

## EQUIPMENT CLAIM TIMES

A Newsletter From Equipment Damage Consultants

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### Case Study - HVAC Condenser Lightning Damage?



When an Insured insists that lightning has damaged their air-conditioning system and has the support of their HVAC (Heating, Ventilating and Air-Conditioning) service provider, sometimes a lightning verification report showing no strikes is not enough to close the claim. An on-site assessment to reveal the actual cause of the loss may be necessary. In this newsletter edition, we document one such loss as a case study. Read on to learn more!

#### Background

It was reported by the Insured, a restaurant establishment, that at some point over a two day period their main air-conditioning system rooftop unit was struck by lightning. A tenant of a neighboring property reported witnessing an electrical flash and smoke coming from the unit during a storm. No power outages were reported and no other equipment was damaged within the restaurant. The rooftop unit was an 11 year-old, 5-ton condenser. The HVAC service provider submitted two estimates, one for the replacement of the compressor for approximately \$3,000 and a second for replacement of the condenser cooling coil at a cost of approximately \$1,700 in support of the claim.

### Investigation

Lightning verification analysis was conducted for one of the two potential dates of loss, revealing no lightning strikes within a radius of 5 miles of the Insured property. Weather databases revealed clear and dry conditions for the second potential date of loss, as well as for two days prior and after. Inquires to the local power utility (a large corporation) on electrical disturbances were rebuffed, citing privacy laws (the subject of a future newsletter). With the cause of loss in question, the Insurer authorized an on-site damage assessment of the HVAC system.

The on-site assessment revealed that compressor did indeed have burnt wiring at the electrical connector, indicating either surge damage or an overheating event. A closer examination of the burnt connector showed that the wiring was intact but the wiring insulation and connector plastics were melted. A significant amount of an oily substance was also evident around the connector and on other surfaces of the compressor. An examination of the rest of the condenser again showed an oily substance on many surfaces. The reason for the need to replace the cooling coil also became apparent when a hole in the copper piping was discovered.

### Findings

The lack of evidence for lightning damage provided by lightning verification analysis and weather database examination led to the need for an on-site assessment for this claim. The proposed replacement of the cooling coil led to a suspicion that something more than electrical damage was involved in the cause of this loss. The finding of damages to the condenser cooling coil provided the answer to the cause of the event - loss of refrigerant. The refrigerant not only acts as a heat exchanger in HVAC systems, but also contains oils that serve to lubricate the compressor. The loss of refrigerant in this system caused overheating of the compressor, leading to a melt down of the electrical wiring connector (with the subsequently described smoke and electrical flash) and failure of the HVAC system. Normal wear and tear was the final determined cause for the event.

Additional considerations for HVAC system claims include:

- Damage to the HVAC system condenser (typically the outdoor component) does not require the replacement of the air-handling unit (typically the indoor component) to match SEER ratings. The reverse is also true, even for heat pump systems.
- The relatively lengthy manufacturer's warranty (commonly 5-10 years) should be evaluated and warranty repair requested when the cause of loss is unknown or in doubt.
- R22 refrigerant units are still common and any HVAC service provider estimate that includes a different refrigerant from the original system (and hence the requirement for new refrigerant lines) should be questioned.
- A single electrical phase burn out of a compressor is usually indicative of an electrical utility issue ("lost leg") and not lightning damage.
- Unknown or assumed lightning damage causes of loss have a high degree of probability of being due to simple wear & tear.
- Stolen and vandalized outdoor condensers are becoming an increasing problem due to the scrap value of copper.

For a more complete technical article on this subject, please visit the following website link:

<http://www.eqdamcon.com/resources.html>

Please address any comments or questions on these articles via email to Mark Krzyzanowski at [mark@eqdamcon.com](mailto:mark@eqdamcon.com). Please also feel free to suggest newsletter article topics related to technology equipment and property claims.

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