

Weathering the Storm of Catastrophe Litigation in the Electric Utility Industry: Some Thoughts on Meteorological Information Management

by

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Abstract

Electric utilities are occasionally the attractive target of law suits, in which it is alleged that the company's operating procedures or response actions during a particular storm or flood catastrophe were negligent, and therefore the cause of damages sustained by the plaintiff(s). In order for a utility company to properly prepare its defense in such a civil tort law proceeding, relevant weather records available to the company at the time of the catastrophe must be retrieved, and the manner in which company personnel responded to, or applied, this information to the developing storm or flood situation established. The quality of any meteorological data obtained or recorded by sensor systems maintained by the defendant utility must be validated. If relevant to those issues identified in a legal claim, any differences in the types, or sources, of hydrometeorological information available to separate operating areas of the company must be documented. These steps are an essential part of trial preparation, particularly for the utility meteorologist who may be called upon to appear as a fact witness in the trial proceedings.

Some thoughts on the role of the meteorologist in accomplishing these objectives are presented, and two recent examples of storm litigation given.

The Meteorologist as Participant in Storm Disaster Litigation

The larger utility companies in the United States, especially those with nuclear power generation capabilities, retain one or more staff meteorologists to provide a variety of corporate support services—from routine weather and pollutant dispersion potential forecasting, to oversight of atmospheric field measurements programs, to general corporate weather consulting. However, utility meteorologists have also found themselves drawn into the arena of civil litigation, where any of several issues relating to weather and storm conditions at the time of the incident—especially the knowledge of, and reaction to the weather and storm conditions which utility personnel may have had at the time—become a factor in the lawsuit against the company. It is our intent to focus here on the role of the meteorologist in storm disaster litigation, a reference to any civil legal proceeding against the defendant utility company which has been sued

by one or more aggrieved individuals (or groups of individuals) who allege that the damages they have suffered from a particular weather incident, storm or flood was directly attributable to the negligent acts of utility personnel. The involvement of meteorologists in other legal proceedings, including public and regulatory hearings, has been described elsewhere (Huston, 1992; Carson, 1992) and will not be covered here.

In most circumstances, the meteorologist must be prepared to work with defense counsel and other members of the litigation support team to (1) locate and review past weather data products which were supplied to, or generated by the company at the time of the storm disaster; (2) document how this information was used by company personnel, particularly if some aspect of their storm preparedness or response activities were demonstrably affected; (3) verify the measurement protocols and accuracy of any key weather data collected on company premises which may be relevant to allegations made in the pending litigation; and (4) prepare for possible deposition or trial testimony. Complicated storm disaster litigation will likely engage the meteorologist in issues of both fact and of expert opinion. Storm-specific hydrometeorological or atmospheric processes may need to be clarified in terms that laymen would understand; the precedence for storms (or floods) of comparable magnitude which may have impacted the local area will have to be investigated; and the methods by which the company acquires and distributes meteorological information to others within, or outside, the company will need to be discussed and evaluated.

Storm disaster litigation is a recurrent threat to electric utilities. Accordingly, company meteorologists, or those who have been retained to assist in the defense of a law suit linked to aspects of the weather, should anticipate their involvement in the drama of the courtroom. In a larger sense, the spectre of likely legal action against a utility—erroneously perceived as a corporate monolith with the power to control, or even eliminate the vagaries and disruptiveness of the weather—should dispel the notion that meteorological information management is somehow uncoupled to overall storm contingency planning process. Various thoughts on the matter have been raised at a recent EPRI disaster preparedness planning conference (cf. Falconer, 1990; Loyalvo, 1990).

Hydrometeorological Information Management

Electric utilities have a myriad of operational uses for real-time weather and hydrologic information, as indicated in Table 1. Unless there is a reason to suspect errors or inconsistencies in the data being received, those using real-time weather observations, forecasts and advisory messages in their day-to-day operations will implicitly assume their accuracy. Weather information-sensitive decisions based on real-time data are a fact of life in utility operations, and can range from a determination of how many crews to dispatch in anticipation of widespread lightning in the utility's service territory, when to have spinning reserves ready to come on-line when the summer heat wave commences, or when to begin regulating pond elevations

behind the company's hydropower dam when significant rainfall upriver is anticipated. Companies which have instituted procedures for retrieving and storing weather data products, and are able to document when, and in what manner this information was used during storm or flood incidents, will be in a favorable position to vigorously investigate any subsequent weather claims which may be filed. It has been my own experience that the process of reconstructing the actual flow of hydrometeorological information through a utility can be a time-consuming exercise, one potentially fraught with discrepancies between the time(s) when certain weather or storm-sensitive decisions or procedures occurred, and when critical hydrometeorological information was actually received and acknowledged, as distinct from their time of transmission (e.g. from the National Weather Service, River Forecast Centers, instrumented meteorological towers, traveling line crews, other governmental authorities, etc). From the standpoint of meteorological investigation of a storm claim, or any other significant weather loss, all relevant weather and corporate communications pathways and associated utility operations must be documented, and any discrepancies in time and information content accounted for.

Table 1. Operational Applications of Meteorological Data by Electric Utilities

Air pollution transport and dispersion calculations
Load forecasting and generation dispatch
Planned and systematic maintenance guidance
Thermal line and equipment ratings
Crew dispatching protocols
Restoration planning
System reliability
Lightning trip-outs
Conductor icing
Wet snow exposure
Wind loads
Solar-induced currents
Loss-of-life calculations
Lines
Transformers and reactors
Potential for insulator contamination
Wheeling and purchasing of power

A corollary issue regarding the flow of real-time weather and storm information through the utility is that of identifying whether different departments receive (and therefore act upon) different meteorological data products. With such a broad

spectrum of operating goals and procedures, it is likely that a variety of weather data products are being routinely used, possibly outside the knowledge of other departments within the company. For example, operations control may access current regional weather statistics from the National Weather Service and monitor continuously-updated lightning locations or weather radar displays. Generation scheduling, on the other hand, will likely be interested in temperature, humidity and precipitation forecasts. The environmental affairs department will undoubtedly keep close watch over real-time boundary layer wind and temperature conditions, obtained from meteorological monitoring towers in the vicinity of their nuclear power plant.

While there may be compelling reasons for various department to independently acquire various types of real-time hydrometeorological data, it is this discontinuous, intra-corporate flow of weather communications which can be exploited by the creative Plaintiff's counsel, who may seek to show that company personnel had constructive knowledge of a pending storm or flood situation, when in fact they did not. Thus, there is an aspect to long-range storm preparedness planning which speaks in favor of making utility personnel commonly aware meteorological data acquisition and display capabilities within the company. In many companies, this function is accomplished through the offices of the corporate meteorology staff, who are available as in-house weather consultants and information resources.

An Overview of the Meteorologist's Role in Storm Disaster Litigation

Once a utility has become engaged in legal action which involves issues of weather, there are likely to be several requirements placed upon the utility meteorologist by the company's trial counsel. These include, but are not limited to:

- acquiring and interpreting basic meteorological or hydrologic records (e.g. observations, forecasts, official severe weather and flood advisories, weather maps, remote storm and flood detection data products, and so forth);
- advising counsel on the relevance, meaning and applications of these basic meteorological data products to any weather issues arising out of liability claims or legal action against the company;
- performing specialized meteorological analyses based on weather and any other related records (e.g. interpreting the severity or magnitude and rarity of the weather or flood phenomenon);
- creating any specialized graphic or audio-visual presentations which are capable of faithfully expressing or clarifying concepts regarding, or observations documenting the weather incident;
- assembling an investigative weather report, and
- being prepared to provide credible expert weather testimony.

Familiarity with the procedures for acquiring relevant, legally-acceptable weather records and publicly-available storm documentation; a willingness to participate in extended pre-trial work; and a working knowledge of courtroom procedures are extremely helpful in major liability litigation.

The Election Day 1985 Flooding on the Monongahela River in Western Pennsylvania

During the first six days of November 1985, tropical moisture from former Hurricane Juan circulated into a second, intense low pressure disturbance which moved slowly northward over the Mid-Atlantic States. Record amounts of rain, upwards of 20" in some sections of Virginia, fell in the Appalachian Mountains. The persistent rain became heaviest on November 4th-5th, and was concentrated primarily over northern Virginia, western Maryland and north-central West Virginia.

As a result of rainfall far in excess of the soil's carrying capacity, the Cheat River—flowing northward through the mountains of West Virginia to meet the Monongahela River at the Pennsylvania border—rose to record flood heights. West Penn Power, owner and operator of a 50-MW hydroelectric facility at the Lake Lynn Dam, situated on the Cheat River just above its confluence with the Monongahela River, recorded the most severe flooding in the 60-year history of the dam. Disastrous river flooding also occurred downriver, along the Monongahela from the state line to the City of Pittsburgh, leading to wide-spread property damage and disruption. Within the year, a class-action lawsuit was filed against West Penn Power by numerous plaintiffs who lived downstream of the dam and who alleged that the property damage they suffered was not caused by the flood, but by the negligent actions of the Company in operating the controllable flood gates.

In preparation for the defense of this lawsuit, meteorologists involved in the West Penn litigation were asked to provide an assessment of the following three questions: (1) Was the storm and resultant flood of early November 1985 of known historic proportions, and could either have been foreseen? (2) What storm-related information did others, including the flood-affected class members, the National Weather Service, and local and state emergency management agencies have access to during the developing flood, and how did each respond to this information?, and (3) What did West Penn Power do with any knowledge it may have had regarding the timing and severity of the rapidly rising river water as it approached the dam?

Through long hours of research, it was established that the storm and the river flooding which it produced were without historical precedent, were not detected with the existing infrastructure of weather surveillance radars and satellite imagery, and were never well-forecasted. Meteorologists involved in the pre-trial investigations further determined, by construction of a detailed master time line, what weather information was actually available to company officials as the flood unfolded, and what information was being provided to outside warning authorities, such as the National

Weather Service and to county emergency management agencies below the dam. The task of documenting when certain information was known to, or disseminated by West Penn personnel was made immeasurably easier because all telephone conversations of the T&D and Power Control Departments, the times of these conversations, and even the broadcast statements of the N.O.A.A. Weather Radio prepared by the Pittsburgh office of the National Weather Service were preserved on a ten-channel tape recording which the Company maintained.

The liability portion of the trial was held before a jury in Washington County, Pennsylvania. Following several days of testimony, including that of meteorologists representing the interests of the Defendant company, the jurors found that it was the historic flood, and not the actions of West Penn Power, that was the significant cause of the damages which Plaintiffs had sustained. The subsequent appeal of this verdict by the Class was unsuccessful.

Fortunately, the meteorological analysis of what West Penn knew, and what actions their personnel took as the flood developed was made immeasurably less complicated, due to the careful weather data management and communications recordings which the Company had earlier instituted.

A Devastating, Early Autumn Snowfall Surprises Eastern New York State

As a result of a freak, unanticipated October 1987 snowstorm of unprecedented intensity, massive power outages were experienced by nearly a half-million electric service customers across Eastern New York State. Service restoration efforts required as many as ten days to complete in some areas, and cost the three electric utilities directly affected by this incident nearly \$30 million in damages and related costs. Heavy, wet snow, with snow:meltwater equivalent ratios of 4:1 accumulated to depths of nearly two feet in some of the higher terrain. The ground snow loads associated with the deepest snowpacks approached 30-40 lbs/sq. ft. Compounding the heavy snowfall was the fact that the snowstorm occurred while trees were still foliated, thereby assuring that trees and major tree limbs would fall into distribution lines.

Within a month of the storm, Niagara Mohawk Power Company—the most heavily-impacted of the electric utility companies—was named in a lawsuit by an individual seeking to recover damages in small claims court for food which had spoiled in his refrigerator during the period of widespread power outages. The Claimant alleged that he had relied upon Niagara Mohawk's early prognosis that power would be restored within two days after the storm had ended. In fact, his service was returned four days later.

Counsel representing the utility sought to vigorously defend this lawsuit, as this was the first of several which were pending against the company. A complete meteorological analysis of the storm was required. The meteorologist was asked to

establish whether there was any historical precedent for snow falls of this magnitude in early autumn; to determine what regional weather forecasts and storm advisories would have been available to the company prior to, and during the storm incident; to analyze the distribution of snowdepths and snow loads across Eastern New York; and to prepare a written report of findings.

In order for the judge in this matter to grant the claim, Plaintiff was obligated to demonstrate that, through its actions, Niagara Mohawk's service restoration efforts were "grossly negligent." After testimony was submitted, and all evidence heard, the judge presiding over the matter ruled that the storm was "an unprecedented Act of God" and said, "Nature caused the outage, and not any [gross] negligence on the part of the power company." The judge further stated, "... It is true that Niagara Mohawk's initial public estimate of restoration proved to be mistaken. But this estimate was made in good faith, and without intent to deceive."

Utility Storm Planning Also Means Preparing for Storm Disaster Litigation

Defending utility companies in third-party tort claims arising out of a storm or flood disasters, or some unusual impact attributable to the weather, can be a costly, time-consuming affair. In important ways, it is never safe to assume that "battling the storm" is over once the customers' power is finally brought back on line. Our society has increasingly turned to litigation as the means of choice for resolving disputes. Utilities, whose primary responsibility it is to maintain a level of service for their customers through good weather and bad, are challenged to not only minimize the impacts of inclement weather in a country of unparalleled storminess, but also to defend their storm response and service restoration actions.

Knowing that a named utility defendant will be questioned before a trier of fact, usually a lay jury, regarding its anticipation of, and response to, a weather disaster, the following recommendations are offered as suggestions for what might be considered "extended disaster preparedness planning."

(A) Pre-Disaster Preparedness Considerations

- (1) Real-time weather information products and display techniques, customized to the particular need of the utility, should be accessible to those who have a stake in weather-sensitive company operations. The managed flow of customized weather information strategically supports such operations as storm-related crew mobilization, power generation scheduling, and post-storm claims investigations.
- (2) Utilities should avoid shifting the burden of weather, storm and flood forecasting, or meteorological data interpretation, to company personnel who may be untrained in meteorology. In companies which do support a staff meteorologist with forecasting expertise,

make certain that forecasts, advisories or any other interpretive storm assessments which the company meteorologist(s) feels may be relevant are accessible to corporate executives and operating personnel—even after normal business hours.

- (3) Utilities are neither storm nor flood warning agencies, and should abandon or discourage the adoption of any policies which allow either the public or outside authorities to believe that the utility has assumed a duty to warn. Observational or operational information collected during storm or flood situations which the utility chooses, or may be mandated to provide to outside parties should be generally presented as a notification, rather than a warning. Utilities should be aware that the only official source of weather and flood warnings is the National Weather Service.
- (4) In companies whose service territory may span two or more National Weather Service forecast and warning jurisdictions, plans should be made to ensure that the relevant weather information is available to each regional office and operating division or department.
- (5) Written emergency response or storm disaster warning plans should be periodically reviewed, revised as appropriate, and put into practice.
- (6) Utilities may wish to establish a working relationship with key local emergency management and response authorities. Make certain that each understands how communications, including weather observations and notifications, from your company to their organization will be handled during emergencies.

(B) Post-Disaster Preparedness Considerations

- (1) Carefully preserve, or at least be able to accurately retrieve, all key weather and flood information received by, or communicated to company personnel.
- (2) Train personnel to use still cameras and camcorders to capture key times and events before, during, and after storm disasters occur.
- (3) Carefully preserve all prints and videos depicting the development and impacts of the storm disaster, or incident weather feature.
- (4) Isolate and preserve all oral messages, recorded telephone calls, timetables, and any other oral communications which places people, key weather or flood developments, and storm response actions.

Concluding Thoughts

Utilities will occasionally confront major liability law suits asserting that company operations aggravated a particular storm or flood condition, thereby causing significant human impact or property damage; or that the company acted negligently by failing to warn its neighbors of an impending storm or flood danger; or that it provided inaccurate or misleading public information regarding post-storm, service restoration times. Through proper advance planning and coordination amongst company meteorologists, emergency planners, systems operations personnel and management, the prospects for weathering future litigation arising out of a storm or flood catastrophe, or involving other significant meteorological factors, are bright.

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