



Original Article

Implementation of Hot Work Permits at PT Pertamina Geothermal Energy Karaha-Tasikmalaya Area

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Abstract:

Labor is the main role involved in work activities in the company. Workers' activities are a source of work accidents. One effort to prevent work accidents in industry can be made by implementing a safe work permit system, including a hot work permit. A safe work permit system is a formal written system used to control work identified as potentially hazardous. This study aims to understand hot work permit programs, procedures, and implementation. This study used a qualitative descriptive method, where field observation, interviews, and literature studies were carried out during a collection. This study was conducted at PT Pertamina Geothermal Energy Area Karaha, in Karaha Bodas Village, Kadipaten District, Tasikmalaya Regency, West Java. The results of this study are that the hot work permit program includes administrative checks such as JSA and Hot Work Permit; procedures and implementation refer to Government 50 of 2012 and Standard NFPA 51 B 2019. Based on the study's results, work containing heat must attach a hot work permit, and socialization must be provided to workers to minimize the risk of accidents and fire.

Keywords: Application, Program, Procedure, Implementation, Hot Work Permit.



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Introduction

The safe work permit system consists of hot work permits, cold work permits, lifting and carrying permits, confined or restricted space permits, electrical permits, and height permits (Suma'mur, 1983). In 2006, an industrial accident

occurred at a sandblasting paint factory, resulting in severe injury and eventual death of a worker. This incident was caused by a worker not using a safe work permit and the workplace lacking fans for air circulation ([Khaqim et al., 2014](#)).

PT. Pertamina Geothermal Energy Area Karaha is an industry engaged in geothermal energy production ([Darma et al., 2021](#)). In supporting production activities, workers are involved in tasks in hot areas or fire-related areas, which pose potential fire hazards. Therefore, maintenance and repair of equipment used to support production must be performed routinely to minimize losses ([Buntarto, 2015](#)). Implementing Hot Work Permits is crucial for workers to minimize these potential hazards.

According to the Ministry of Manpower of the Republic of Indonesia, workplace accidents kill 250 million people annually, and approximately 160 million people suffer from work-related illnesses. Meanwhile, 1.2 million people die due to work accidents and occupational diseases each year. This indicates that the cost trend for implementing occupational health and safety management is very high ([ILO, 2013](#)).

Accidents

Work accidents result in loss of time, property, and lives and are undesirable for every worker. Elements of work accidents include:

a. Unexpected (unplanned and unintentional); b. Unwanted/anticipated (every accident is accompanied by physical and mental harm); and c. Loss and damage (resulting in disruption of workflow).

Safe Work Permit System

The Safe Work Permit System (SIKA) is a formal written system to control work identified as having potential hazards. Additionally, SIKA serves as a communication tool between site or facility managers, supervisors, plant operators, and workers involved in hazardous work ([Salmah & Lubis, 2016](#)).

Safe Work Permit Form

Filling out the safe work permit form, obtained through communication, must also be well documented, as communication is crucial for worker safety and health. In high-risk situations, the weaknesses of verbal communication are addressed with written communication in the form of a work permit ([Syukri, 1997](#)).

Implementation of the Safe Work Permit System

Implementing the safe work permit system must adhere to the guidelines for work permits so that work can be coordinated with management in an orderly manner, leading to safe production ([Syukri, 1997](#)).

1. Work Permit Process

Work requiring a permit must first prepare a work plan. The operational inspector then develops the work plan and must consult with the safety department and the person in charge of the work area. Before applying for the permit, the party performing the work must arrange the work, including the building type to use. This includes quarantining the area being prepared. Once the quarantine is complete, the executing personnel will report to the control center, verifying the report's authenticity and issuing the work permit ([Widodo & Saleh, 2022](#)).

2. Implementation of the Work Permit System

Implementing the work permit system depends on the complexity of the company's

operations and the risk level. Standard models cannot be applied to all workplaces. Therefore, company management will design a system that can be used. This system is designed by combining general principles and remaining flexible so it can be applied to all types of hazardous work.

The main steps in preparing a work permit are [\(Ridley, 2008\)](#):

- a. Identify the work to be done;
 - b. List the hazards associated with the work (provide a checklist);
 - c. Compare isolation (connections must be broken, and testing specified and indicated in the permit);
 - d. Include warnings and tests that can be used as a checklist in the permit,
 - e. Please specify the time limit for the work and the person responsible for it, who is equipped with time;
 - f. Once everything is complete and the responsible person is satisfied with all preparation work listed on the permit, the authorized officer signs the permit.
3. Delegation of Responsibility
 - a. Ensure and understand the work to be done and determine the preventive measures to be taken (the responsible person must have full licensing).
 - b. Sign the work permit by the supervisor;
 - c. Inspect to ensure all required safety equipment is available and the specified preventive measures have been implemented.
 - d. If necessary, extend the work permit if the work will continue at the end of the shift and consult with the issuing official.
 - e. Update old permits or issue new ones.
 4. Completion of Work
 - a. Sign the work permit as proof that the responsible person has completed the work, that all work has been transferred, and that all personal protective equipment has been removed and reinstalled.
 - b. Each group leader will sign the work permit if working in multiple groups.
 - c. Compared to machines, equipment is handed over to the production department, and the head of the department signs the permit as a sign of responsibility. The work permit is considered complete, and regular work resumes.

Types of Safe Work Permits

Safe work permits include several types, such as hot work permits, cold work permits, electrical permits, entry permits, excavation permits, and radioactive work permits [\(Himaningrum, 2011\)](#).

Hot Work Permit

A hot work permit is used for any work in areas with potential fire/explosion hazards, including facilities/platforms/production processes. Hot work permits are essentially for work that involves open flames, such as:

Welding, flame cutting, grinding, etc.

Using any equipment that can create sparks and other sources of ignition.

Opening and moving pipes and tanks containing flammable, toxic, and high-pressure materials.

Hot Work Safety Guidelines

a. Before Working

1. Identify hazards and mitigations by creating a Job Safety Analysis (JSA) and Safe Work Permit (SIKA).
2. Use appropriate personal protective equipment (PPE) suited for the job and ensure it is in good condition.
3. Prepare fire extinguishers in easily accessible positions.
4. Clean the location and materials that are flammable.
5. Use acetylene cylinders to ensure hoses and connections are checked to avoid gas leaks.
6. Test for hydrocarbons or other flammable gases with a gas test.
7. Ensure the job coordinator has provided a safety briefing to other workers.

b. During Work

1. Monitor the work being performed by the job coordinator.
2. Ensure there is a fire watch assigned to oversee hot work.
3. Position fire extinguishers or fire protection equipment in accessible locations.

c. After Work

1. Clean up all equipment used and return to its original condition.
2. Close the work permit.

Methods

In this study, the method used is descriptive survey research, which includes field surveys and observations of work processes and environments using the Safe Work Permit System (SIKA). The subjects of the study include management and several workers, with interviews conducted at the company related to the implementation of Hot Work Permits at PT. Pertamina Geothermal Energy Karaha Area. The data used in this study include both primary and secondary data. Data analysis is performed using SIKA procedures for hot work permits.

Results

a. Safe Work Permit Program

The programs implemented at PT. Pertamina Geothermal Energy Karaha are as follows:

1. **Pre-Job Safety Meeting (PJSM)**

The Pre-Job Safety Meeting (PJSM) is held before work begins at the site (according to the job description). After the toolbox meeting is completed, workers are divided into several groups for different tasks at various work sites, which are also addressed by the PJSM (Pre-Job Safety Meeting).

The PJSM includes several checks, including:

- a. Completeness of the Job Health Safety Environment Analysis (JHSEA).
- b. Completeness of the tools required by the JHSEA for the task.
- c. Completeness of Personal Protective Equipment (PPE) and Safety Equipment (SE).
- d. Work Permit is fulfilled and still valid.
- e. Worker understanding of the JHSEA.

2. **SIKA Implementation Inspection**

This inspection is a verification on-site of safe work permits and whether the work is

performed in compliance with regulations or in violation of regulations. Typically, SIKA inspections are ad hoc or surprise inspections conducted by HSE. Some of the points covered include:

- a. Ensuring the original/white SIKA is on site.
- b. Ensuring the SIKA title is correct.
- c. Ensuring the hazards listed in the SIKA match the field conditions.
- d. Checking the expiration date of the SIKA.
- e. Verifying that all relevant functions have been approved on the SIKA form (Creator, Construction Supervisor/Construction Body, Issuing Authority/Work Permit Safety Authority, and Property Owner).

The SIKA creation program conducted by PT Pertamina Geothermal Energy Area Karaha includes Refreshment Training. Refreshment Training is an annual training program for employees and vendors, conducted once a year during Safety Month (K3). Refreshment training covers the creation of SIKA (Safe Work Permit), including how to create SIKA, the process of creating/signing SIKA, and the distribution of SIKA.

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b. Safe Work Permit Procedure

Safe work permits are carried out by preparing the work permit and submitting an approved application. The implementer and HSSE will coordinate and communicate with the PIC who signs the work permit. Work permits are created based on the work zone and are valid for 7 days, with the possibility of extension by filling out the work permit form, as explained in TKO No. Doc.: B-004/PGE610/2018-S9. The process of applying for a work permit (PTW) involves several stages for high-risk activities. The application stages are as follows:

1. The worker submits a work permit/permit to work application and JHSEA to the asset/Asset Holder through the online JSA system.
2. The worker submits the draft of the work permit/PTW and JHSEA approved by the asset/asset holder to the Safety Advisor.
3. The Safety Advisor reviews the compliance and completeness of the JHSEA and the draft work permit/permit to work. If it meets the requirements and is complete, it will be approved and a notification will be sent to the Issuing Authority.
4. The Issuing Authority receives and examines the work permit/permit to work approval request after obtaining approval from the Safety Advisor to ensure that the risk mitigation steps have been properly and completely planned.
5. The worker prints the approved PTW and JHSEA to bring to the work site and places the work permit/permit to work at the work site as a reference for performing the work and controlling work hazards. Before leaving the work site and at the end of the work, ensure the work site is safe and clean.
6. Submit the safe work permit/permit to work and all attachments to the issuing authority. The Issuing Authority and Work Supervisor/Performing Authority inspect the work site to ensure it is safe and clean. The Issuing Authority and Work Supervisor/Performing Authority sign the document and close the work permit/permit to work document as evidence that the work has been completed.

Here are some points in the Hot Work Permit procedure. Interview results related to hot work permits include:

1. Completing the specific SIKa form with the hot work sheet.
2. Reviewing the hot work sheet by the permit issuer.
3. Conducting initial gas testing by the Gas Tester and ensuring that the APAR is available and in working condition by the fire watcher.
4. Signing the specific SIKa by the hot work permit issuer and the hot work sheet, and authorizing the hot work to be carried out.
5. Documenting the signed hot work sheet at the work location.
6. Measuring gas every 10 minutes by the Gas Tester or when there are changes in conditions/areas not supervised for ± 10 minutes.
7. Regularly checking the hot work location until completion by the Fire Watcher (on alert and on duty). The worker, work supervisor, fire watcher, and gas tester monitor the condition of the work location until the hot work is completed.

c. Implementation of Hot Work Permit

In the implementation of hot work, before the hot work permit is enforced, the following preparations are made:

1. Before Working
 - Prepare the hot work permit and Job Health Safety Environment Analysis (JHSEA).
 - Ensure that Personal Protective Equipment (PPE) is properly prepared and suitable for the type of work.
 - Ensure that Fire Extinguishers (APAR) are readily accessible and in good condition.
 - Prepare other supporting facilities, such as First Aid Kits (P3K) in case of workplace accidents. Install safety lines to demarcate safe areas and the area where hot work is to be performed.
2. During Work
 - Place the hot work permit and other attachments at the work location.
 - Conduct gas tests every 10 minutes and ensure that the fire watcher is stationed at the work site until the work is completed.
3. After Working
 - Close the hot work permit.
 - Ensure that the work location is safe and that equipment has been cleaned.

Procedurally, the implementation of the hot work permit is required by HSSE for any work related to heat, as follows:

1. The worker confirms to HSSE or the Safety Officer that welding and cutting activities (related to hot work) will be conducted.
2. HSSE conducts a visit to the workshop or welding and cutting site to identify and inspect the area: a. Identification: Identify potential hazards from both the work area and equipment. b. Inspection: Check various tools used to determine if they are still suitable for use or if they need testing and maintenance. c. Record the results of the identification and inspection in the checklist form provided in the hot work permit.
3. If the results of the identification and inspection comply with the existing procedures, HSSE approves the activity. However, HSSE will continue to monitor the activity for some time to prevent unsafe actions or identify any hazardous areas that could cause accidents, ensuring that the activity can proceed.
4. If the results of the identification and inspection do not meet the requirements, HSSE will recommend that the welder operator perform repairs or housekeeping in the area

until it is deemed safe by HSSE, both in terms of equipment and conditions, so that the welding and cutting activities can be approved by HSSE through the hot work permit.
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Discussion

a. Safe Work Permit Program

Related to hot work, the company has a specific application for implementing the program, which includes administrative checks such as fire prevention measures, PPE checklists, equipment inspections, and work area inspections. This program aims to ensure that workers comply with regulations. If workers, partners, or contractors do not follow the enforced rules, sanctions are imposed, up to and including job cancellation.

b. Hot Work Permit Procedure

The hot work permit procedure is documented in the Organizational Work Procedures (TKO) for Permit to Work (PTW) with document number B-004/PGE610/2018-S9. The implementation of this procedure includes creating individual permit issuers, establishing hot work permit procedures, and appointing hot work operators and fire watchers.

Implementation of Hot Work Permit

In the implementation of hot work permits at PT Pertamina Geothermal Energy Area Karaha, there is a correlation between the JHSEA (Job Health Safety Environment Analysis) and the hot work permit, which is based on regulations according to Government Regulation No. 50 of 2012 concerning the Implementation of SMK3 (Occupational Health and Safety Management System). In the company's permit implementation, the work permit includes work preparation, mandatory use of PPE, first aid kits, fire extinguishers (APAR), and safety signage. This results from hazard identification and risk assessment followed by control measures, including administrative requirements, PPE obligations, provision of supporting safety facilities, and monitoring ([INDONESIA, n.d.](#)).

According to Law No. 13 of 2013 on Manpower, Article 87, paragraph 1, "every company is required to implement a safety and health management system integrated with the company's management system" ([INDONESIA, 2006](#)). If this article is violated, administrative sanctions are imposed as per Law No. 13 of 2003 on Manpower, specifically Article 190 in conjunction with Article 87. These administrative sanctions may include warnings, written notices, business activity restrictions, suspension of business activities, cancellation of registration, revocation of approval, suspension of some or all production equipment, and revocation of licenses.

Conclusion

1. The programs implemented for hot work at PT Pertamina Geothermal Energy Area Karaha include various forms such as Pre-Job Safety Meetings, Refreshment Training, and SIKA Implementation Inspections, including Hot Work Permits.

2. The procedure for creating work permits/permits to work at PT Pertamina Geothermal Energy Area Karaha has been documented in the Organizational Work Procedures (TKO) No. B-004/PGE610/2018-S9. The technical implementation of the hot work permit is documented and carried out in the field.
3. The implementation of hot work permits at PT Pertamina Geothermal Energy Area Karaha includes the use of Personal Protective Equipment (PPE), safety signage, fire extinguishers (APAR), and first aid kits (P3K), with supervision/monitoring of hot work until the work is completed properly.

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