

How to Execute a Post-Fire Rebuild

Despite the best plans and procedures, accidental fires and explosions can happen in today's refining, chemical, petrochemical and heavy industrial facilities—resulting in building and equipment damage, and possibly injury to personnel. Heeding important precautions during the rebuilding process can help minimize the opportunities for claims and disputes following a fire or explosion.

Contractors Can Stoke Flames of Claims if Procedures Aren't Followed

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PRESERVING SURROUNDING ASSETS

Due to the sudden nature of a fire or explosion, plants often are unable to follow normal shutdown and decommissioning procedures. Unaffected systems must be preserved or "safed" as soon as possible. Preserving a system typically includes a nitrogen purge to keep the air and moisture out of the system. Safing, on the other hand, includes removing hazardous chemicals or flammable hydrocarbons in addition to a nitrogen purge.

The fire-damaged area should be isolated using blinds, or by crimping pipes, to facilitate safing non-affected systems and to prevent feeding additional flammable liquids and gases to the fire zone.

INCIDENT INVESTIGATION

The Environmental Protection Agency and the U.S. Chemical Safety and Hazardous Investigation Board (also known as the U.S. Chemical Safety Board) require an incident investigation to determine the likely cause of the fire or explosion and make recommendations to limit the potential for a recurrence.



A typical incident investigation includes conducting interviews, gathering and reviewing data and documents, reviewing the plant's safety procedures, reviewing maintenance records and possibly conducting forensic analysis.

An incident investigation could take several months and delay any effective rebuilding efforts, as the fire area must be preserved until the investigation is complete. Therefore, owners and their insurers are advised to include sufficient time in the rebuild schedule and recognize that access to the fire area may be limited until the investigation is complete.

DAMAGE ASSESSMENT

A thorough damage assessment is important, as it will be the starting point for any rebuilding efforts. Various industry guidelines provide methodologies for evaluating whether plant, equipment and piping systems are fit for service or require repair or replacement. API RP-579 contains guidelines for conducting damage assessments and testing, from visual inspections to hardness testing and, in some cases, finite element analysis.

Contractors must recognize that damage may result in areas not directly in the fire zone due to heat moving along pipes and wires. It is often difficult to identify damaged wiring systems with visual inspections; damaged instrument and electrical systems likely will be identified when tested during the commissioning and start-up phases. Furthermore, instrument and electrical systems may be damaged and corroded due to prolonged exposure to firewater. At a minimum, contractors should check critical systems for functionality prior to introducing hazardous feedstock into the unit.

A thorough insulation inspection also is recommended, as insulation can be damaged due to both fire and the deluge of firewater. Wet insulation must be replaced.

COORDINATION WITH THE PLANT'S INSURANCE CARRIER

Include any insurance carriers in the rebuilding discussions and keep them informed of critical decisions to ensure a quick and full recovery of available insurance proceeds. Plant owners should discuss the extent of repairs with the insurance company, recognizing that additional damage (i.e., discovery work) may be identified during the

rebuilding and commissioning phases.

The construction means and methods also should be agreed upon with the insurance carriers. Construction means and methods can directly impact repair costs and the schedule duration, which directly impact the business interruption claim. For example, depending on the extent of damage, it may be less expensive and less time-consuming to "clear cut" the fire damaged area as opposed to surgically demolishing and repairing the damage. Clear cutting involves removing all pipe and steel from a given area and reinstalling new items. A clear cut approach typically leads to higher labor productivity and lower repair costs.

Because sudden fires and explosions do not allow normal planned shutdown procedures to be followed, damage to systems and equipment may result. For example, improperly decommissioned furnaces can result in furnace tubes cracking or becoming fouled with coke deposits. The sudden shutdown following a fire and inability to properly decommission and drain the unit of hazardous chemicals may result in a more complex commissioning following the fire rebuild.

Furthermore, extended shutdowns during repairs may require systems outside the fire zone to be commissioned, as it is not uncommon for systems to rust or deteriorate while sitting idle for an extended period of time.

Code upgrades may be necessary given the age of the existing facility. Owners often are required to upgrade older facilities if industry codes have changed since the facility was originally built.

REPAIRING THE FACILITY

Contractors conducting the repairs should resist the temptation to "upgrade," recognizing that insurance companies will only pay for repairing "like-with-like" when possible. If upgrades are desirable, segregate those costs so the insurance company can easily track and understand them, and ensure they are not included in any insurance claim.

Likewise, it is important to segregate the cost of any maintenance work performed during the shutdown, as the insurance company typically will not pay for normal maintenance work outside of the fire-damaged area. It may be advisable to utilize separate

contractors for upgrade/maintenance and repair work to facilitate cost segregation.

In addition, with respect to business interruption claims, owners are advised that any maintenance/upgrade work should be performed as non-critical path work. As an alternative, owners should clearly demonstrate that any critical path schedule delay associated with upgrades and maintenance work is not included in the business interruption claim.

Typically, a lump sum contract is not advisable from an owner's perspective due to the uncertainty and difficulty of the required repairs. Other contracting strategies to consider include a target price with a fixed fee, a target price with sharing of any under/overruns, or a unit price contract that places the productivity risk with the contractor.

COMMISSIONING THE FACILITY

Commissioning a plant after a fire may be more complex, and take longer, than a planned shutdown. During a normal turnaround, piping and equipment systems are maintained in a controlled environment and protected from debris, moisture and harmful chemicals. However, typically in a fire rebuild, there are multiple breaches in equipment and piping systems, resulting in water, air, hydrocarbons and other chemicals sitting in these systems for an extended period of time.

A sudden and uncontrolled shutdown may result in the need to commission systems both inside and outside the fire zone. Discovery of additional fire-related damage to instruments and electrical systems also should be expected during commissioning, as this is typically when the systems are functionally tested and made ready for startup.

Because fire rebuilds are more complex than a typical construction project, claims and disputes can arise if various issues are not handled properly. Although fires or explosions rarely occur, contractors should be prepared for the additional risks involved when they are called upon to rebuild a facility.

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