

SEAWATCH INDONESIA INFORMATION SYSTEM FOR OIL AND GAS

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Abstract

Oil and Gas Industries in Pertamina activities is consist of up stream activities and down stream activities. Negative impact in up stream activities are wastes from drilling mud, cutting drill, oil spill and expired chemicals. Negative impact in down stream activities are wastes from oily sludge, spent catalyst, spent activated carbon, spent mercury, oil spill and expired chemical.

Seawatch Indonesia Programs as the cooperation program between BPPT and Oceanor - Norway in monitoring on Marine Environmental Pollution is applicated in Pertamina to detect if oil spill occur, monitoring water quality in effluent water refinery, environmental data in offshore installation, environmental data in oil drift modelling.

This paper studied some aspects related Pertamina activities, protection environment and application Seawatch Indonesia Programs in Pertamina activities.

I. INTRODUCTION

As we are entering the Indonesia Long Term Development Program Stage II (PJPT II), and specifically the 6th Indonesian Five Year Development Program (REPELITA VI - take off stage), it is imperative that the oil, gas, and geothermal industry strengthen its role as the primary supplier of energy as well as insure its ability to continue as the principal foreign exchange earner.

Of particular concern in today's world is the need to maintain and improve the environment and protect the health and safety of the entire planet and the people who live on it. This concern was manifested in the results of the Earth Summit Conference in Rio De Janeiro, Brazil in June 1992.

Being aware that the oil, gas and geothermal industries are at some risk and could, without proper stewardship, cause degradation to the environment, or cause harm to the health and safety of employees or the surrounding community, it is imperative that we pursue all available preventive and corrective avenues of operation.

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Therefore, the oil, gas, and geothermal industries should integrate environmental, health and safety considerations into its entire scope of normal business activities, including design, engineering, construction, producing, operation, transportation, and distribution. We must also be concerned with the ultimate usage and disposal of our products.

II. OIL AND GAS INDUSTRY ACTIVITIES AND IMPACT FOR ENVIRONMENT

The negative impact potentials of oil, gas and geothermal operations may be a logical consequence of the following :

1. *Oil, gas and geothermal operations*

Oil, gas, and geothermal resources or reserves are located generally in mountainous, remote forest and swamp areas, far from populated areas. Besides these onshore areas, the locations of oil, gas and geothermal resources or reserve are also to be found offshore and in deep sea areas.

Exploration activities in those areas are operations of drilling into subsurface formations to obtain accurate geological data. Environmental problems, which may arise from these operations are overlapping of interests, environment affecting technological applications and blow-out risks.

2. *Oil, gas and geothermal exploration and production operations*

Drilling operations, carried out by stages in onshore, offshore including deep sea areas, produce associated fluid wastes with possible high salt or other concrete waste content from the subsurface or from the chemicals used in these operations.

Other impacts may arise because of collision of interests with residential, agricultural estate-farming areas, nature reserves (aquatic and wild life reserve areas onshore, offshore as well as in deep sea areas).

3. *Oil and gas refining, processing and petrochemical operations.*

Oil and gas refining, processing and petrochemical operations are generally to be found on land, alongside a river or at the seashore.

The impact potential is in the form of :

- Noise from oil refinery, gas and petrochemical plants.
- Liquid and concrete waste, which may contain chemical substances like phenol, sulfate, (hydrocarbon) oil and heavy metal substances.
- Change of temperature, pH, conductivity, smell, color.
- Emission of air caused by effluent gas and the associated temperature, SO₂, CO, H₂S, NO₂, noise, concrete particles, light hydrocarbons.

4. *Supply, storage, distribution and transportation operations*

The impacts potential is generally due to the clearing of land and purchase of land required for the construction of installations, land/up-country and sea-fed depots and pipelines.

Other impact potential to the natural environment (eco-system) are wastes in the form of gas and hydrocarbons due to leakage at installation, tanks, pipelines, tank-trucks and spill during cleaning of installations and tanks.

5. *Special oil harbors and sea transportation operations*

Impacts potential of these operations are due to : leakages or spill during loading and off-loading of crude oil and other products, discharge of ship-ballast water, cleaning, running aground and collision of ships and leakages of port installations.

6. *Geothermal operations*

Geothermal operations are generally in mountainous areas, in general close to active volcanoes and in forest areas.

The impact potential are caused by :

- Noise
- Emission of H₂S gas

III. ENVIRONMENTAL PROTECTION IN PERTAMINA

As stated before, the historical milestone as the start of environmental protection management practices within Pertamina was June 7, 1973 with the establishment of the BKLL. One year later the instruction booklet "Peraturan Umum Pencegahan Pencemaran" (*General Rules on Pollution Prevention*) was launched in March, 1974 by Decree of the Senior Vice President of Corporate Affairs. Several months afterwards Pertamina, exercising management control over not less than 30 foreign oil companies operating in Indonesia, consolidated the environmental protection activities in the form of the POD (*Pola Operasi Darurat - Integrated Contingency Plan*) in anticipation of eventual emergency situations.

Within Pertamina's own sphere structurally in any Work Area, Unit, Field, Terminal and Depot, in the upstream as well as the downstream operations, an Environmental Protection organization has been established integrated with the fire & safety organization.

As a more corporate managerial improvement of the organization, in 1987 the PPLHP (*Pusat Pengendalian Lingkungan Hidup Pertamina - Pertamina Living Environment Control Center*) was established reporting directly to the Senior Vice President of Corporate Affairs. A few year later in line with the corporate requirements and based on Presidential Decree no.11 of 1990 a corporate organizational unit on environmental protection and occupational health, reporting directly to the President Director, was established with the name of : Pusat Lindungan

Lingkungan dan Pembinaan Keselamatan Kerja (PLPK)”. (*Environmental Protection and Occupational Safety Development Center*).

The tasks and duties of PLPK encompass not only environmental protection but are more extensive to include coordination and development of occupational health and safety at the central level as well as at the levels of the Area/Regions, Units and Operational Fields.

Due to the ever expanding tasks and responsibilities of Pertamina and the necessity of being increasingly prepared to face future opportunities and challenges and in particular to maximally reduce the negative impacts of oil, gas and geothermal operations, in February 1992 the Pertamina Board of Directors announced Pertamina’s commitment and policy regarding Environmental Protection and Occupational Safety.

The policy directives concerned are as follows :

1. *Implementation of Environmental protection*

Pertamina basically highly supports the principles of sustained and environment oriented national development.

Pertamina actively stimulates environmental protection by damping down impacts on the environment and reducing the amount of impacts arising from any aspects of the operations.

New installations will be equipped with proper control systems in obedience of the government rules concerned and in meeting the standards of similar industries.

2. *Creation of a safe work environment*

Pertamina is determined to create work conditions, which are free from lost time accidents and fire hazards. All employees, suppliers and contractors engaged in oil, gas and geothermal operational areas, installation and fields are within the framework of efforts to have them follow occupational safety training.

3. *Maintenance of good relationship with the neighboring community*

It is a Pertamina policy to constantly maintain a healthy and harmonious relationship between the industry and the neighboring community. We should be alert to matters concerning impacts caused by oil, gas and geothermal operations and if required seek for the best solution.

IV. CONCLUSION

Some possible Seawatch Indonesia Program application in Pertamina to detect if oil spill occur, monitoring water quality in effluent water refinery, environmental data in offshore installation, environmental data in oil drift modeling.

1. *Offshore facilities*

Production sharing contract between Pertamina and other company right now more than 414 platforms installation and possible to be developed.

2. ***Oil Refineries***

Some oil refineries such as P. Brandan, Dumai, Cilacap, Balikpapan, Balongan always monitoring effluent waste water treatment (the parameter are : pH, COD, BOD, Oil, Sulfide, Ammonia, Phenol, Temperature). Parameter is possible changes from seawatch data to convert Pertamina data required.

3. ***Distribution & Transportation Activities***

Seawatch Indonesia program is possible install in route oil tanker in Pertamina activities to detect if oil spill occur.

4. ***Oil Spill Modeling***

Pertamina have oil spill modeling in Selat Lombok, Bali and possible to be developed to the other area such as Sumatra, Jawa, Kalimantan, Makasar and Sorong.