UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Michael C. Farrar, Chairman
Richard S. Salzman
Dr. W. Reed Johnson

In the Matter of	)	
	)	
FLORIDA POWER AND LIGHT COMPANY		Docket No. 50-389
(St. Lucie Nuclear Power Plant,	)	
Unit No. 2.)		
	)	

INTERVENORS INTERROGATORIES TO FLORIDA POWER AND LIGHT CO.

1. How may system wide power failures or major electrical blackouts have occurred in the FPL system during the past 10 years? For purposes of evaluation, please list any electric system disruptions that were either system wide, were considered major outages, consisted of so many scattered blackouts in close time sequence that constituted a substantial system disruption, involved tripping off line of one or more power generating stations in the FPL system or resulted in the failure of on site power to any FPL generating plant. Please provide the date of the occurance or sequence of occurances, the duration of the outage and the location of the affected areas.

2. (Interrogatory #2 treats off site power failures with emphases on their effect on FPL power generating plants.) Please list all electric blackouts or power failures in the past ten years that caused an interruption in the flow of offsite power to any FPL electric generating plant site, whether operational at the time or under construction, repair, or in cold shutdown or standby condition. Identify with particularity, the date of the occurance, the identity of the plant so affected, the duration of the outage and the scope of the power failure in the FPL system as related to outage at the other FPL plants

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3. Please state, why, in its efforts to achieve greater system reliability the Florida Power and Light Company fails to provide a 500 kv intertie or greater to the Georgia Power Corporation and the eastern United States electrical grid system. Would such an intertie or system of interties provide greater system reliability in the FPL system? If not why not?

4. Would provision of the 500 kv intertie to the Eastern U.S. electrical grid obviate the need for any additional generating capacity in the FPL system. If the answer is affirmative, in increments of 250 kv per interties, how many megawatts of base load generating capacity in the FPL system would be obviated or a 250 kv interties, a 500 kv interties, a 750 kv interties?

5. The testimony of NRC Staff witness R. Fizpatrick indicates the startup record of auxilliary diesel generators to provide emergency on site power at the St. Lucie Unit 1 Power Plant is sub-standard. What reasons are known to the FPL Company for the existance of this sub-standard startup record. To what extent does the plants proximity to the oceanic mareine environment affect the performance reliability of these diesel generators and what if any protective or remedial measures are being taken by the utility company?

6. While Hurricane David approached South Florida, Charles Scheer, FPL corporate spokesman is reported in the press to have stated "the Company would continue to operate the plants during a hurrican". (See Palm Beach Post, Thursday, August 30, 1979 P. C 2). Yet, during the pre-down hours as the hurricane approached, the Hutchinson Island site, FPL personnel decided to shut down the St. Lucie Unit 1 reactor. Why did this discrepancy in FPL point of view exist. Has the company changed orestablished policy such that it will shut down reactors during hurricanes? What is the FPL policy concerning reactor operation during passage of a major hurricane where landfall is projected to be in close proximity to the plant site? Specifically, why did the company shut down St. Lucie Unit 1 during the passage of hurricane David?

7. It is reported in the Palm Beach Post of Sept. 1, 1979, that during the passage of hurricane David at the St. Lucie site on Hutchinson Island, a construction crane segment toppled from the Unit 2 containment building and knocked out Unit 1's lead-in auxiliar transformer line. What are the implications of this event as relates to plant safety and availability of on site power?

8. Please provide the test results and performance records of the St. Lucie Unit 1 auxiliary diesel generators for start-up reliability up to the present date. Please provide results originating rom the first in-service date and notate all relavent date.

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CERTIFICATE OF SERVICE

I Hereby Certify, that true and correct coppies of the foregoing letter dated November 27, 1979 and attachments, have been served this 27th day of November, 1979 by deposit in the U.S. Mail on the following:

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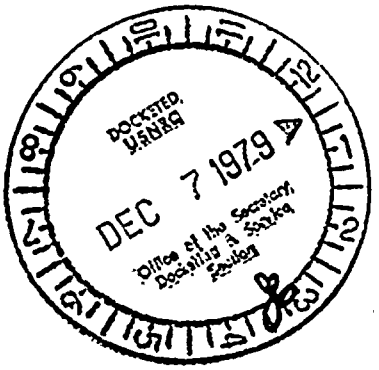


Attachment Page 1

Three Mile Island It Isn't. But Might It Have Been?

First in a Series

By Jeffery Kahn
Post Staff Writer

There has been no cataclysmic disaster because of the St. Lucie nuclear power plant. There has been no "catastrophe, no' meltdown, no crisis reported at the Hutchinson Island facility. To all appearances, the plant has operated routinely and inconspicuously during its 32-month existence.

Inconspicuous, however, does not mean accident-free.

Obscure, virtually indecipherable documents on file with the federal government detail otherwise. Known as LERs (licensee event reports) in the nuclear industry, they trace "non-normal" occurrences in nuclear plants. Such events, a records search reveals, occur repeatedly at most every nuclear power plant. LERs disclose that St. Lucie has had the "normal" scores of problems.

Records show the plant has had inevitable equipment failure, normal in a billion-dollar machine. Records show the plant has endured unplanned nuclear events, normal in that they were resolved without injury to the public. Records show the plant has survived personnel errors, design and fabrication errors and defective operating procedures, all normal in nuclear power plants.

MHB Technical Associates, acting as a consultant for The Post, reviewed the highly technical LERs at St. Lucie.

The California firm, which assesses nuclear matters for government, industry and private agencies around the world, concluded that St. Lucie's history is no better and no worse than that of other nuclear plants. The consultants said St. Lucie's "non-normal" events are typical of the inherent problems experienced throughout the nuclear power industry.

MHB said that on multiple occasions, malfunctions and chains of malfunctions have occurred at St. Lucie, midway between Fort Pierce and Stuart.

MHB said several of these accident sequences were "the same sort of thing that got Three Mile Island in trouble."

So far, Florida Power & Light Co. (FPL), which operates the St. Lucie plant, has managed to avert accidents on the scale of Three Mile Island, according to MHB. But, said the consultants, their review of several sequences of failures indicates that luck rather than design was responsible for defusing one such accident sequence.

MHB's Dale Bridenbaugh said he was alarmed by what happened at the plant on May 14, 1978.

"God, we were kind of lucky," he commented.

Bridenbaugh said that in order to understand the significance of the May 1978 event, it's necessary to examine the history of failures of the two diesel generators at the plant.

Said Bridenbaugh, "The diesels are only important if they lose offsite power. They have to come on in less than a minute to keep from getting in trouble.... If they lose offsite power, they are basically forced to shut down. So, they need the diesels (for power to accomplish this)."

Without the diesel power, Bridenbaugh said, the nuclear reactor continues to produce heat but the plant no longer consumes the heat to produce electricity. Either the diesels start and allow the reactor to be cooled, said Bridenbaugh, or the diesels don't start and heat builds up. The result of a heat buildup, he said, is a dreaded core meltdown.

U.S. Nuclear Regulatory Commission (NRC) computerized LER documents disclose a continuing history of diesel failure at St. Lucie.

The first failure date was Nov. 2, 1976. It was before the plant had been loaded with uranium fuel and begun producing power on Dec. 11, 1976. The failure happened during a test. The second backup diesel was out of service at the time.

The event recurred on Jan. 19, 1977. This time, the reactor was fueled and "critical."

According to the LER, "During surveillance testing, the 1A diesel generator failed to start. A second attempt to start the 1A diesel produced the same result. Since the 1B diesel generator was out of service at the time, two off-site AC circuits (sources of power) were demonstrated operable within one hour as required by TS (technical specification) 3.8.1.1.

"The rack handle was stuck in the open position. The 1A diesel generator failure to start was attributed to a dirty fuel rack linkage and possibly the effect of unusual, prolonged subfreezing weather on the diesel governor oil system."

There are positive and negative aspects to this LER. It shows that FPL personnel diligently tested the diesels. It also shows that one diesel wouldn't start and FPL wasn't absolutely sure why.

Four months later, on May 16, 1977, the diesels received their first actual test. This was not a surveillance run. FPL had a systemwide power disruption and St. Lucie was forced to shut down. To do this routinely and without disastrous consequences, diesel power was mandatory. This time, the diesel performed.

Said the LER, "A system undervoltage condition occurred with the subsequent loss of all four reactor coolant pumps. Both diesel generators automatically started and loaded and a natural circulation cooldown was commenced. After approximately 28 minutes, voltage was restored."

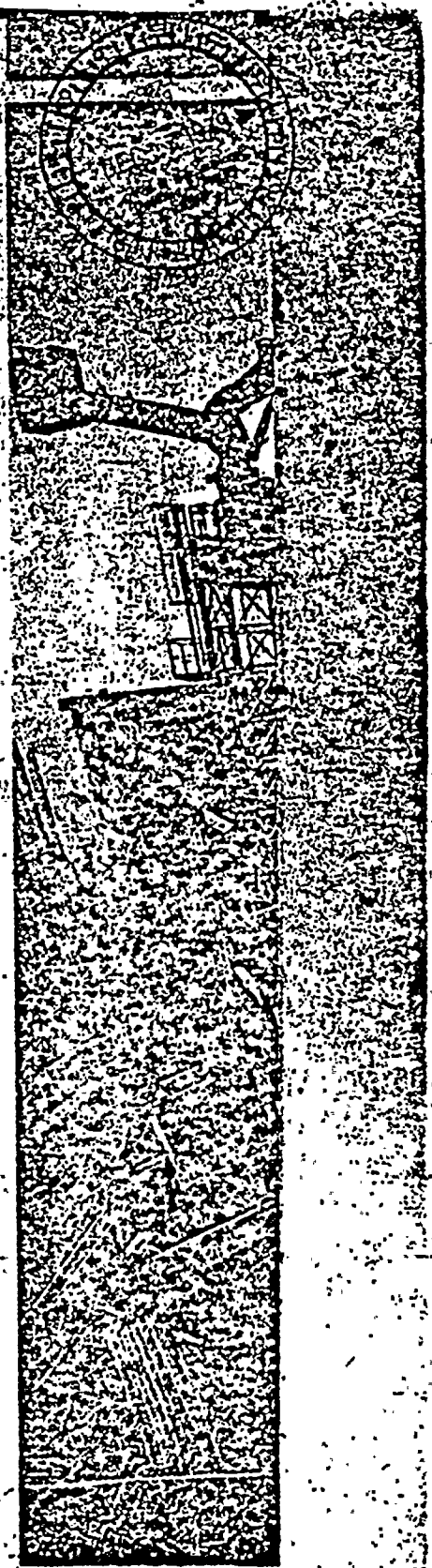
Four months later, again a diesel failed. It was during a surveillance check.

"Smoke began issuing from 1A 12-cylinder diesel turbocharger. Diesel was immediately stopped. Redundant diesel generator, 1B remained operable," reads the LER.

On May 14, 1978, trouble developed elsewhere in the FPL grid, at the Pratt & Whitney power substation. Immediately, offsite power was lost at the St. Lucie plant and it was required to shut down.

Said the LER, "This resulted in loss of off-site power to St. Lucie plant for about 8¼ minutes. One onsite diesel generator was out of service for maintenance. Remaining diesel generator started automati-

Turn to ST. LUCIE, D4



Bird's-Eye View of

FP

tem. The system monitors activity in ... move radioactivity from the containment atmosphere if you had an ac-

Attachment Page 2

D4—Palm Beach Post-Times, Sunday, October 22, 1978

St. Lucie

cally and provided shutdown power until off-site power was restored."

Bridenbaugh said the combination of loss of offsite power and one diesel being out of service was risk enough. Combined with the history of diesel failures at St. Lucie, he said, safety of the public was imperiled.

"With the diesel performance we have seen before that," he said, "maybe you could say, 'God, we were *kind of* lucky.'"

The clutch performance of the diesel did not mean FPL had debugged the machines. On Sept. 5, 1978, again there was a diesel generator problem. Again, fortune shone on FPL and the public. The problem occurred during a surveillance check.

FPL, which submits the LERs to the government, disagrees with Bridenbaugh about the significance of the diesel malfunctions. The utility acknowledges repeated diesel breakdowns.

St. Lucie senior control room operator Gary Davis said FPL has consulted with the diesel manufacturer about the disorders. At this point, he said, FPL believes it has discovered what's been wrong. The diesels have been tested periodically but run only an hour at a time, not long enough *to* heat them up to the point that they will start again at the next test. Two-hour test runs and other modifications have helped, Davis said.

Additionally, he said, demanding NRC requirements ensure plant *safety.*

Said Davis, "Say I want to change the oil in the A-diesel. OK, I've got to run the B-diesel. And I've got to test run it every eight hours and test it until I get the *A-diesel* back in service and test run it.

"And I've got a time limit. Say, I have that diesel out for 72 hours to work on it but at the end of 72 hours, if I don't have that diesel back on line, then I got to shut down and bring it down (the entire plant)."

Bridenbaugh said the reliability of the diesels *is* critical.

"These diesel generators almost have got to perform perfectly," he said. "When you start building up several times in a year (that) these things refuse to start, you are getting outside the bounds of the assumptions under which the plant is designed to function.

"You assume you have this failure and it coincides with a loss of offsite power and so you have to supply all the cooling functions with on-site (diesel) power." Without that power, Bridenbaugh said, a *disaster* is inevitable.

Another chronic "non-normal" activity bedeviling St. Lucie is its digital data processing (computer) system.

The system monitors activity in the lethally radioactive reactor core. Nuclear operators cannot enter this "no-man's land." Yet, they must monitor fluctuations inside the reactor and respond to them. It's the digital data processing system and its sensors that make control of the reactor possible.

On 10 occasions, the system has gone dead. Operators, blinded by the loss of sensor data, had to cut power production by limiting activity in the core. Operators are unable to fine-tune peak core activity without the data system.

Had the data system failure coincided with other malfunctions, operators would have been left guessing how to respond, Bridenbaugh said.

Data system failures began in October 1977. The system failed four times that month. In 1978, six failures occurred. Through March 1978 (the most recent LER reviewed by MHB), no failures had occurred this year.

Said Bridenbaugh, "This is the system that tells the operator what the hell is going on with the plant and specifically, with the reactor itself ...

"This is the thing that is being discussed so intensely in the aftermath of Three Mile Island: That is the man-machine interface. How does the machine communicate what actually is happening and what action is needed?

"This is a failure of that system. Had this system failed in a critical transient occurrence, it could have led to a very severe accident ... The risk is they may not have the data there to be able to properly respond."

Bridenbaugh and FPL's Davis agreed that diesel malfunctions and data system failures were the two most significant groups of LERs at St. Lucie. That is not the extent of St. Lucie's problems however.

On Nov. 14, 1978, FPL submitted LER report number 78-042/01T-0. It told the story of an innocent oversight at the plant three days before.

Said the LER, "During power operation following a maintenance outage, four solenoid-operated NAOH addition system valves were found to be deenergized. After investigating, it was found that the fuses for these valves were removed. Action was taken in accordance with T.S. 3.6.2.2. The fuses were replaced and the valves were verified energized. The NAOH addition system had been deenergized for about 57 hours."

Despite the incomprehensible language of the LER, its meaning is simple and worrisome. Just as at Three Mile Island, plant operators inadvertently disconnected emergency response systems at the plant. Fortunately, at St. Lucie, the disconnect was discovered during routine surveillance. At Three Mile Island, the disconnect was discovered when the emergency system didn't perform.

Said Bridenbaugh, "That's an absolute repeat of Three Mile Island and the problems with their feedwater auxiliary valve. (Plant maintenance had locked the valve closed and when an emergency occurred, operators were unable to open the valve to respond to the emergency.)

"In this case," Bridenbaugh continued, "this is the containment spray system that would be turned on if you had a loss of coolant accident. It would reduce temperature (preventing a meltdown) and remove radioactivity from the containment atmosphere if you had an accident.

"They took both systems out during maintenance and forgot to refuse them for 57 hours."

Bridenbaugh reviewed 134 licensee event reports spanning almost three years. The great majority of these reports, he said, were routine. Several reports disclosing a breach of the plant's containment system were disturbing, Bridenbaugh said.

On March 11, 1977, FPL reported a containment escape lock door was found inoperable. It was the third such instance.

... is the ultimate, essential ... [illegible] containment integrity during operation of the plant. That is the last line of defense against releasing significant amounts of radioactive material in the event of an accident," Bridenbaugh said.

"This casts doubt on the ability of the (St. Lucie's) containment system to do the job it was designed for."

Another containment system incident, Bridenbaugh said, illustrates a flaw in the nuclear industry's "safety in depth" design system.

On April 13, 1977, all the air-operated valves in the containment failed. The failure was caused when an air compressor failed and a back-up air compressor was unable to function because of the first compressor failure.

Said Bridenbaugh, "That is a very good example of what is called a common mode failure, where one system fails and the manner in which it fails prevents the backup system from correcting the problem. If you look back at one of the more serious accidents, it has been chains of events like these that have got us in trouble."

Bridenbaugh said the MHB review covered what they considered to be the most significant events at St. Lucie.

"The problem is," he said, "... that things one might consider not be *significant might* be just the event that could lead you into a serious accident sequence."