

Quantitative Risk Assessment for a New Liquid Natural Gas Terminal at Lázaro Cárdenas Gastream Mexico



Gastream Mexico, a subsidiary of the Spanish company Repsol YPF, was planning a new liquid natural gas (LNG) import terminal at Lázaro Cárdenas in the state of Michoacán, on the west coast of Mexico.

Following a request from the appointed base engineers, Sener Ingeniería y Sistemas, Entec carried out a review of the proposed terminal design. This included an assessment of the suitability of the separation between the parts and equipment of the site, as well as consideration of the adequacy of the site with regard to risk to surrounding areas, including the residents of Lázaro Cárdenas, the nearest houses, existing port facilities and neighbouring industry.

The results were presented as both individual risks at surrounding facilities (nearest industries, key points within the ports, local residential and recreational areas) and average societal or group risk.

The societal risk examined the number of people outside the terminal or LNG carrier who could be affected by a series of major accident scenarios and multiplied this number by the predicted frequency of the incident (allowing for the likelihood of the meteorological conditions, wind direction and ignition). Summing these results enabled any risk to life to be quantified.

The assessment of tolerability of the risks was made against international criteria to supplement the NOM-013-SECRE-2003 regulations, the Mexican standard for LNG facilities.

Entec also identified the scenarios contributing most to the risk and so highlighted the priorities for any risk reduction measures. The possibility of interactions with other industries which might cause an escalation in the consequences of a major accident was also qualitatively assessed.

Outline quantitative risk assessment against international criteria to show compatibility with existing industrial and urban developments

