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REACTOR SCRAM REPORT FOR PERIOD
JULY 1, 1965 - DECEMBER 31, 1965

L. J. Newell

DOUGLAS UNITED NUCLEAR, INC.
RICHLAND, WASHINGTON

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DOUGLAS UNITED NUCLEAR, INC.

DUN-828

DISTRIBUTION:

DATE February 23, 1966

TO A. K. Hardin, Acting Manager
Process Technology

FROM L. J. Newell, Process Analysis Unit *LJN*

SUBJECT REACTOR SCRAM REPORT FOR PERIOD
JULY 1, 1965 - DECEMBER 31, 1965

The reactor scrams are summarized in a table which identifies

1) the component that opens the safety circuit and 2) the reason or cause for the safety circuit trip. Caution should be exercised in the use of the summary for specific analysis of reactor scram causes. In a high percentage of cases, the component that opens the safety circuit is not at fault. A description of the reason or cause for a particular scram is given in the body of the report.

The actual outage time charged to the cause of the reactor scram is given with the exception of scrams caused by tube leaks or fuel failures.

LJN:bmr

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REACTOR SCRAM SUMMARY AND CLASSIFICATION

Safety circuit component which was tripped	Reason or Cause of Safety Circuit Trip													
	.1		.2		.3		.4		.5		.6		.7	
	No.	Hrs	No.	Hrs	No.	Hrs	No.	Hrs	No.	Hrs	No.	Hrs	No.	Hrs
1. Pressure Monitoring System	5	11.0			2	0.5	7	--	4	9.9	14	78.4		
2. Flux Monitoring System														
3. Reactor Test Facilities											1	15.4		
4. Electrical Power Supply Failure			1	1.0										
5. Manual			1	1.7			1	--			1	0.3	1	2.7
6. SN														
7. Seismoscope														
8. Ball 3X System														
9. Temperature Monitor														
10. Other														
Totals	5	11.0	2	2.7	2	0.5	8	--	4	9.9	16	94.1	1	2.7
													6	11.4
														44 132.3

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<u>Date/Time</u>	<u>Safety Circuit Component Which Tripped</u>	<u>Reason or Cause of Trip</u>	<u>Class.</u>	<u>Outage Time Charged(hrs)</u>	<u>Type Startup</u>
<u>105-B</u>					
10-13/4:39 am	Panellit	Fuel element failure tube 4474	1.4	--	cold
<u>105-C</u>					
7-1/3:57 am	Manual	Indicated loss of HCR water supply- exact cause not known although HCR water pressure controller has had history of poor performance	5.6	0.3	cold
7-2/4:20 pm	Panellit	Tripping of gauge 3389 believed to have been caused by shifting of fuel	1.1	0.3	sec. cold
7-8/2:45 am	Panellit	Leak in process tube 4675 - tube contained thoria charge	1.8	--	cold
9-16/5:46 pm	Panellit	Unexplained trip of gauge 3681	1.6	25.2	cold
10-28/7:17 pm	Panellit	Unexplained trip of gauge 3264	1.6	4.2	cold
10-30/7:49 am	Panellit	Unexplained trip of gauge 3168	1.6	1.9	sec. cold
12-8/9:01 am	Panellit	Unexplained trip of gauge 3366	1.6	23.0	cold
12-30/9:50 pm	Panellit	Unexplained trip of gauge 1059	1.6	2.1	sec. cold
<u>105-D</u>					
7-1/4:59 pm	Panellit	Exact cause unknown - possibly caused by shifting of fuel	1.6	1.8	sec. cold
7-16/10:13 pm	Manual	Fuel element failure in tube 2668	5.4	--	cold
7-22/1:56 am	Panellit	Low pressure trip of gauge 0174 when foreign material partially plugged orifice screen	1.8	2.7	sec. cold
7-22/9:15 am	Power failure	Electrical power loss to busses 1, 3, and 4 when the A-342 circuit breaker malfunctioned during a critical "W" situation	4.2	1.0	sec. cold
8-24/3:20 pm	Panellit	Failure of spline cap seal on poison spline tube 1286	1.3	0.3	cold
8-26/11:55 am	Panellit	Fuel element failure tube 3389	1.4	-	sec. cold

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Date/Time	Safety Circuit Component Which Tripped	Reason or Cause of Trip	Class.	Outage Time Charged(hrs)	Type Startup
8-26/10:00 pm	Panellit	Partial plugging by gasket material of the orifice screen of tube 1795	1.8	0.6	sec. cold
10-10/1:30 pm	Panellit	Fuel element failure in tube 1570	1.4	--	cold
10-19/8:48 pm	Panellit	Failure of spline cap seal during insertion of a spline	1.3	0.2	sec. cold
11-29/10:50 am	Panellit	Partial plugging of the orifice screen of tube 2169	1.8	1.1	cold
11-30/11:15 pm	Panellit	Low trip of gauge 0893 - exact cause not determined	1.6	1.0	sec. cold
12:15/1:18 am	Panellit	Unexplained trip of gauge 4458	1.6	2.0	cold

105-KE

7-30/10:05 am	Test facilities	Low pressure trips on cross header gauges monitoring 1706 Single-Pass tubes 4963 and 5063 when valving in the PT-2 pump. The suction side of PT-2 had been drained during a previous overhaul of the pump and was still empty at time of valving. The valving was considered to be a routine operation.	3.8	5.4	cold
8-1/3:27 pm	Panellit	Oscillating gauge 1398	1.5	0.6	sec. cold
8-14/3:05 pm	Panellit	Unexplained trip of gauge 2242	1.6	0.7	sec. cold
8-17/6:16 pm	Test facilities	While not totally explained, it is believed that high pressure tripping of 1706 Single-Pass 3050 and 2952 occurred because of an increase in pH level. Exact cause of increase not known.	3.6	15.4	cold
9-20/12:26 pm	Panellit	Oscillating gauge 5871	1.5	0.6	sec. cold
10-26/4:38 am	Panellit	Accidental tripping of safety circuit of a side-to-side test tube.	1.1	0.6	sec. cold
10-26/6:18 am	Panellit	Oscillation of gauge 0668 - believed to have been caused by foreign material in process tube	1.5	2.8	sec. cold

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Date/Time	Safety Circuit Component Which Tripped	Reason or Cause of Trip	Class.	Outage Time Charged(hrs)	Type Startup
10-26/10:25 am	Panellit	Oscillation of gauge 0668 - Investigation revealed what appeared to be a piece of masonite in a perf. Masonite is used for fuel to rest upon in the shipping boxes	1.5	5.9	sec. cold
11-9/4:42 pm	Panellit	A circuit-to-circuit short accidentally occurred on gauge 5665 while being jumpered	1.1	0.3	cold
11-11/3:15 pm	Panellit	Fuel element failure in tube 4384	1.4	--	sec. cold
11-11/6:30 pm	Panellit	Unexplained trip of gauge 3445	1.6	1.2	sec. cold
11-11/8:11 pm	Panellit	Unexplained grip of gauge 3645	1.6	2.5	sec. cold
<u>105-KW</u>					
7-15/8:00 am	Panellit	Tripping of gauge 0271 believed to have been caused by upstream plugging	1.8	1.6	sec. cold
7-15/11:41 am	Manual	Reactor manually scrammed because of faulty RTDs	5.2	1.7	sec. cold
7-22/12:28 pm	Panellit	Fuel element failure in tube 2964	1.4	--	cold
8-14/12:31 pm	Panellit	Unexplained trip of gauge 0271	1.6	0.7	sec. cold
8-15/4:58 pm	Panellit	Unexplained trip of gauge 0271	1.6	11.5	cold
9-28/9:05 pm	Panellit	Cause unknown	1.6	0.6	sec. cold
10-19/4:21 am	Panellit	Inadvertently rolled gauge 3470 instead of 3370 during splining operations	1.1	4.2	cold
10-21/4:23 pm	Manual	Insufficient reactivity control to achieve turnaround	5.7	2.7	sec. cold
11-3/1:53 pm	Panellit	While checking response time on what appeared to be a "dead" gauge, wrong toggle valve was opened	1.1	5.6	cold

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<u>Date/Time</u>	<u>Safety Circuit Component Which Tripped</u>	<u>Reason or Cause of Trip</u>	<u>Class.</u>	<u>Outage Time Charged(hrs)</u>	<u>Type Startup</u>
11-14/4:00 am	Panellit	Fuel element failure in tube 2970	1.4	--	cold
12-5/7:42 pm	Panellit	Fuel element failure in tube 3579	1.4	--	cold

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