



## **FREEPORT LNG PROVIDES SUMMARY OF ROOT CAUSE FAILURE ANALYSIS REPORT ON JUNE 8 INCIDENT**

**Houston, TX, November 15, 2022** – Freeport LNG Development, L.P. (Freeport LNG) is today providing the results of an independent, third-party root cause failure analysis (RCFA) report on the June 8, 2022 incident that occurred at its liquefaction facility. The RCFA report was commissioned by Freeport LNG and independently conducted by a highly qualified incident investigation company, IFO Group, in order to identify the causes underlying the June 8<sup>th</sup> incident. Over the course of almost five months, IFO Group investigated the incident, collected and analyzed physical specimens from the incident, interviewed witnesses, reviewed process and design data, and ultimately developed the RCFA report, identifying specific causes that led or contributed to the June 8<sup>th</sup> incident.

The safety and security of our workforce and surrounding community, and environmental stewardship are Freeport LNG's top priorities. Freeport LNG believes that transparency around the causes of this incident, and the remedial actions it is taking to ensure an incident of this nature never occurs again, is critical to maintaining public trust.

With that in mind, the results of the root cause failure analysis prepared by IFO Group are as follows:

### **Direct Cause**

- Isolation of a piping segment containing cryogenic liquefied natural gas (LNG) without proper overpressure protection, which LNG then warmed and expanded due to exposure to ambient conditions, resulting in a boiling liquid, expanding vapor explosion, or BLEVE, and the rupturing of the piping segment.

### **Root Causes**

- Pressure safety valve (PSV) testing procedure and car seal program deficiencies;
- Failure to repurpose temperature indicator alarms used for cool down operations during commissioning on LNG piping that could warn operators of increasing temperatures in LNG piping during operations; and
- Operating procedures that allowed operator discretion to close valves that could allow LNG to be isolated in a piping segment.

### **Contributing Causes**

- Failure of 2016 Hazard and Operability study to evaluate the potential for a blocked-in LNG piping segment with inadequate overpressure protection;
- Failure to utilize management of change process for revisions to tank management operating procedures;



- Failure to accurately and timely diagnose sudden pipe movement as being due to piping stresses from the overpressuring of an adjacent piping segment; and
- Operator fatigue as a result of significant overtime needs.

IFO Group proposed recommendations to resolve each of the above root and contributing causes, and Freeport LNG is implementing each of those recommendations. Specifically, Freeport LNG has made significant enhancements to its PSV testing processes and car seal program, implemented procedural changes to avoid operating scenarios that could allow blocked-in LNG in piping segments, and revised its control system logic to alert control room operators to valve positions or temperature readings that indicate possible isolation of LNG in any piping segments. Freeport LNG is also updating its training program to address causes of the incident, as well as identification and diagnosis of abnormal operating conditions in the facility.

To supplement IFO's report, Freeport LNG also engaged another independent consultant to perform a full review of its LNG storage and transfer operating procedures, its control systems maintenance and inspection procedures, and its personnel qualifications and training programs. As a result of this independent, multi-month review, Freeport LNG is implementing various recommended improvements in these areas. Additionally, Freeport LNG has undertaken a significant hiring effort to increase LNG plant employee staffing by over 30%, in order to reduce the amount of overtime, as well as create new functional departments within the organization that are focused on improved training, operational excellence, quality assurance, and improved business performance. Freeport LNG is also executing an extensive company-wide process safety management initiative to apply and reinforce process safety concepts into daily work processes across the organization.

Freeport LNG is committed to emerging from the June 8<sup>th</sup> incident with an unmatched focus on safety, operational integrity and operational excellence.

## **ABOUT FREEPORT LNG**

Freeport LNG is an LNG export company headquartered in Houston, Texas. The company's three train, 15 MTPA liquefaction facility is the seventh largest in the world and second largest in the U.S. Freeport LNG's liquefaction facility is the largest all-electric drive motor plant of its kind in the world, making it the most environmentally sustainable site of its kind. The facility's electric drive motors reduce carbon emissions by over 90% relative to gas turbine-driven liquefaction facilities. Freeport plans to expand by adding a fourth liquefaction train, which has received all regulatory approvals for construction. Freeport was formed in 2002 to develop, own and operate an LNG terminal on Quintana Island, near Freeport, Texas. The terminal started LNG import operations in June 2008 and began LNG export operations in 2019. Further information can be found on Freeport's website at [www.freeportlng.com](http://www.freeportlng.com).

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