BEFORE THE UNITED STATES

ATOMIC ENERGY COMMISSION

In the Matter of)
)
Consolidated Edison Company) Docket No. 50-247
of New York, Inc.)
(Indian Point Station, Unit No. 2))

RESPONSES OF APPLICANT
TO QUESTIONS OF THE
ATOMIC SAFETY AND LICENSING
BOARD AT THE
NOVEMBER 17, 1971
HEARING SESSION

1. Tr. 4110: Mr. Moore states that he will check the answer to Mr. Briggs's question concerning the reason that the temperature does not continue to rise during the period from 39 seconds to 50 seconds, why it levels off and why it rises following that time even though the heat transfer coefficient rises.

Answer: The reason the clad temperature decreases slightly at 40 seconds results from the increase in heat transfer coefficient from 6 to 10 Btu/Hr Ft^2 ^oF. Since the fuel rod gap heat transfer coefficient is 500 Btu/Hr Ft^2 ^oF, there is a large resistance to heat transfer across the gap, and the heat for a short time period is pulled out of the cladding itself. When the pellet "catches up" the cladding starts heating up again since the heat transfer coefficient is not sufficient to turn the temperature around. At 78 seconds, the heat removed by reflooding heat transfer balances that generated by decay heat and metal water reaction and turnaround occurs.

2. Tr. 4114: Mr. Moore states that he would have to confirm the 50 or 60 feet per second figure which he gave for the maximum steam velocity at the top of the core during reflood.

   Answer: The average steam velocity exiting from the core is 30 to 40 feet/second. Local steam velocities exiting from the core could be 50 to 60 feet/second.

3. Tr. 4139: Mr. Briggs asks Mr. Moore to give additional information concerning ECCS for 50 percent power. He asks that Mr. Moore indicate how long the ECCS might be delayed in functioning without the maximum clad temperature exceeding 2300 degrees.

   Answer: The operation of the high head safety injection system is not needed for the large breaks (0.5 ft^2 to double ended) at 50% power. The operation of the low head safety injection system could be delayed approximately 5 minutes without temperatures exceeding 2300^{O}F at 50% power. Since the accumulator system is a passive system, its operation is ensured.

4. Tr. 4144-45: Dr. Geyer asks that the Applicant provide a complete energy balance including changes in energy storage temperature and pressures for the hot channel or bundle for a few selected time increments during the critical phase of reflooding.

Answer: See attached table.

HOT CHANNEL ENERGY BALANCE DURING REFLOODING

Time (Sec)	Hot Spot Average Pellet Temperature (°F)	Hot Spot Clad Temperature (°F)	Hot Channel* Fuel Heat Generation Rate (Btu/sec)	Hot Channel* Clad Reaction Heat Generation Rate (Btu/sec)	Hot Channel* Clad to Coolant Heat Release Rate (Btu/sec)	Core Pressu[illegible] (psia)
40	2195.	2171.	5.45	0.43	2.96	51.
45	2255.	2179.	5.36	0.36	6.86	51.
50	2303.	2219.	5.29	0.37	7.28	51.
55	2342.	2249.	5.24	0.37	7.79	51.
60	2373	2269.	5.15	0.37	8.56	51.
78	2428.	2300	4.89	0.30	10.20	51.
85	2431.	2297.	4.87	0.28	10.47	51.
90	2428.	2290.	4.81	0.26	10.65	51.

* Integrated Over Length of Channel

HOT SPOT ENERGY BALANCE DURING REFLOODING

Time (Sec)	Hot Spot Average Pellet Temperature (°F)	Hot Spot Clad Temperature (°F)	Fuel Heat Generation Rate (Btu/ft-sec)	Clad Reaction Heat Generation Rate (Btu/ft-sec	Clad to Coolan[illegible] Heat Relea[illegible] Rate (Btu/ft-se
60	2373.	2269.	.77	0.22	.73
78	2428.	2300.	.73	0.18	.86
85	2431.	2297.	.72	0.16	.88
90	2428.	2290.	.72	0.15	.90