

PNR - 000068, Rev.11: 10/02/2024

Issuing Department: Health, Safety and Environment Division

Responsible Manager: Rafael Costa – ID: 81021754 – Health and Safety Process Management

Target Audience: All professionals who work in the Health, Safety and Operational Risks area of Vale or perform job task that demand JSA

Training Needed: () YES (x) NO

Expected Result:

- ✓ Minimize risks related to the execution of job tasks and keep them at tolerable levels according to Vale's strategy and governance in response to risks.

Association with VPS:

Leadership

1. Culture and engagement
2. Talent management and development
3. Individual and organizational performance

Technical

4. Risk perception and management
5. Health, safety and environment
6. Projects and constructions
7. Operations
8. Maintenance
9. Change management
10. Mining planning
11. Sustainability
12. Emergency, crisis and business continuity

Method

13. Strategy deployment
14. Routine management
15. Processes and standardization
16. Problem solving and continuous improvement
17. Evaluation of the management model and results

1. Purpose

Establish guidelines for development and application of Job Safety Analysis (JSA).

2. Application

This document applies to Vale and must be adopted by its subsidiaries or entities where, by shareholders' agreement, Vale is responsible for health and safety management.

The local Health, Safety and Operational Risks departments may develop or maintain local procedures on Job Safety Analysis, if the requirements established in this document are met.

3. References

- NFN 00001 - Planning, Development and Management Standard
- NOR - 0003 - G - Risk Management Norm
- PNR 000031 - Safe Work Permit.
- PNR 000069 - Critical Activities Requirements
- PNR 000008 – Guidelines for the VPS Element 8 - Maintenance
- PNR 000039 – Processes and Standardization
- PNR 000013 – Global Guidelines to development normative documents

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4 Note about revision and deadline for implementation

Deadline for compliance with NOR - 0003 - G - Risk Management Standard

The new JSA must be prepared according to the current standard of NOR - 0003 - G. For existing JSA prepared before the publication of NOR - 0003 - G, it must be developed an action plan to adapt to the current standard.

Deadline for compliance to Annex III – Guidelines to define probability for JSA

The new JSA must be prepared according to the current version of Annex III. For existing JSA based on other parameters of probability, an action plan to be compliance with annex III is recommended.

→ 5 Official JSA registration system and template for JSA

Annex IV should be used as the basis for feeding the JSA registration system.

Annex IV contains the following tabs:

- **Planning JSA:** template for drawing up the planning JSA, where all the information required for the risk analysis must be filled out.
- **Field JSA cover:** cover for using the planning JSA in the field, where basic JSA information is filled out.
- **Printout of the JSA with all risks:** Field planning JSA, with all information required for task execution. The content data of this JSA is automatically migrated from the planning JSA.
- **Printout of the JSA with high and very high-risk:** High and very high-risk scenarios, which aims to show the most relevant risk situations for the employee. The content data of this JSA is automatically migrated from the planning JSA.

Annex IV is available at the link:

Vale employees or third parties with access to the Vale's intranet:

<https://globalvale.sharepoint.com/teams/int-inst/Documentos%20Compartilhados/Global/nossa-empresa/como-nos-mantemos-seguros/PTS/Tamplate%20for%20JSA>

Third party employees without access to Vale's intranet:

<https://vale.com/im-a-supplier>

6 Important definitions

- **Activity leader:** leadership or another employee formally designated as responsible for leading and/or supervising the execution of a task.
- **Causes:** situations or occurrences that, if not controlled, can result in an unwanted event.
- **Circumstantial risks:** risks that are not associated with task steps, but that may arise according to the time or work environment, during or before the execution of the task. Example: wet floor, dark environment, interference between different service fronts.
- **Consequence or effect:** result of an unwanted event. Example: incident with first aid, fatality, incident.
- **Control measures:** action or equipment that aims to prevent the risk situation from occurring or that the consequences of the risk situation are mitigated. The implementation of control measures tends to decrease the final risk rating.
- • **CRM (CCV App):** 3-layer verification methodology (Manager, Supervisor/Coordinator and Performers) with a focus on fatality prevention through the evaluation of critical task controls.

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- **Job task steps:** steps that together form a job. The steps of a dump truck tire change task can be, for instance, fully depressurizing the tire or positioning the tire in the press with the tire handler.
- **Mitigation controls:** control measures that tend to mitigate the consequences of an unwanted event.
- **Performer:** worker who will perform the job for which the JSA was developed.
- **Prevention controls:** control measures that tend to prevent the event from occurring.
- **Probability:** the frequency that an event is expected to occur.
- **Procedure:** document that establishes a step by step how to perform a task from beginning to end.
- **Risk:** the combination of Probability and severity for an event to occur.
- **Risk analysis:** identification of the causes, consequences and control measures associated with the risk situation.
- **Risk evaluation:** the process of making decisions, based on the outcomes of risk analysis, about which risks need treatment to prioritize treatment implementation.
- **Risk identification:** action to find a risk situation before or during the execution of a task, without necessarily proceeding to the others stages of risk assessment.
- **Risk rating:** determination of the level of risk based on probability and severity.
- **Risk situation:** an unwanted event during the performance of a task. Example: being hit by an object.
- **Risk situation or constant risk:** situation that is present during all or part of the task. Example: fall from level difference when working at height.
- **Severity:** a level of magnitude of the consequence. Example: minor, significant or critical.
- **SWP:** Safe Work Permit.
- **Task:** assignment of work to be carried out during a specified period in a physical space. Example: changing forklift turning brake gear, changing dump truck tire, changing railway sleeper, etc.

7. Method description

7.1 Concept and applicability:

Concept - Job Safety Analysis is a risk analysis method that consists of identifying, at each step of the job task, the causes, hazards or risks situations and control measures that must be applied to prevent an unwanted event from occurring or for the consequences of these events to be mitigated. Once this information is established, the risk rating is performed at each step of this job task, based on probability and severity.

Applicability – A Job Safety Analysis must be completed for all work activities. For activities and reoccurring tasks with a procedure it should be aligned with an updated JSA. The JSA does not replace the need or use of a field level risk assessment which should be used to identify changes in conditions that may have not been included in the JSA.

7.2 Exceptions:

The development of a JSA is not required for:

- a) Administrative activities;
- b) Inspection / observation activities that do not involve critical activities (RACs / CARs) and where there is no interaction with equipment, machinery or structures. Examples: safety walks, inspections, etc;

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- c) Driving light vehicles (CAR 02)- on public roads or in above ground areas with traffic plans and defined procedures;
- d) Health, safety and environmental emergency response tasks.

7.3 Developing & approving a JSA:

JSAs should be developed and approved by Vale or third-party employees:

- a) Trained and knowledgeable in the JSA method and requirements defined in this document;
- b) With in-depth knowledge of the tasks and hazards to be performed.

This team is responsible for identifying all the information necessary for the elaboration of JSA and performing the classification of risks. It is important that the information is clearly and objectively described for the task performer to understand.

It is recommended that urgent tasks be approved by the immediate supervisor or HSOR professional. This is considered an exception when the JSA must be completed in the field. The JSA must be formalized after the end of the task.

Third-party company JSAs must be verified by Vale employee(s), with understanding of hazards, according to the periodicity and sampling defined in the area. Approvers of third-party JSAs may include safety professionals, operations, maintenance and/or project personnel, etc.

7.4 Steps for developing a JSA¹:

The JSA must be developed prior to the work beginning. The same JSA can be used for recurring tasks.

The method for developing a JSA consists of the following steps:

1. Define the scope of work activities;
2. List and break down the tasks of the job into steps;

Important: The scope and the job tasks must be specific to the task being performed. It is not permissible to use JSAs with generic scopes or include tasks that will not be performed.

3. Evaluate each step of the task and identify hazards (risk identification);
4. Characterize risk situations, their causes and effects (risk analysis);
5. Identify the existing controls to prevent the unwanted event or mitigate its effects (risk analysis);
6. Classify² the risk rating by assigning severity and probability (risk rating);

- Definition of effects must be made disregarding the actions of controls.
- The final risk rating must be made on the residual risk, that is, considering the available controls implemented.



- **There is no need to define probability for risk scenarios that have low or moderate severity. This classification will be done automatically as low to low and medium to moderate.**



7. Take the necessary actions according to the risk rating (risk evaluation), **in accordance with the risk response strategy defined by NOR-0003.**

¹ See Annex 1 – Developing and use of JSA.

² Risk rating must be done according to tables of probability, severity and risk matrix. The severity and risk matrix can be found in NOR – 0003 – G. The probability must be defined in accordance with Annex III.

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7.5 Identification of new risks before or during the execution of the task and non-conformity of JSA with the real work situation:

If new tasks, hazards or changes to the risk or controls are identified before or during the execution of the task, the work must stop and the JSA must be updated with the new information. The supervisor or the employee in charge for the activity must be informed, analyze the situation and take the following actions:

- a) If the risks are part of the job task steps, communicate with the team responsible for preparing the JSA or the HSOR team and include this risk situation in the JSA, perform the risk analysis, rating and evaluation. The leader or the employee in charge of the activity must examine whether the task can be continued after the implementation of controls at the time of the execution or whether it is necessary to wait for the analysis and classification of risk by the multidisciplinary team.
- b) If the risks are circumstantial and are not part of the task steps, implement the necessary controls to carry out the activity.

In a situation where the work conditions do not match the tasks or hazards defined in the JSA, the performer must stop work and communicate this new risk with the leader or person in charge of the activity.

7.6 Other important considerations

- a) If the risk situation that is verified at the time of execution is associated with one step of the task, even if the performer identifies the risk, it is not the task of the performer to identify the other necessary information (risk analysis), classify (probability x severity), or evaluate the risk. This process should be carried out by the multidisciplinary team and there is no need to be done in the field, but this risk situation should be evaluated and mitigation measures implemented ensuring safe execution.

→ b) **The same JSA can be used by a company (Vale or Contractors) in different areas if the task (steps, risks and control measures) is the same.**

→ c) **JSAs prepared by contractors cannot be shared between them or with Vale.**

- d) For urgent tasks (e.g. emergency maintenance) that are not planned, for which there are no previously prepared JSAs and it is not possible to prepare a JSA covering all the stages, it is permissible to prepare a summary JSA, containing at least the steps of the task, risk situations and control measures. The JSA summary can be prepared on the printout of the JSA planning form itself, leaving the non-mandatory lines blank. This should be done as an exception and the JSA should be completed after the task has been completed.

→ 7.7 Use of JSA in the field:

a) Tasks without procedure:

The area must make the JSA available at the front of the work, and it can be printed out in full or summarized format, considering only high and very high risks.

The JSA must be checked and signed by the performers only once (there is no need for daily signatures) after discussion.

b) Tasks with procedure or CRM:

It is not necessary to provide the planning JSA in the field.

c) Areas may establish their own printing templates for use of the JSA in the field, as long as the requirements established in this PNR are respected.

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7.8 Revision of JSA:

Existing JSA's should be revised when the team responsible for its preparation considers it necessary and whenever:

- The scope of the job task is modified;
- An incident occurs during the execution of the job task;
- A failure or absence of control measures provided for in the JSA is identified and that failure or absence cannot be resolved immediately for the execution of the task;
- A new risk situation related to a job task step is identified before or during the execution of the task;
- The associated procedure to the JSA is updated.

8. Training

JSA training is given by the multiplier to the JSA developer:

- **Multiplier:** Instructor of the JSA method who is qualified to provide training for the developer.
- **Risk analysis developer:** A person who knows the method and is responsible for preparing the JSA, trained by the multiplier.

JSA developers must be trained in JSA development.

The person who knows the steps of the task does not need to be trained in the method.

Frequency: The training should only be applied once, unless there is a significant change in the method, in which case the need for new training will be formalized by the HSE Board.

The training should consist of:

TIPO	OBJECTIVE	MINIMUM WORKLOAD
Theoretical part	The instructor will explain the method to the JSA developer, following the training content and instructions in this document.	1 hour 30 minutes.
Practical part	the instructor will teach the developer how to prepare an JSA, using the following methods: <ul style="list-style-type: none"> Preparation of one or more JSAs together with the developer; Going to the field to prepare or review a JSA for an existing task; In-class review of existing JSAs. 	2 hours

9. Roles and responsibilities

9.1 Area manager:

- Ensure that all job tasks performed under its responsibility are previously and formally assessed on its risks;
- Manage and implement the JSA in the areas under its responsibility under the terms of this document;
- Ensure the necessary resources (financial, human and material) to provide effective management of the risks;

9.2 Supervisor:

- Ensure the fulfillment of all the requirements established in this document;

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- b) Identify the JSA developers in its team and ensure that they are trained in the methodology;
- c) Provide the necessary resources to carry out the activities as provided for in JSA;
- d) Identify in the job tasks in areas under its responsibility;
- e) Seek opportunities to carrying out the job task and reduce the probability of risk occurrence or mitigate its consequences;
- f) Stop the work if changes are identified in the steps of the task during execution;
- g) Include in their daily field inspection, the verification of services regarding compliance with JSA;

9.3 JSA developer:

- a) Participate in the preparation of the JSA and in the regular reviews of the document;

9.4 Performers:

- a) Comply with the control measures indicated by JSA;
- b) Stop the activity when situations that are not covered in JSA occur and notify the activity leader about these situations;
- c) Use JSA to check the risks before the execution of tasks;

9.5 Health, Safety and Operational Risk manager:

- a) Support other managements in the implementation of the JSA under the terms of this document;
- b) Ensure the training of those responsible for conducting the development of JSA in all the managements under their responsibility.

9.6 Health, Safety and Operational Risk Team:

- a) Support, when requested, in the identification of alternatives for carrying out the activity;
- b) Support, when requested, in the preparation of JSA for tasks of greater complexity;
- c) Ensure compliance with this procedure.

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ANNEX 1 – Developing and use of JSA flow

