Kajian Analisis Risiko pada Fasilitas Penerimaan Darat dengan Metode Kuantitatif (Quantitative Risk Assessment) = Risk Analysis Study at Onshore Receiving Facilities with Quantitative Methods (Quantitative Risk Assessment)

Ali Zaenal Abidin, author

Abstrak

Industri minyak dan gas merupakan salah satu industri dengan tingkat risiko tinggi bagi pekerja dan masyarakat sekitar. Hal ini disebabkan oleh sifat dari produk yang dihasilkan, yaitu hidrokarbon (gas dan cair), termasuk ke dalam kategori zat yang mudah terbakar. Salah satu upaya untuk memahami tingkat risiko bekerja di fasilitas migas adalah dengan menggunakan metode kuantitatif atau yang sering disebut dengan QRA (Quantitative Risk Assessment). QRA yang dilakukan di ORF (Onshore Receiving Facility) bertujuan untuk memahami perubahan risiko terhadap pekerja di ORF dikarenakan adanya modifikasi dan penambahan sistem perpipaan Lean Gas untuk keperluan komersial. Selain itu, modifikasi sistem perpipaan juga dilakukan di KM 21.65. Hasil studi QRA untuk ORF dan KM 21.65 menunjukkan bahwa paparan risiko tertinggi berasal dari proses hidrokarbon untuk kelompok pekerja Field Operator, Assistance Operator, dan Turnaround Staff dengan IRPA berada di angka 4.24E-05/tahun dikarenakan tingkat kehadiran yang tinggi di area proses, dengan kontribusi risiko mencapai 54%. Selain itu, area ORF dan KM 21.65 telah memenuhi kriteria LSIR dengan tidak melebihi 1.00E-05/tahun dan 1.00E-06/tahun untuk area di luar pagar batas ORF dan KM 21.65. Societal Risk di ORF dan KM 21.65 berada di area ALARP dan memenuhi kriteria perusahaan. Hasil studi ini juga telah melalui proses validasi, baik untuk data input dan hasil perhitungan, yang dilakukan oleh gabungan tim dari Operations, Project Development – Facilitites Engineering, Maintenance, Asset Integrity dan HSEQ – Pocess Safety. Sebagai tambahan, studi ini telah dilakukan dengan mempertimbangkan Aspek K3LL, Kode Etik Keinsinyuran dan Profesionalisme.
.....The oil and gas industry is an industry with a high level of risk for workers and the surrounding community. This is due to the nature of the products produced, namely hydrocarbons (gas and liquid), which are included in the category of flammable substances. One effort to understand the level of risk of working in oil and gas facilities is to use quantitative methods or what is often called QRA (Quantitative Risk Assessment). The QRA carried out at ORF (Onshore Receiving Facility) aims to understand changes in risk to workers at ORF due to modifications and additions to the Lean Gas piping system for commercial purposes. Apart from that, modifications to the piping system were also carried out at KM 21.65. The results of the QRA study for ORF and KM 21.65 show that the highest risk exposure comes from the hydrocarbon process for the Field Operator, Assistance Operator and Turnaround Staff worker groups with IRPA at 4.24E-05/year due to the high level of presence in the process area, with risk contribution reached 54%. In addition, the ORF and KM 21.65 areas have met the LSIR criteria by not exceeding 1.00E-05/year and 1.00E-06/year for areas outside the ORF and KM 21.65 boundary fences. Societal Risk at ORF and KM 21.65 is in the ALARP area and meets the company's criteria. The findings of this study have undergone a validation process for both input data and calculation results, conducted by a collaborative team from Operations, Project Development – Facilities Engineering, Maintenance, Asset Integrity, and HSEQ – Process Safety. Additionally, this study has been conducted with consideration for HSE (Health, Safety,

Environment, and Loss Prevention) aspects, Engineering Code of Ethics, and Professionalism.