Civitas : Jurnal Pengabdian Masyarakat
E-ISSN : 3064-1454
Volume. 1 Issue 2 Desember 2024
Page No: 80-89

Training and Certification for Oil and Gas Safety Operators in Bojonegoro and Surrounding Communities

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Received : November 22, 2024
Accepted : Desember 5, 2024
Published : Desember 20, 2024

Citation: Handoko, S., Nugroho, B, S., Ayende., Widiyanto, T., Hamid, F, A., Indriani, E., Dewi, A, K., & Wardhana, A, S. (2024). Training and Certification for Oil and Gas Safety Operators in Bojonegoro and Surrounding Communities. Civitas : Jurnal Pengabdian Masyarakat , 1(2), 80-89. https://doi.org/10.61978/civitas.v1i2

ABSTRACT: Occupational Safety and Health (OSH) is indispensable to the oil and gas sector, which encompasses production, processing, and transportation, due to its substantial risk of workplace accidents and fires. Oil and gas OSH is a regulation that ensures the reliable operation and safety of oil and gas institutions/companies by standardizing equipment, personnel, general protocols for oil and gas installations, and operational procedures. OSH certification is a highly regarded indicator of documented expertise and is highly regarded for its credibility. The process of implementing this OSH training and certification involves the identification of training requirements, the preparation of a curriculum, and the coordination with relevant parties, specifically the Bojonegoro Regency Government. Preparation of socialization from participant registration through the selection of participants based on their basic requirements or qualifications. Theory sessions and practical sessions comprise training implementation. The theoretical session involves the delivery of material in the classroom, while the practical session involves the simulation of tool use in the fire and safety laboratory. In collaboration with LSP PPSDM Migas, the STTK certification exam for operator level was administered. The National Professional Certification Agency (BNSP) issues certificates. A total of 25 participants took the STTK exam on 8-9 August 2024, with 23 of them being declared competent and passing. The certification exam for the operator level was administered in conjunction with LSP PPSDM Migas. Furthermore, an additional examination was administered on August 27-28, 2024. Thirty-one individuals were declared competent and successfully completed the certification, out of a total of fifty.

Keywords: Safety, Training, Certification, Bojonegoro

INTRODUCTION

Activities in the oil and gas business, including production, processing, and transport, pose significant hazards, including the risk of workplace accidents and fires. Therefore, capable human resources are essential for oil and gas administration. Thorough preparation and planning is essential to develop and realise capable human resources, especially with training systems and support mechanisms. Competent human resources with standardized qualifications and abilities will be able to manage oil and gas assets well, and the country will survive in the face of competition

and free trade. In response to this, all countries, including Indonesia, are actively seeking to improve the quality of their human resources through standardisation and competency certification across all industries(Jayakumar et al., 2023; Rodolfa et al., 2022). This requires collaboration between business/industry, government, and both formal and informal training institutions to establish national competency standards, particularly in the Oil and Gas Industry Sector.

Based on Law No. 22 of 2001 on oil and gas, specifically articles 39 and 40, oil and gas companies are mandated to ensure standards and quality. In addition, Law No. 13 of 2003 on labour and Government Regulation No. 23 of 2004 on the National Professional Certification Agency (BNSP) mandate the implementation of work competency certification by SKKNI, as stipulated in Minister of Energy and Mineral Resources Regulation No. 20 of 2008. Presidential Regulation No. 8 of 2012 establishes the Indonesian National Qualifications Framework as a competency qualification leveling system that can juxtapose, equalise, and integrate between the fields of education and the fields of vocational training and work experience in order to provide recognition of work competencies in accordance with the fields of work at home and abroad (O'Hara et al., 2022).

One of the mandatory competencies in the oil and gas industry is the Certificate of Competence in Occupational Safety provided by BNSP (National Professional Certification Agency)(Rezazga et al., 2024; Venugopal et al., 2021). Occupational Safety and Health are very important for an organization. All oil and gas sector companies are required to implement Occupational Safety and Health (OHS) regulations to ensure worker safety (Jayakrishnan et al., 2021). Oil and gas sector safety protocols include standardisation of equipment, human resources, general rules for installations, and operational processes to ensure the reliable functioning of oil and gas institutions/companies while maintaining their safety. Safety certification serves as significant evidence of documented recognition of competence and a high level of confidence in one's understanding(Aleem et al., 2023).

Bojonegoro Regency is famously known as Bumi Energi as a number of oil and gas fields have been built and are in operation such as Sukowati oil and gas field managed by Joint Operating Body Pertamina- Petrochina East Java (JOB PPEJ), Banyu Urip Cepu Block managed by Exxon Mobil Cepu Limited (EMCL), and Jambaran Tiung Biru (JTB) by Pertamina Exploration and Production (EP) Asset 4 Field Cepu. Bojonegoro Regency is one of Indonesia's largest oil and gas-producing cities, with 210,000 barrels daily from the Banyu Urip Block oil field. The oil and gas reserves account for about 20% of national oil and gas production. In addition, Bojonegoro also has the Jambaran Tiung Biru (JTB) Project, which is one of the National Strategic Projects (PSN)(Alade et al., 2022; Kuokštytė, 2024). It is expected to become one of the largest gas producers in East Java. The challenge for Bojonegoro Regency is to prepare infrastructure, human resources, and ease of licensing to invest in the downstream oil and gas industry.

The momentum of K3 training and certification in the oil and gas sector is very appropriate and strategic. All groups can be encouraged to participate in work safety in Indonesia (Brkić & Stajić, 2021). Therefore, the researchers would like to organize OHS training and certification in the oil and gas sector for the people of Bojonegoro and its surroundings. This training and certification is to complement the knowledge and expertise of the community in the field of oil and gas OHS.

Training and certification prevent work accidents, foster an OHS culture, and increase a sense of occupational safety and health (OHS). This training and certification are helpful in enriching experience and knowledge about HSE phenomena, especially for those close to our environment. It also instils in them the importance of HSE characteristics to make them successful. Safety culture is an important issue because an organization's safety culture is the basis for developing future safety management strategies. Awareness is a function of safety culture and plays an important role in achieving all safety activities(Shiga et al., 2022; Wang et al., 2024).

METHOD

The process of implementing this OSH training and certification involves the identification of training requirements, the preparation of a curriculum, and the coordination with relevant parties, specifically the Bojonegoro Regency Government. Preparation of socialization from participant registration through the selection of participants based on their basic requirements or qualifications. Theory sessions and practical sessions comprise training implementation. The theoretical session involves the delivery of material in the classroom, while the practical session involves the simulation of tool use in the fire and safety laboratory. In collaboration with LSP PPSDM Migas, the STTK certification exam for operator level was administered. The National Professional Certification Agency (BNSP) issues certificates(Karp & Ochs, 2023).

For the fourth day, they implemented the OSH Oil and Gas workshop at the operator level for 75 individuals from Cepu and the adjacent Bojonegeoro region based on SP3 No. 015/SP3/Pengabdian/ DIPA2024/PEM Akamigas(T. I. P. K. Migas, 2017). The occupational safety Oil and Gas workshop will be implemented at the operator level for 75 individuals from Cepu and the adjacent Bojonegeoro region in Cepu. Each batch will last for two days. The lecturers consisted of two lecturers from the Refinery Mechanical Engineering and Oil and Gas Processing Engineering study programs and two student representatives from the Refinery Mechanical Engineering study program at Polytechnic Energy and Mineral Akamigas (PEM Akamigas). Four lecturers delivered the workshop materials from Polytechnic Energy and Mineral Akamigas Lecturers. The materials consisted of two days of theory and one day of practice. The workshop material is derived from the Decree of the Minister of Manpower No. 118 of 2024 concerning the Determination of Indonesian National Work Competency Standards in the Mining and Quarrying Category of the Main Group of Mining Support Services Activities in the Field of Occupational Safety and Health in the Oil and Gas Industry and Permen of ESDM No. 05 of 2015 concerning the implementation of the National Work Competency Standards in the Field of Oil and Gas Business Activities (Kementerian, 2024.).

The workshop material contains nine competencies, including (1) OHS Legislation in the Oil and Gas Industry, (2) Applying OHS in the Oil and Gas Industry Workplace, (3) Using Personal Protective Equipment (PPE), (4) Conducting Fire Fighting in the Oil and Gas Industry, (5) Operating Fire Fighting Equipment in the Oil and Gas Industry, (6) Using Self Contain Breathing Apparatus (SCBA), (7) Operating Gas Test Equipment in the Oil and Gas Industry, (8) Operating

Sound Level Meters in the Oil and Gas Industry, and (9) Performing First Aid to Victims of Work Accidents. After completing the training and passing, all 75 individuals from Cepu and the surrounding Bojonegoro in Cepu registered to take the oil and gas safety operator certification exam through the PPSDM Migas portal. Every cohort lasted for two days(D. J. Migas, 2021).

An official certificate will be issued to the residents of Cepu and the surrounding Bojonegoro area who successfully complete the oil and gas safety operator certification exam. This certificate serves as confirmation of the participants' proficiency in fulfilling their responsibilities in the oil and gas industry by adhering to Occupational Safety and Health standards. Participants may advance to the subsequent stages of their professional development. The Oil and Gas Safety Operator Certification is effective for three years and can be renewed by retaking the exam. The entire process comprises well-coordinated stages that guarantee all participant' training and certification efficiency and effectiveness.

RESULT AND DISCUSSION

1. Place and Time of Implementation

Implementation of community service activities for training and certification of occupational safety Oil and Gas operator level for the people of Bojonegoro and surrounding areas in the 1st-floor hall of the old rectorate room of Akamigas Energy and Mineral Polytechnic (PEM Akamigas). The implementation of training and certification of Oil and Gas OHS at the operator level is in collaboration with the LSP of the Oil and Gas Human Resource Development Centre (PPSDM Migas) for the special technical personnel certification exam (STTK). The training was conducted twice, batch 1 on 6 to 7 August 2024 with 25 participants and batch 2 on 25 to 26 August 2024 with 50 participants. The implementation of the special technical personnel certification exam (STTK) for batch 1 was on 8 to 9 August 2024, and batch 2 was on 27 to 28 August 2024. The STTK exam is based on the Permen of ESDM No. 05 of 2015 concerning implementing the National Work Competency Standard in the Oil and Gas business activities(Peraturan Menteri, 2015).

2. Purpose of Implementation

The objectives in conducting community service activities in Dumai City include:

- General Purpose
  We are providing understanding to the entire community, teachers, and employees, as well as school security regarding knowledge and expertise within the field of Oil and Gas OSH properly and correctly
- Special Purpose
  1) A means of increasing knowledge, and awareness among high school students in the city of Dumai;
  2) Being an agent of change, spreading a sense of security at home, school and community and pursuing personal benefits;
  3) Educate the school community on the risks, hazards, and diseases that may arise from industrial activities;

4) Instilling awareness of OHS cultural behaviour to prevent workplace accidents;
5) Improve knowledge and skills in accident prevention, and mitigation at school for all teachers and employees;
6) Know the conditions and measures for accident prevention in their respective work areas;
7) Able to secure accident prevention sites.

3. Objectives

This workshop focuses on Bojonegoro's population and the surrounding areas in the cities of Cepu and Bojonegoro. The workshop will be attended by 75 participants, with facilitators who are PEM Akamigas Lecturers and special technical personnel certification (STTK) in collaboration with LSP Migas Human Resource Development Centre (PPSDM Migas).

4. Discussion

The operator-level Oil and Gas OSH workshop for the residents of Bojonegoro and the surrounding areas was implemented in two batches: batch 1 on August 6–7, 2024, with 25 participants, and batch 2 on August 25–26, 2024, with 50 participants, as illustrated in Figure 1. In compliance with Permen ESDM No. 05 of 2015 and the Decree of the Minister of Manpower SKKNI No. 118 of 2024, this training activity described the nine competencies of Oil and Gas OSH at the operator level. Additionally, this training activity offers the chance to engage in discussions and inquire with community members and resource persons. The number of participants who posed questions and the enthusiasm of the results of participant discussions indicate that the people of Bojonegoro and surrounding areas were very serious about participating in the occupational safety Oil and Gas workshop at the operator level. They were eager to execute the planned program.

Figure 1 Implementation of Oil and Gas OSH Workshop at Operator Level in Cepu

Figure 2 Seriousness of Oil and Gas OHS Workshop Participants at Operator Level

Figure 3 Participant in Using Sound Level Meters

The workshop used a lecture approach with a whiteboard and markers to present the material visually and facilitate discussion, while the LCD Projector was used for visual presentation and more interactive presentation of material. Practice with props like sound level meters in Figure 3, multi-gas detectors in self-contained breathing apparatus (SCBA), as shown in Figure 5. The practical equipment is available in PEM Akamigas' fire and safety laboratory.

Figure 4 Participation in Using Multi-Gas Detectors

Figure 5 Participation in Using Self-Contained Breathing Apparatus (SCBA)

5. Certification Results

The STTK certification exam was administered to the residents of Bojonegoro and the surrounding areas in two batches: batch 1, which consisted of 25 participants on August 6-7, 2024, and batch 2, which consisted of 50 participants on August 25-26, 2024, at LSP Pusat Pengembangan Sumber Daya Manusia Migas (PPSDM Migas) with four assessors. Figure 6 illustrates the ambiance of the unique engineering certification exam (STTK). The Special Engineering Certification Exam (STTK) results can be accessed at https://portal.ppsdmmigas.id/sertifikasi/pengumuman. Batch 1, which consisted of 25 participants, was declared competent by 23 participants, while Batch 2, which consisted of 50

participants, was declared competent by 31. A certificate of competence in Oil and Gas Occupational Safety and Health will be awarded to participants who complete the course.

Figure 6 Atmosphere of Specialized Engineering Personnel Certification Examination

6. Monitoring and Evaluation

It is hoped that high school students who have graduated and received certification can become agents of change and pioneers of OSH in their work environment—monitoring the implementation of oil and gas OSH knowledge in each participant's work environment. Conduct periodic evaluations to ensure that the understanding and application of Oil and Gas OSH remains optimal. By implementing this solution, students are expected to become reliable human resources, understand potential risks, and be ready to face challenges within the petroleum and natural gas sectors. That way, OSH can be maintained, and oil and gas companies can operate reliably and safely for all workers.

Contribute to creating a strong safety culture and collective awareness of OSH aspects in the petroleum and natural gas sector. It is hoped that through this series of activities, the service results can positively impact participants, the work environment, and the petroleum and natural gas sectors. Improved safety, health, and work quality will be a long-term investment for companies and the Indonesian nation facing the dynamics of petroleum and natural gas. The residents of Bojonegoro and the surrounding areas are more aware of the importance of Oil and Gas OSH in maintaining safety and health in the work environment. Increased understanding of equipment standards, general guidelines for oil and gas installations, and work procedures required for reliable operations.

CONCLUSION

As a result of an in-depth analysis of the challenges and needs in the petroleum and natural gas sector, as well as the implementation of the Oil and Gas Occupational Safety and Health (OSH) training program in the residents of Bojonegoro and the surrounding areas, several points of conclusion include:

- **Safety and Health Challenges within the Petroleum and natural gas sector**
  The petroleum and natural gas sector faces significant potential hazards, especially in the production, processing, and transport processes, which indicate a high risk of occupational accidents and fires.
- **The Importance of Qualified and Competent Human Resources**
  The success of overcoming risks within the petroleum and natural gas sector depends on the qualifications and competence of the Human Resources (HR) involved. Systematic preparation and design through training and support systems are key to producing reliable human resources.

- **National Standards and the Era of Global Competition**
  Competency standardization and certification play a key role in increasing the quality of human resources within the petroleum and natural gas sectors. This is not only to ensure work safety and security but also to meet national standards and compete in the era of free trade.
- **The Vital Role of OHS Certification from BNSP**
  Occupational Safety and Health (OSH) certification issued by the National Professional Certification Agency (BNSP) is a written proof of competence and a crucial step in improving an individual's understanding of OSH.
- **Contribution of OHS Training to Safety and Wellbeing**.
  Oil and Gas OHS training, both in theory and practice, is implemented as a crucial step to protect company assets, prevent accidents, and improve employee welfare. Some suggestions for further development and improvement include:
- **Strengthening Stakeholder Cooperation**
  Strengthen cooperation between government, business/industry, and formal and informal training institutions to develop national standards of excellence, particularly within the petroleum and natural gas sector.
- **Expansion of Training Coverage**
  Expand the scope of oil and gas OHS training to include more students and related industry sectors to increase the number of competent human resources in this field.
- **Continuous Monitoring and Evaluation**
  Improve the monitoring and evaluation system for training and certification examinations to ensure the quality and effectiveness of the program on an ongoing basis.
- **Integration of OSH Materials in the Curriculum**
  Integrate Oil and Gas Occupational Safety and Health material into the education curriculum to provide a deeper understanding from an early age.
- **OSH Awareness Advocacy**
  Conduct advocacy programs and OHS awareness campaigns in the community and industry to increase understanding of the importance of OHS in oil and gas.

Implementing these suggestions is hoped to increase awareness, improve the quality of human resources, and improve work safety within the petroleum and natural gas sectors. This will positively contribute to the industry's sustainability and the welfare of the Indonesian people.

Acknowledgments
We want to thank the Bojonegoro City Government, the Principal and Teachers of SMK Migas, and SMK Kasiman Bojonegeoro for their exceptional support throughout the activities, from the planning phase to the evaluation phase.

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