

**mishap**

LESSONS LEARNED

MISHAP SUMMARY

Mishap
Billeting Area Fire

Damage
\$2,644,624.55

Injury
Multiple fatalities.

Operation
Enduring Freedom

DISCLAIMER

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Billeting Area Fire

SUMMARY

A unit operating from a forward operating base (FOB) in a remote location of Afghanistan was living in a locally fabricated billeting structure. The structure consisted of 20' shipping containers lined with plywood (tack welded together to form a 20' x 25' room) and eleven relocatable buildings (RLBs) that were subsequently covered with a corrugated steel roof. The overall structure had a north and south exit, but the individual RLBs only had one exit that led directly into a common hallway. The origin of the fire was a locally purchased step-down transformer (220v to 110v) that overheated and caught fire in a common room at the south end of the building. When the fire was discovered it was already too hot to contain and the structure was engulfed in flames and thick black smoke in a matter of minutes. Three Marines perished in the fire and two others received second and third degree burns during the rescue efforts.



CONCLUSIONS

- The step-down power transformer (220v to 110v) was not Underwriters Laboratory (UL) or Conformance Europeene (CE) approved. The current U.S. Forces Afghanistan policy does not authorize locally purchased step-down transformers to be used. U.S. Forces Afghanistan Safety Officer released a safety alert via email in May of 2008.
- The structure was never inspected by a safety/fire/electrical professional. All billeting and work spaces are required to have quarterly safety inspections. There are additional requirements for units to have fire marshals in order to conduct fire safety inspections. Either of these inspections could have identified the issues resident in the billeting structure. The unit had a collateral duty fire marshal assigned, but he was tasked with multiple other duties and did not conduct inspections. Additionally, an installation/area safety manager could not be identified.
- There were no smoke detectors in the structure and there was no standing fire watch. As a result there was no early warning available for the occupants. According to the area safety policy, all billeting and work spaces are required to have wired or battery operated smoke detectors. If units have battery operated smoke detector, they are required to test the smoke detector on a monthly basis. This policy was not provided to the mishap unit and there was no area safety office to ensure that they were aware of this requirement.

- Primary and alternate exit for the overall structure existed, but the individual RLBs where the Marines slept only had one exit point into a common hallway. The lack of an alternate exit for the individual RLBs forced the personnel conducting rescue efforts to hack holes in the sides of the RLBs with tools found in the units' tactical vehicle SL-3. This dramatically increased the response time to those individuals trapped inside.
- There was no evacuation plan for the building. The lack of an emergency evacuation plan for the structure provided for additional confusion during the evacuation of the building and as a result all of the occupants exited the building past the hottest part of the fire.
- The doors on the primary and alternate exit were fitted with cipher locks for security reasons. The use of cipher lock doors on the building added undue confusion to those exiting the structure. The south exit of the building was held open with a bungee strap, but the north exit was left shut due to the immense amount of smoke and heat in the building, which forced all personnel to exit the structure past the origin of the fire and placed all personnel at great risk.
- The unit stored all their "basic load" ammunition items in their billeting areas. The units' basic load consisted of C4, claymore mines, fragmentation grenades, offensive grenades, flash bangs, small arms ammunition, and various types of pyrotechnics. Although not a direct or contributing cause of the fire, the unauthorized storage of ammunition and explosives in the structure impeded the rescue efforts and placed everyone on the scene at risk of secondary fragmentation when the stock pile began to "cook" off from the extreme heat of the fire.
- The all-metal outer shell of the building added to the speed and intensity of the fire and created an effect similar to that of an oven and the heat transferred from space to space ignited all combustible material.

LESSONS LEARNED

- The use of unapproved step-down transformers and other electronic devices is a severe fire hazard.
- Conducting building inspections during the RIP/TOA period will ensure that the incoming unit knows their billeting and work spaces are safe.
- The presence of smoke detectors would have likely prevented the loss of life in this mishap.
- Ensuring that all billeting areas have a primary and alternate exit would provide personnel another avenue to escape and allow rescue personnel better access when searching for personnel in emergency situations.
- Billeting and work spaces that have an emergency evacuation plan established increase likelihood of personnel reaching safety in case of an emergency situation.
- The use of cipher lock doors on billeting areas greatly hinders personnel from escaping in a timely manner during emergency situations.
- Compliance with orders and directives regarding the storage of ammunition in billeting areas will limit secondary fragmentation during fires.
- Consideration should be given to exploring some basic building codes that can be created for overseas/expeditionary construction projects to ensure that USMC personnel have safe billeting and work spaces.
- The incorporation and deployment of Tactical Safety Specialists (TSSs) could have identified all of these hazards and prevented the needless loss of life and equipment.