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Messages for Manufacturing Personnel

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Reporting and Investigating Near Misses

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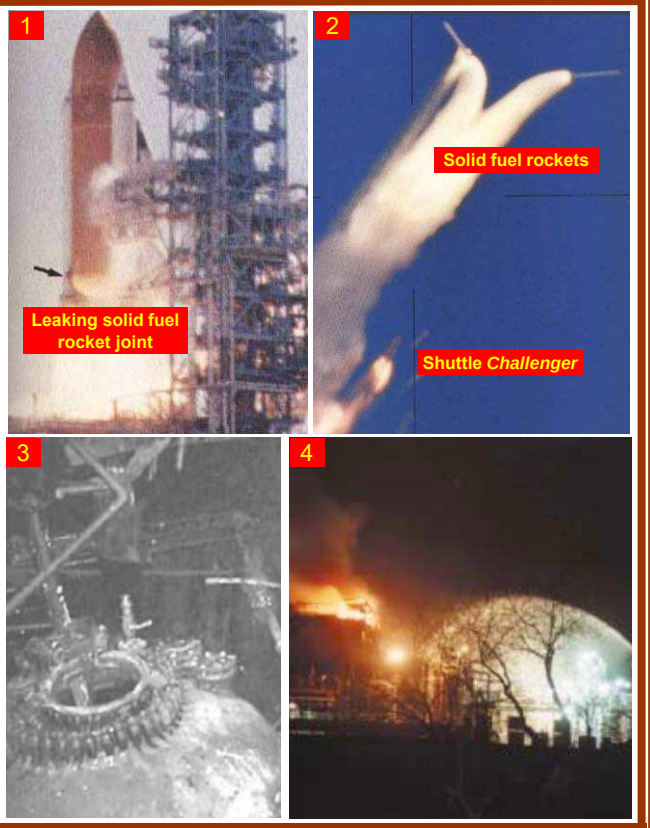
On January 28, 1986 the US Space Shuttle *Challenger* exploded 73 seconds after launch from Cape Canaveral, Florida (1, 2). The *Challenger* was destroyed and all seven crew members were lost. The immediate cause was a leak of hot gas from a joint in the solid fuel rocket boosters. The hot gas impinged on the hydrogen fuel tank causing it to rupture and explode. Adjoining segments of the solid fuel rocket boosters were sealed with primary and secondary "O-rings" in the joints. Both seals on a joint failed because of low temperature on the launch day. There had been several prior launches in which the primary seal had failed, but the secondary seal successfully preserved the solid fuel rocket integrity. These prior failures were near misses that were not deemed serious enough for investigation.

Failure to report and investigate near misses has been a factor in process industry incidents as well. For example, on April 8, 1998 a runaway reaction overpressurized a 2000 gallon batch reactor (3) at a plant in New Jersey. The explosion and fire (4) injured 9 workers, 2 seriously. Operators were unable to control the batch temperature using existing procedures and available cooling. In at least 6 previous batches, operators had been unable to control the temperature below the specified maximum, but the temperature did not get high enough for a runaway reaction. These prior near-miss incidents were not investigated.



Do you know?

- Following a major process safety incident, investigators often find that there were previous warnings and near misses. If these had been reported, investigated, and investigation findings implemented, the major incident could have been prevented.
- We would all prefer to learn from near misses, where there were no injuries and damage was not significant, rather than from serious incidents.
- Near misses cannot be investigated if nobody reports them! Near misses will not be reported if people fail to recognize the incidents as near misses, or if they do not understand their significance.
- Safe process operation requires control of your process. If you are unable to control your process within specified safe operating limits for any critical process safety parameter you must recognize this as a near miss.
- Successful activation of any safety device or backup device should be considered a near miss. What if the safety or backup device had failed?

What can you do?

- Understand your plant's incident and near miss reporting and investigation system. If your plant doesn't have such a system, suggest to your management that they implement a system.
- Report all near misses, including failure to control your process within safe operating limits and operation of safety or backup systems.
- Don't assume that supervisors, managers, and technical staff will observe near miss events by reading shift logs, instrument records, or other process data. A plant generates a lot of data, and these events might be missed. If you recognize a near miss, it is your responsibility to make sure management is aware of it.
- If you are not sure if something is a near miss, report it anyway. Also, think about "how bad could it have been" to help identify a near miss.
- Volunteer to participate in investigations of near misses and incidents in your plant.

Your plant is talking to you through near misses – is anybody listening?

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