
Services Performed

IRC completed a reliability, availability, and maintainability (RAM) analysis for the Compass Port liquefied natural gas (LNG) receiving terminal in the Gulf of Mexico. The analysis covered the equipment located on the platform, the offloading equipment, and shipping within a 96-hour journey of the platform. Sensitivity cases were run to determine the impact of alternative LNG tank sizes, smaller LNG carriers, and higher production rates.

Objectives

- Quantify the production availability of the facilities relative to the required average send-out rate
- Identify the critical equipment leading to loss of send out
- Analyze the impact of delays due to mechanical, operational, and weather reasons
- Assess the expected delays to shipping and associated demurrage costs to the terminal including ship queuing

Project Description

The Compass Port development is an LNG import and regasification facility off the coast of Alabama (in the southern USA). The facility offloads LNG into storage tanks before regasification and send-out to the gas distribution network. The storage volume currently is 300,000 cubic meters (m³) and the LNG tankers have a gross capacity of 253,000 m³ (net 243,000 m³). Regulations prohibit the entry of tankers into the port before the storage tanks have sufficient capacity to receive the full cargo (allowing for any send-out during offloading). IRC extended the existing RAM model to include LNG shipping and offloading.

Sensitivity cases were analyzed to determine the impact of configuration and assumption changes on production, availability and demurrage. The sensitivity case with the largest negative impact on plant availability was removing the facility's ability to boost. Without the ability to boost to clear space in the tanks, every offloading delay was compounded until a queue developed. The sensitivity case with the largest positive impact on plant availability was the addition of a spot cargo after a tropical storm, which improves the availability of the terminal by 1.4 percent.



Key Benefits to Client

- Prediction that an additional 176 billion cubic feet (bcf) per year could be produced if the send-out rate was increased from 1.0 to 1.5 bcf per day (bcfd) while increasing the ability to boost from 1.2 to 1.75 bcfd
- Prediction that removing the ability to boost to 1.2 bcfd in the event of high tank levels or production outages reduced the facility availability and, therefore, production by 5.1 percent
- Removing the facility's ability to boost caused the largest negative impact on demurrage costs (increased four to five times); increasing the production rate to 1.5 bcfd without increasing boosting also augmented demurrage costs due to the increased number of shipments
- Reducing the size of the tanker fleet to reduce CAPEX and to optimize return on investment



Protecting life and improving production by shaping the design and operation of hazardous facilities

IRC Risk and Safety, LLC, 10497 Town & Country Way, Suite 800, Houston, Texas, 77024, USA
Telephone: 713 647 7929, Facsimile: 713 467 9757, Email: irc@ircrisk.com, Web: www.irc-americas.com