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QUESTION / ENGAGEMENT

Dépôt du rapport Skikda (California Energy Commission)

RÉPONSE

La Commission californienne de l'énergie a rédigé une note de synthèse sur l'accident de Skikda du 19 janvier 2004. Cette note se trouve sur le site internet de la Commission à l'adresse suivante : http://www.energy.ca.gov/lng/news_items/2004-01_algeria_factsheet.html.

Le document est joint ci-après.

Algerian LNG Plant Explosion

Fact Sheet prepared by California Energy Commission Staff

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Overview

On January 19, 2004, in Skikda, Algeria, a steam boiler that was part of an LNG production plant exploded, triggering a second, more massive vapor-cloud explosion and fire that took eight hours to extinguish. The explosions and fire destroyed a portion of the LNG plant and caused death, injury, and material damage outside the plant's boundaries.

Sonatrach, the government-owned oil company, owns the Skikda LNG liquefaction plant. The plant had six LNG-producing units called "trains," LNG storage tanks, and administration and operations buildings. The plant uses steam boilers to make high-pressure steam for its steam turbines. These turbines supply power to the plant's refrigerant compressors that are used to liquefy the natural gas.

The explosion of the gas vapor cloud occurred between two sections of one production train: 1) where natural gas liquids (propane and ethane) are separated from methane, and 2) where methane is liquefied. Fire destroyed three LNG trains, but did not damage any LNG storage tanks or the remaining three trains.

Analysis of Causes

The explosion was most likely accidental, not sabotage. A board of inquiry was set up by the Minister of Energy and Mines (and Sonatrach president), Chakib Kheli, to determine the causes and to place responsibility. A report by the board of inquiry is expected by late April or late May. CAAT, the plant's insurer, also established an emergency committee with Sonatrach and a team of international experts to inspect the damage and follow the situation.

According to a presentation given at an LNG conference in Qatar on March 21, 2004 by Bachir Achour and Ali Hached of Sonatrach, a control-room operator noticed rapidly rising pressure within a steam boiler and attempted to correct the situation by reducing the amount of fuel flowing into the boiler. Despite his effort, the boiler's safety valve activated.

Another operator near an adjacent train reported that a gas vapor cloud was forming near that boiler. According to Sonatrach, individuals investigating the causes of the explosion have not yet determined which equipment or pipe failed and caused the leak or which type of hydrocarbon gas leaked to form the vapor cloud.

The leaking gas was drawn into the boiler by its air-inlet fan. Once inside the boiler's firebox, the gas mixed with the right amount of air and exploded. The boiler explosion was close enough to the gas leak area to ignite the vapor cloud and produce an explosion and fireball. Other factors contributing to the vapor cloud explosion included the absence of wind to disperse the leaking gas, and its ignition in a semi-confined space.

Analysis of Impacts

The destroyed LNG units will cost approximately $800 million to replace. In the meantime, LNG liquefaction plants in Arzew and Bethioua, Algeria will produce more LNG to compensate for the loss of facilities in Skikda. Most of the plant's LNG was exported to France, Italy, Spain, and Greece. LNG deliveries to the U.S. will not be affected.

U.S. newspapers published in cities near proposed LNG receiving terminals are carrying the story, escalating local concerns about LNG hazards and public safety risks and fostering distrust of government and industry officials who attest to LNG's safety.

LNG import terminals revaporize LNG back into natural gas, they do not refrigerate natural gas into a liquid. Import terminals, therefore, do not require high-pressure steam boilers.

The only components common to both LNG liquefaction plants and import terminals are storage tanks and marine facilities supporting LNG carrier loading or unloading (e.g, pumps and piping). An LNG leak could occur at an import terminal, although terminal design, equipment, and operating procedures are in place to prevent such an event from occurring or escalating.

Trains on fire.
Photo credit: Sonatrach

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