)

5. **Appendix B – Field Risk Register User Guide**

Click the link below to access a step-by-step user guide of the Field Risk Register Tool.

[Field Risk Register User Guide](#)

6. **Appendix C - Risk Matrix**

Click the link below to access the Risk Matrix.

[Risk Matrix](#)

7. **Appendix D – Job Hazard Analysis (JHA) Procedure**

Click the link below to access the Job Hazard Analysis.

<http://extportal.vale.com/NAPG/NAPG/Jha%20procedure.pdf>