

D O N A L D C . C O O K N U C L E A R P L A N T

ANNUAL OPERATING REPORT

1987

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INTRODUCTION

The Donald C. Cook Nuclear Plant, owned by Indiana Michigan Power Company is located five miles north of Bridgman, Michigan and consists of two nuclear power units. Each unit employs a pressurized water reactor nuclear steam supply system furnished by Westinghouse Electric Corporation.

The Unit 1 reactor is currently designed for a power output of 3250 Mwt and the Unit 2 reactor is designed for a power output of 3411 Mwt, which are their licensed ratings. The approximate gross and net electrical outputs of Unit 1 are 1056 MWe and 1020 MWe and of Unit 2 are 1100 MWe and 1060 MWe, respectively. The main condenser cooling method is open cycle using Lake Michigan water as the cooling source. The Cook Nuclear Plant was the first domestic nuclear facility to employ the ice condenser reactor containment system. The American Electric Power Service Corporation was the architect-engineer and constructor.

This Report was compiled by B.A. Svensson with the following individuals contributing information as follows:

D.C. Loope	- Personnel Exposure Summary
R.T. Rickman	- Steam Generator ISI Summary
E.A. Abshagen	- Changes to Facility
T.P. Beilman	- Changes to Procedures
D.M. Draper	
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M.M. Terry	- Tests and Experiments
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R.W. Hennen	- Results of Irradiated Fuel Inspections

1.16 REPORT - WORK FUNCTION CATEGORIES

Reactor Operations and Surveillance

Those activities involved with operating the plant or monitoring it's operation, including chemistry, performance testing, surveillance testing, etc. The plant may be at any power level, including zero, and still have work falling into this area. Many STP's run during shutdown or refueling may still fall into this category.

Routine Maintenance

All equipment or system maintenance, whether preventative or restorative, which does not involve significant modifications to equipment or systems. Included is I&C repair work, as well as work to adjust operable equipment to improve performance (adjusting fan blade pitch, for example).

Inservice Inspection

Inspections of equipment and systems to monitor changes that would be detrimental to function or integrity. Also included is all work required to permit such inspections, such as building required scaffolding, removing or replacing supports of insulation, or disassembly of valves, pumps, etc. Not included are inspection to assess or monitor normal wear, etc. For example, disassembly of a charging pump to inspect bearing wear would not be Inservice Inspection, but disassembly to inspect for rotor cracking or casing damage would be. Inspection of a weld on a newly added line is Special Maintenance, or inspection of a weld repair at a leaking fitting is Routine Maintenance.

Special Maintenance

All work on equipment or systems performed to make significant modifications. Installation of new systems or equipment, replacement or addition of supports or hangers, addition of new lines or instruments, removal of existing equipment, replacement of existing equipment with significantly different equipment are all Special Maintenance. For example, replacement of a properly functioning, original equipment pressure transmitter with a different model with improved characteristics or certification would be Special Maintenance, but replacement of a malfunctioning pressure transmitter with a newer or improved model would probably be Routine Maintenance.

Waste Processing

All work associated with decontamination of equipment, areas, systems, etc. (if not an integral part of another job, such as pump repair), collection and processing of waste, whether solid, liquid, or gas. Operations in support of waste handling are also included. For example, draining a filter to permit changing it, or venting it after changing are part of Waste Processing, but valving a clean filter into the system is Reactor Operations. Repair of the Baler or drumming room crane is Routine Maintenance.

Refueling

All work is directly concerned with refueling the reactor, including all support operations, is classified as Refueling. Testing the polar crane or installing the cavity filter rig is part of Refueling, as is cavity decon before or after flood-up. Changing the cavity filter, however, is Waste Processing and fixing the manipulator crane is Routine Maintenance.

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	# PERSONNEL > 100 mR			TOTAL MAN-REM		
	STAT.	UTIL.	CONT.	STATION	UTILITY	CONTRACT
Reactor Operations & Surveillance						
Maintenance Personnel	0009	0000	0008	0002.002	0000.000	0001.376
Operations Personnel	0075	0000	0040	0023.138	0000.000	0009.732
Health Physics Personnel	0015	0000	0080	0004.606	0000.000	0035.887
Supervisory Personnel	0002	0000	0000	0000.410	0000.000	0000.000
Engineering Personnel	0008	0000	0006	0001.135	0000.000	0001.322
Routine Maintenance						
Maintenance Personnel	0108	0000	0384	0076.364	0000.000	0212.888
Operations Personnel	0039	0001	0053	0008.609	0000.751	0013.477
Health Physics Personnel	0009	0000	0065	0002.102	0000.000	0021.866
Supervisory Personnel	0008	0000	0003	0002.431	0000.000	0000.372
Engineering Personnel	0014	0003	0012	0002.786	0000.671	0003.078
In-Service Inspection						
Maintenance Personnel	0015	0000	0150	0004.992	0000.000	0096.803
Operations Personnel	0004	0000	0021	0000.787	0000.000	0013.568
Health Physics Personnel	0002	0000	0030	0001.140	0000.000	0011.746
Supervisory Personnel	0001	0000	0000	0000.440	0000.000	0000.000
Engineering Personnel	0002	0001	0001	0000.565	0000.149	0000.520
Special Maintenance						
Maintenance Personnel	0011	0000	0039	0003.543	0000.000	0016.095
Operations Personnel	0001	0000	0000	0000.360	0000.000	0000.000
Health Physics Personnel	0000	0000	0015	0000.000	0000.000	0002.090
Supervisory Personnel	0001	0000	0001	0000.170	0000.000	0000.225
Engineering Personnel	0002	0002	0005	0000.314	0000.495	0001.060
Waste Processing						
Maintenance Personnel	0008	0000	0128	0002.130	0000.000	0070.683
Operations Personnel	0000	0000	0006	0000.000	0000.000	0006.032
Health Physics Personnel	0002	0000	0022	0000.345	0000.000	0004.994
Supervisory Personnel	0000	0000	0001	0000.000	0000.000	0000.140
Engineering Personnel	0003	0000	0002	0001.157	0000.000	0000.655
Refueling						
Maintenance Personnel	0000	0000	0003	0000.000	0000.000	0000.574
Operations Personnel	0003	0000	0030	0000.632	0000.000	0005.485
Health Physics Personnel	0000	0000	0000	0000.000	0000.000	0000.000
Supervisory Personnel	0000	0000	0000	0000.000	0000.000	0000.000
Engineering Personnel	0001	0000	0000	0000.132	0000.000	0000.000
Totals						
Maintenance Personnel	0110	0000	0539	0089.031	0000.000	0398.419
Operations Personnel	0095	0001	0094	0033.526	0000.751	0048.294
Health Physics Personnel	0018	0000	0098	0008.193	0000.000	0076.583
Supervisory Personnel	0009	0000	0003	0003.451	0000.000	0000.737
Engineering Personnel	0024	0005	0019	0006.089	0001.315	0006.635
Grand Totals	0256	0006	0753	0140.290	0002.066	0530.668

STEAM GENERATOR TUBE INSERVICE INSPECTION1987 SUMMARY REPORTS

During the calendar year of 1987 three, one hundred percent eddy current examinations were performed. This included: one complete examination in Unit One during the July refueling outage and two complete examinations in Unit Two during the surveillance outages. This report is divided into three sections which summarize the results of each examination.

STEAM GENERATOR TUBE INSERVICE INSPECTION REPORTUNIT 1

During July of 1987, 100% of the tubes in all four steam generators were eddy current tested. All tubes were tested from the hot leg side of all steam generators. Rows 10 through 46 were tested full length, while rows 1 through 9 were tested to the seventh support plate on the hot leg side. Rows 1 and 2 were also tested through the U-bend to the seventh support, cold leg side.

In addition to the standard bobbin coil testing, special eddy current inspection was performed in steam generator 12 with a rotating pancake coil probe on selected tubes for information only.

In steam generator 11 a total of 3,368 tubes were inspected. A total of 69 tubes were plugged, 50 for administrative reasons and 19 due to Technical Specification requirements.

In steam generator 12 a total of 3,366 tubes were tested. A total of 86 tubes were plugged, 55 for administrative reasons and 31 due to Technical Specification requirements.

In steam generator 13 a total of 3,363 tubes were tested. A total of 24 tubes were plugged, 21 for administrative reasons and 3 due to Technical Specification requirements.

In steam generator 14 a total of 3,378 tubes were tested. A total of 90 tubes were plugged, 74 for administrative reasons and 16 due to Technical Specification requirements.

A summary of all tube indications and their location is attached. The summary also indicates whether or not the tube was plugged.

STEAM GENERATOR NUMBER 11

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
10	3	C	26%	1	0.0	NO	20	27	H	31%	TE	20.4	YES
10	4	H	INR	4	33.5	NO	36	28	H	DI	TE	20.6	YES
10	4	H	INR	4	48.9	NO	43	30	C	36%	2	0.0	NO
6	8	H	DI	TE	19.8	YES	26	31	H	INR	TE	20.0	NO
15	8	H	DI	TE	20.3	YES	40	31	H	31%	TE	20.8	YES
16	8	H	64%	TE	20.0	YES	43	31	C	23%	1	0.0	NO
26	12	H	DI	TE	20.4	YES	34	32	H	DI	TE	20.9	YES
31	13	H	57%	TE	20.9	YES	28	33	H	DI	TE	20.9	YES
8	17	H	80%	TE	20.0	YES	33	33	H	DI	TE	20.4	YES
33	17	C	37%	2	0.0	NO	38	34	H	DI	TE	20.8	YES
34	17	H	DI	TE	20.3	YES	14	36	H	69%	TE	17.6	YES
35	18	C	36%	2	0.0	NO	44	36	C	23%	2	0.0	NO
35	18	C	INR	1	0.0	NO	14	37	H	77%	TE	19.9	YES
21	19	H	41%	TE	20.3	YES	32	38	H	34%	TE	20.6	YES
26	20	H	67%	TE	20.7	YES	31	40	H	DI	TE	20.9	YES
26	20	U	22%	AV1	0.0	YES	32	40	H	43%	TE	20.9	YES
36	20	C	16%	2	0.0	NO	38	40	H	56%	TE	20.8	YES
12	21	H	28%	TE	20.7	YES	14	41	H	DI	TE	19.8	YES
37	21	C	10%	2	0.0	NO	33	43	H	45%	TE	20.5	YES
38	21	C	7%	2	0.0	NO	33	43	H	DI	1	0.0	YES
15	22	H	INR	TE	20.0	NO	14	46	H	32%	TS	1.5	YES
38	22	C	14%	2	0.0	NO	15	46	H	INR	TS	.8	YES
14	25	H	24%	TE	20.8	YES	15	46	H	DI	TS	.4	YES
39	25	C	INR	1	0.0	NO	13	47	H	INR	TS	.6	NO
40	25	C	30%	2	0.0	NO	19	47	H	INR	TS	.3	NO

STEAM GENERATOR NUMBER 11

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
13	48	H	22%	TS	.8	YES	5	58	H	DI	TE	20.3	YES
31	48	H	69%	TE	20.6	YES	5	58	H	61%	TE	2.5	YES
41	48	U	18%	AV4	0.0	NO	17	58	H	28%	TS	2.0	YES
10	50	H	DRT	TE	2.5	YES	20	58	H	DI	TS	.3	YES
10	50	H	84%	TE	2.4	YES	32	58	H	DI	TE	20.5	YES
14	50	H	INR	TS	1.1	NO	43	58	C	35%	2	0.0	NO
15	50	H	30%	TS	1.5	YES	18	59	H	23%	TS	1.7	YES
12	52	H	76%	TS	.5	YES	44	59	C	25%	2	0.0	NO
14	52	H	INR	TS	.8	NO	45	59	C	25%	2	0.0	NO
18	52	H	85%	TS	.7	YES	18	60	H	DI	TS	.4	YES
45	52	C	28%	2	0.0	NO	20	60	H	DI	TS	0.0	YES
2	53	H	81%	TE	2.5	YES	43	61	C	45%	2	0.0	YES
14	53	H	DI	TS	.6	YES	7	62	H	DI	TE	21.0	YES
18	53	H	INR	TS	.7	NO	29	62	H	DI	TE	21.2	YES
9	54	H	DI	TE	20.9	YES	34	62	H	DI	TE	21.0	YES
14	54	H	DI	TS	.6	YES	23	63	U	17%	AV2	0.0	NO
17	54	H	26%	TS	1.7	YES	23	63	U	15%	AV3	0.0	NO
14	55	H	DI	TS	1.2	YES	36	63	U	20%	AV3	0.0	NO
16	55	H	28%	TS	2.0	YES	27	65	H	DI	TE	20.4	YES
18	55	H	27%	TS	.4	YES	19	67	H	DI	TE	20.4	YES
14	56	H	21%	TS	1.3	YES	9	71	H	DI	TE	21.1	YES
45	56	C	DI	2	0.0	NO	16	71	H	DI	TE	20.6	YES
18	57	H	DI	TS	1.2	YES	35	75	H	DI	TE	21.1	YES
18	57	H	DI	TS	.2	YES	19	77	H	DI	3	15.6	NO
45	57	C	33%	3	0.0	NO	22	77	H	DI	TE	20.9	YES

STEAM GENERATOR NUMBER 11

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
28	77	H	DI	TE	20.8	YES							
32	77	C	DI	1	0.0	NO							
10	79	H	52%	TE	21.1	YES							
31	79	C	18%	1	0.0	NO							
10	80	H	DI	TS	0.0	YES							
26	80	H	24%	TE	21.0	YES							
29	80	H	27%	TS	5.5	YES							
30	80	C	INR	1	0.0	NO							
30	81	C	23%	1	0.0	NO							
12	82	H	DI	TE	20.6	YES							
24	82	H	DI	TE	21.0	YES							
30	82	C	42%	2	0.0	YES							
27	84	C	16%	2	0.0	NO							
15	91	C	23%	1	0.0	NO							
10	92	H	DI	2	0.0	NO							
3	94	H	INR	TE	1.7	NO							

STEAM GENERATOR NUMBER 12

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
4	3	H	22%	TE	20.5	YES	19	34	H	33%	TS	.6	YES
12	4	H	14%	TE	20.6	YES	43	34	H	43%	TE	20.9	YES
14	4	C	25%	1	0.0	NO	43	34	H	DI	2	0.0	YES
8	5	H	38%	1	0.0	NO	18	35	H	DI	TS	.8	YES
16	5	C	29%	2	0.0	NO	43	35	H	50%	TE	20.8	YES
8	7	H	DI	2	0.0	NO	16	36	H	24%	TS	2.1	YES
14	8	H	48%	TE	20.5	YES	17	36	H	22%	TS	1.3	YES
21	9	H	79%	TE	20.6	YES	18	36	H	42%	TS	1.4	YES
13	10	H	DI	TE	20.5	YES	19	36	H	INR	TS	.6	NO
12	11	H	42%	TE	20.8	YES	20	36	H	INR	TS	.6	NO
13	15	H	87%	TE	20.9	YES	17	37	H	23%	TS	1.1	YES
32	16	C	46%	1	0.0	YES	21	37	H	DI	TE	20.0	YES
8	20	H	DI	2	0.0	NO	21	37	H	INR	TS	.6	YES
39	26	C	14%	1	0.0	NO	44	37	H	INR	TS	.2	NO
17	31	H	28%	TS	1.3	YES	16	38	H	79%	TS	.8	YES
23	31	H	DI	TE	21.2	YES	43	38	H	DI	TE	20.7	YES
35	31	U	13%	AV1	0.0	NO	44	38	H	INR	TS	.6	NO
35	31	U	24%	AV2	0.0	NO	16	39	H	60%	TS	.8	YES
35	31	U	34%	AV3	0.0	NO	44	39	H	INR	TS	.5	NO
16	32	H	DI	TS	1.2	YES	15	40	H	19%	TS	1.2	YES
17	32	H	48%	TS	1.3	YES	16	40	H	42%	TS	2.6	YES
19	32	H	DI	TS	.1	YES	18	40	H	29%	TS	1.4	YES
43	32	H	DI	TE	20.8	YES	18	40	H	41%	TS	.9	YES
16	33	H	37%	TS	1.4	YES	19	40	H	54%	TS	.8	YES
18	33	H	32%	TS	.8	YES	19	40	H	29%	TS	1.3	YES
							20	40	H	DI	TS	.5	YES

STEAM GENERATOR NUMBER 12

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
18	41	H	37%	TS	.7	YES	13	47	H	30%	TS	1.2	YES
19	41	H	26%	TS	.5	YES	14	47	H	39%	TS	1.8	YES
43	41	U	30%	AV3	0.0	NO	14	47	H	45%	TS	1.2	YES
43	41	U	25%	AV4	0.0	NO	15	47	H	31%	TS	2.0	YES
14	42	H	41%	TS	1.5	YES	15	47	H	INR	TS	.7	YES
17	42	H	89%	TE	3.5	YES	15	47	H	INR	TS	.9	YES
17	42	H	36%	TS	.6	YES	16	47	H	32%	TS	1.9	YES
18	42	H	30%	TS	.8	YES	17	47	H	14%	TS	1.1	YES
44	42	H	INR	TS	.6	NO	18	47	H	DI	TS	.2	YES
45	42	C	36%	2	0.0	NO	19	47	H	45%	TS	.3	YES
18	43	H	43%	TS	.8	YES	45	47	H	INR	TS	.8	NO
38	43	H	DI	1	0.0	NO	46	47	H	INR	TS	1.5	NO
44	43	H	INR	TS	.7	NO	15	48	H	54%	TS	1.3	YES
16	44	H	23%	TS	1.2	YES	15	48	H	INR	TS	.8	YES
16	44	H	28%	TS	.4	YES	17	48	H	50%	TS	.6	YES
18	44	H	26%	TS	.8	YES	43	48	H	DI	TE	20.7	YES
35	44	U	24%	AV1	0.0	NO	44	48	H	INR	TS	.9	NO
43	44	H	68%	TE	20.9	YES	45	48	H	INR	TS	.9	NO
12	45	H	DI	TS	.8	YES	46	48	H	INR	TS	1.5	NO
14	45	H	98%	TS	.4	YES	14	49	H	DI	TS	.1	YES
15	45	F	35%	TS	1.4	YES	44	49	H	INR	TS	.6	NO
19	45	H	DI	TS	.6	YES	45	49	H	INR	TS	1.1	NO
19	46	H	INR	TS	.7	NO	46	49	H	INR	TS	1.1	NO
43	46	H	53%	TE	20.8	YES	12	50	H	DI	TS	0.0	YES
45	46	H	INR	TS	.6	NO	15	50	H	DI	TS	.7	YES
46	46	H	INR	TS	1.3	NO	20	51	U	INR	AV2	0.0	NO

STEAM GENERATOR NUMBER 12

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
43	51	H	DI	TE	20.8	YES	11	66	H	DI	TE	21.0	YES
43	53	H	DI	TE	20.8	YES	40	66	H	INR	TS	.3	NO
46	53	H	INR	TS	1.0	NO	41	66	C	DI	2	0.0	NO
34	54	U	17%	AV4	0.0	NO	41	66	C	DI	1	0.0	NO
37	54	U	27%	AV4	0.0	NO	26	73	H	DI	TE	20.9	YES
43	54	H	58%	1	0.0	YES	8	74	H	26%	TE	21.1	YES
44	54	H	INR	TS	1.8	NO	14	75	H	39%	TE	20.6	YES
45	54	H	INR	TS	1.8	NO	17	75	H	70%	TE	20.7	YES
46	54	H	INR	TS	1.5	NO	20	76	H	56%	TE	20.6	YES
36	55	U	33%	AV1	0.0	NO	35	76	C	57%	2	0.0	YES
36	55	U	30%	AV2	0.0	NO	37	76	C	22%	2	0.0	NO
37	55	C	INR	TE	1.7	NO	14	77	H	INR	TE	20.7	NO
45	55	H	INR	TS	3.9	NO	34	77	C	36%	2	0.0	NO
44	56	H	INR	TS	2.7	NO	14	78	H	INR	TE	20.8	NO
45	56	H	INR	TS	.6	NO	35	78	C	27%	1	0.0	NO
45	57	H	INR	TS	.3	NO	13	79	H	DI	TE	20.7	YES
45	58	H	INR	TS	.3	NO	31	79	C	33%	1	0.0	NO
44	60	H	12%	TS	.8	YES	25	80	H	DI	TE	20.6	YES
44	61	H	24%	TS	.8	YES	7	81	H	DI	TE	20.9	YES
40	63	H	INR	TS	.3	NO	7	82	H	56%	TE	20.8	YES
42	63	U	15%	AV3	0.0	NO	12	82	H	DI	TE	20.8	YES
42	63	U	25%	AV4	0.0	NO	26	82	H	DI	TE	20.7	YES
40	64	H	INR	TS	.3	NO	7	83	H	INR	TE	20.8	NO
40	65	H	INR	TS	.3	NO	12	83	H	DI	TE	20.9	YES
41	65	H	INR	TS	.4	NO							

STEAM GENERATOR NUMBER 12

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
7	84	H	45%	TE	20.4	YES							
13	84	H	INR	TE	20.4	YES							
13	84	H	DI	TE	20.8	YES							
16	84	H	DI	TE	20.5	YES							
7	85	H	41%	TE	20.7	YES							
12	85	H	DI	TE	20.9	YES							
16	85	H	INR	TS	15.7	NO							
26	85	C	38%	2	0.0	NO							
14	86	H	24%	TE	20.7	YES							
7	87	H	DI	TE	20.7	YES							
10	91	C	36%	1	0.0	NO							

STEAM GENERATOR NUMBER 13

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
20	6	C	15%	1	0.0	NO	3	46	H	DI	TE	0.0	YES
4	9	H	INR	2	3.2	NO	14	46	H	23%	TS	.6	YES
4	10	H	DI	TE	19.8	YES	17	46	H	INR	TS	.8	NO
24	10	C	INR	TS	14.1	NO	19	46	H	INR	TS	.1	NO
23	15	C	INR	1	10.4	NO	39	47	U	22%	AV3	0.0	NO
34	17	C	23%	2	0.0	NO	39	47	U	16%	AV4	0.0	NO
36	19	C	49%	2	0.0	YES	16	48	H	DI	TS	2.2	YES
35	21	C	24%	2	0.0	NO	38	48	U	15%	AV3	0.0	NO
22	26	H	24%	TE	19.8	YES	38	48	U	25%	AV4	0.0	NO
28	28	H	75%	TE	19.8	YES	12	49	H	INR	1	21.8	NO
38	28	U	21%	AV2	0.0	NO	12	49	H	INR	3	8.6	NO
38	28	U	21%	AV3	0.0	NO	33	49	U	INR	AV3	0.0	NO
38	28	U	15%	AV4	0.0	NO	35	50	C	INR	TE	8.4	NO
39	28	H	29%	TE	20.5	YES	40	50	U	23%	AV3	0.0	NO
2	31	H	DI	TE	20.2	YES	40	50	U	21%	AV4	0.0	NO
34	33	H	INR	TE	13.7	NO	41	50	U	22%	AV3	0.0	NO
44	36	C	8%	2	0.0	NO	41	50	U	16%	AV4	0.0	NO
41	38	U	24%	AV4	0.0	NO	19	51	H	DI	TS	.9	YES
29	39	H	INR	2	22.9	NO	25	51	C	INR	1	7.6	NO
31	39	C	INR	6	25.5	NO	16	52	H	19%	TS	2.5	YES
36	41	U	14%	AV1	0.0	NO	33	52	U	INR	AV1	0.0	NO
36	41	U	33%	AV2	0.0	NO	33	52	U	22%	AV2	0.0	NO
36	41	U	32%	AV3	0.0	NO	33	52	U	33%	AV3	0.0	NO
38	42	U	28%	AV3	0.0	NO	33	52	U	21%	AV4	0.0	NO
38	42	U	30%	AV4	0.0	NO	36	53	U	21%	AV3	0.0	NO
29	44	U	INR	AV2	0.0	NO	19	54	H	DI	TS	1.3	YES
35	45	C	INR	TE	11.4	NO	20	54	H	15%	TS	.7	YES
							33	55	H	INR	1	24.3	NO

STEAM GENERATOR NUMBER 13

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
40	55	U	15%	AV3	0.0	NO	15	62	H	21%	TS	3.1	YES
40	55	U	14%	AV4	0.0	NO							
20	56	H	DI	TS	.8	YES	32	62	U	26%	AV3	0.0	NO
36	56	U	30%	AV1	0.0	NO	40	62	U	16%	AV1	0.0	NO
36	56	U	27%	AV2	0.0	NO	40	62	U	27%	AV2	0.0	NO
							40	62	U	22%	AV3	0.0	NO
37	56	U	24%	AV1	0.0	NO	40	62	U	22%	AV4	0.0	NO
37	56	U	20%	AV2	0.0	NO							
37	56	U	21%	AV3	0.0	NO	33	64	U	18%	AV1	0.0	NO
42	56	U	16%	AV2	0.0	NO	36	64	U	14%	AV3	0.0	NO
42	56	U	34%	AV3	0.0	NO	36	64	U	12%	AV4	0.0	NO
42	56	U	12%	AV4	0.0	NO							
							40	64	U	19%	AV1	0.0	NO
15	57	H	19%	TS	2.2	YES							
19	57	H	DJ	TS	1.2	YES	36	65	U	17%	AV3	0.0	NO
19	57	H	40%	TS	1.3	YES	36	65	U	19%	AV4	0.0	NO
20	57	H	10%	TS	.8	YES	39	65	U	12%	AV3	0.0	NO
							39	65	U	19%	AV4	0.0	NO
36	57	U	24%	AV3	0.0	NO							
36	57	U	22%	AV4	0.0	NO	40	65	U	14%	AV2	0.0	NO
							40	65	U	23%	AV3	0.0	NO
20	58	H	26%	TS	.8	YES							
							15	69	H	18%	TS	.9	YES
39	58	U	14%	AV4	0.0	NO							
							10	70	H	DI	TS	0.0	YES
41	58	U	33%	AV2	0.0	NO							
41	58	U	32%	AV3	0.0	NO	36	76	U	23%	AV3	0.0	NO
41	58	U	19%	AV4	0.0	NO							
							32	78	C	DI	1	0.0	NO
18	59	H	DI	TS	1.6	YES							
							3	82	H	DI	1	0.0	NO
20	59	H	DI	TS	1.0	YES							
							10	93	C	12%	1	0.0	NO
15	61	H	24%	TS	3.1	YES							
							12	93	C	12%	1	0.0	NO
34	61	U	22%	AV4	0.0	NO							
36	61	U	24%	AV3	0.0	NO							
36	61	U	26%	AV4	0.0	NO							
41	61	U	20%	AV3	0.0	NO							

STEAM GENERATOR NUMBER 14

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
6	1	H	DI	TS	0.0	YES	28	25	H	INR	TE	21.0	NO
6	2	H	DI	TE	21.0	YES	35	27	C	INR	4	39.2	NO
13	3	H	8%	TE	20.8	YES	41	27	H	40%	TE	20.7	YES
6	4	H	DI	4	0.0	NO	30	28	H	17%	TE	9.6	YES
17	4	C	INR	TS	0.0	NO	20	30	C	13%	1	33.0	NO
5	5	H	43%	TS	0.0	YES	29	30	H	66%	TE	20.8	YES
6	6	H	42%	TE	20.6	YES	18	32	H	DI	TS	0.0	YES
10	7	H	16%	TE	20.6	YES	37	32	H	INR	2	6.0	NO
25	9	C	22%	1	0.0	NO	37	32	H	INR	2	4.1	NO
22	10	H	INR	TE	20.8	NO	37	32	H	29%	3	37.2	NO
26	10	C	45%	1	0.0	YES	37	32	H	21%	3	6.4	NO
28	10	H	DI	TE	20.5	YES	38	32	H	DI	TE	20.6	YES
28	11	H	DI	TE	20.6	YES	36	33	H	77%	TE	20.4	YES
20	12	H	INR	6	34.4	NO	14	34	H	INR	TS	1.1	NO
21	12	H	15%	TS	34.8	NO	20	34	H	INR	1	6.1	NO
8	13	H	19%	TE	20.6	YES	20	34	H	INR	2	21.8	NO
20	15	H	33%	TE	20.8	YES	29	35	H	DI	TE	20.9	YES
34	16	H	INR	TE	1.2	NO	43	35	H	DI	TE	21.0	YES
28	17	H	29%	TE	20.8	YES	15	36	H	15%	TS	.7	YES
13	18	H	DI	TE	20.0	YES	16	36	H	28%	TS	1.3	YES
28	19	H	DI	TE	20.8	YES	17	36	H	INR	TS	.9	NO
21	22	H	DI	1	0.0	NO	18	36	H	36%	TS	.6	YES
28	24	H	13%	TE	20.6	YES	14	37	H	70%	TS	.7	YES
28	24	H	22%	TE	20.1	YES	18	37	H	34%	TS	1.2	YES
28	24	H	15%	TE	19.2	YES	18	37	H	21%	TS	.5	YES
28	24	H	DI	1	0.0	YES	44	37	C	15%	2	0.0	NO
							13	38	H	29%	TS	.9	YES

STEAM GENERATOR NUMBER 14

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
14	38	H	53%	TS	1.5	YES	18	42	H	INR	TS	.3	NO
29	38	H	DI	TE	20.9	YES	18	42	H	INR	TS	.6	NO
17	39	H	INR	TS	1.3	NO	26	42	H	INR	TS	.7	NO
18	39	H	DI	TS	.3	YES	41	42	H	75%	TE	20.3	YES
19	39	H	DI	TS	0.0	YES	44	42	H	DI	TE	20.8	YES
44	39	C	DI	4	0.0	NO	45	42	C	55%	4	0.0	YES
13	40	H	DI	TS	1.1	YES	18	43	H	43%	TS	.6	YES
13	40	H	INR	TS	.7	YES	19	43	H	48%	TS	.5	YES
14	40	H	DI	TS	1.3	YES	38	43	H	DI	TE	20.7	YES
17	40	H	41%	TS	1.1	YES	44	43	C	DI	2	0.0	NO
19	40	H	39%	TS	.4	YES	38	44	H	INR	7	21.9	NO
20	40	H	INR	TS	.4	NO	16	45	H	DI	TS	.6	YES
28	40	H	DI	TE	21.1	YES	18	45	H	DI	TS	.4	YES
35	40	H	INR	5	37.7	NO	29	45	H	DI	TE	21.1	YES
35	40	C	INR	1	6.5	NO	41	45	U	17%	AV3	0.0	NO
13	41	H	DI	TS	.3	YES	41	45	U	12%	AV4	0.0	NO
17	41	H	DI	TS	1.4	YES	17	46	H	16%	TS	.6	YES
18	41	H	23%	TS	.5	YES	19	46	H	DI	TS	.3	YES
18	41	H	DI	TS	.1	YES	19	46	H	DI	TS	0.0	YES
20	41	H	INR	TS	.8	NO	33	46	U	12%	AV2	0.0	NO
28	41	H	INR	TS	.1	NO	33	46	U	27%	AV3	0.0	NO
28	41	H	DI	1	0.0	NO	33	46	U	15%	AV4	0.0	NO
42	41	H	DI	1	0.0	NO	16	47	H	28%	TS	1.8	YES
46	41	C	DI	2	0.0	NO	17	47	H	18%	TS	1.2	YES
16	42	H	19%	TS	1.6	YES	19	47	H	DI	TS	.4	YES
17	42	H	INR	TS	.5	NO	17	48	H	36%	TS	.9	YES

STEAM GENERATOR NUMBER 14

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
19	48	H	DI	TS	.6	YES	6	74	H	DI	TE	21.2	YES
38	48	H	9%	TS	42.9	NO	6	74	H	DI	1	0.0	YES
21	49	H	DI	TE	21.1	YES	6	75	H	DI	TE	20.9	YES
23	50	H	14%	TS	.6	YES	6	75	H	19%	2	0.0	YES
30	51	H	26%	TE	20.8	YES	13	75	H	DI	1	0.0	NO
18	53	H	DI	TE	20.1	YES	17	75	H	DI	TE	21.1	YES
46	53	H	INR	TS	0.0	NO	22	75	H	DI	TE	20.8	YES
45	54	C	43%	3	0.0	YES	6	76	H	DI	TE	21.0	YES
43	56	H	DI	TE	21.0	YES	13	76	H	DI	TE	20.9	YES
19	59	C	INR	3	2.1	NO	15	76	H	26%	TE	20.2	YES
44	59	H	69%	TE	20.8	YES	12	77	H	22%	TE	20.5	YES
20	60	H	INR	3	42.0	NO	16	77	H	DI	TE	20.6	YES
20	60	U	INR	AV2	0.0	NO	36	77	C	DI	1	0.0	NO
43	61	U	15%	AV1	0.0	NO	5	78	H	INR	TS	0.0	NO
43	61	C	27%	1	0.0	NO	12	78	H	DI	TE	20.7	YES
8	64	H	DI	TE	20.6	YES	18	78	H	DI	TE	20.7	YES
20	64	C	INR	3	5.1	NO	16	79	H	DI	TE	20.9	YES
19	66	U	12%	AV1	0.0	NO	23	79	H	DI	TE	20.6	YES
19	66	U	13%	AV2	0.0	NO	23	79	H	DI	2	0.0	YES
19	66	U	19%	AV3	0.0	NO	34	79	C	30%	2	0.0	NO
19	66	U	12%	AV4	0.0	NO	20	80	H	DI	TE	20.8	YES
40	68	C	62%	2	0.0	YES	22	80	H	DI	TE	20.9	YES
14	69	H	DI	TE	20.9	YES	24	81	H	DI	2	0.0	NO
6	71	H	DI	TE	21.2	YES	30	81	C	31%	2	0.0	NO
6	72	H	DI	TE	21.0	YES	15	84	H	DI	TE	21.0	YES
24	73	U	INR	AV1	8.4	NO							

STEAM GENERATOR NUMBER 14

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
18	84	H	DI	TE	21.0	YES							
14	85	H	DI	TE	20.7	YES							
16	86	H	DI	TE	20.8	YES							

STEAM GENERATOR TUBE INSEF .CE INSPECTION REPORTUNIT 2 March 1987

On March 3, 1987 the unit was shutdown due to a primary to secondary leak rate of .247 GPM. The eddy current program was eventually escalated to test 100% of the tubes in all four steam generators.

In steam generator 21, 5 tubes were tested full length, 8 through the U-Bend and 3,233 through the seventh support plate on the hot leg side. Seventeen tubes were removed from service by mechanical plugging.

In steam generator 22, 225 tubes were tested full length, 62 through the U-Bend and 2,890 through the seventh support plate on the hot leg side. Thirty three tubes were removed from service by mechanical plugging.

In steam generator 23, 5 tubes were tested full length, 87 through the U-bend, and 3,085 through the seventh support plate on the hot leg side. A total of 38 tubes were removed from service by mechanical plugging.

In steam generator 24, 212 tubes were tested full length, 16 through the U-bend and 2,959 through the seventh support on the hot leg side. Twenty-one tubes were removed from service by mechanical plugging.

Attached are summary reports of indications found, their location, and whether or not the tube was plugged.

STEAM GENERATOR NUMBER 21March of 1987

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
3	4	H	DI	1	0.0	NO	11	11	H	DI	1	0.0	YES
12	4	H	DI	4	0.0	NO	11	11	H	DI	2	0.0	YES
14	4	H	DI	3	0.0	NO	11	11	H	DI	3	0.0	YES
3	5	H	DI	2	0.0	NO	11	11	H	65%	5	0.0	YES
6	5	H	DI	1	0.0	NO	12	11	H	DI	2	0.0	NO
16	5	H	DI	2	0.0	NO	22	11	H	DI	3	0.0	NO
13	6	H	DI	2	0.0	NO	24	11	H	DI	1	0.0	NO
16	6	H	DI	2	0.0	NO	25	11	H	DI	3	0.0	NO
17	6	H	DI	3	0.0	NO	25	11	H	DI	2	0.0	NO
17	6	H	DI	1	0.0	NO	25	11	H	DI	1	0.0	NO
12	7	H	DI	2	0.0	NO	28	11	H	DI	2	0.0	NO
13	7	H	DI	3	0.0	NO	11	12	H	DI	3	0.0	NO
9	8	H	DI	1	0.0	NO	11	12	H	DRT	TE	2.5	NO
13	8	H	DI	2	0.0	NO	13	12	H	DI	2	0.0	NO
25	8	H	DI	2	0.0	NO	13	12	H	DI	3	0.0	NO
9	9	H	DI	2	0.0	NO	3	13	H	DI	2	0.0	NO
11	9	H	DI	4	0.0	NO	14	13	H	DI	3	0.0	NO
12	9	H	DI	3	0.0	NO	19	13	H	DI	1	0.0	NO
14	9	H	DI	3	0.0	NO	27	13	H	DI	2	0.0	NO
20	9	H	DI	2	0.0	NO	29	13	H	DI	2	0.0	NO
20	9	H	DI	3	0.0	NO	31	13	H	DI	1	0.0	NO
5	10	H	DI	2	0.0	NO	10	14	H	DI	1	0.0	NO
11	10	H	DI	4	0.0	NO	10	14	H	DRT	TE	2.5	NO
11	10	H	DI	3	0.0	NO	12	14	H	DI	1	0.0	NO
11	10	H	DRT	TE	2.3	NO	12	14	H	DI	2	0.0	NO
							12	14	H	DI	3	0.0	NO
							15	14	H	DI	1	0.0	NO
							15	14	H	DI	2	0.0	NO

STEAM GENERATOR NUMBER 21March of 1987

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
17	14	H	59%	3	0.0	YES	11	17	H	DI	1	0.0	NO
							11	17	H	DI	2	0.0	NO
24	14	H	DI	3	0.0	NO	11	17	H	DI	3	0.0	NO
24	14	H	DI	2	0.0	NO							
24	14	H	DI	1	0.0	NO	14	17	H	DI	4	0.0	NO
27	14	H	DI	2	0.0	NO	15	17	H	DI	2	0.0	NO
							15	17	H	DI	3	0.0	NO
8	15	H	DI	1	0.0	YES							
8	15	H	47%	2	0.0	YES	20	17	H	DI	2	0.0	NO
8	15	H	DI	3	0.0	YES							
13	15	H	43%	2	0.0	YES	27	17	H	DI	2	0.0	NO
13	15	H	45%	1	0.0	YES	27	17	H	DI	4	0.0	NO
13	15	H	DI	3	0.0	YES							
							29	17	H	DI	1	0.0	NO
							29	17	H	DI	4	0.0	NO
14	15	H	DI	1	0.0	NO							
14	15	H	DI	2	0.0	NO	3	18	H	DI	3	0.0	NO
							3	18	H	DI	2	0.0	NO
23	15	H	DI	2	0.0	NO							
23	15	H	DI	3	0.0	NO	11	18	H	DI	2	0.0	NO
							11	18	H	DI	3	0.0	NO
24	15	H	DI	3	0.0	YES							
24	15	H	49%	2	0.0	YES	24	18	H	DI	1	0.0	NO
							24	18	H	DI	2	0.0	NO
7	16	H	DI	2	0.0	NO	24	18	H	DI	3	0.0	NO
11	16	H	DI	1	0.0	NO	27	18	H	DI	1	0.0	NO
11	16	H	DI	2	0.0	NO	27	18	H	DI	4	0.0	NO
11	16	H	DI	3	0.0	NO							
11	16	H	DI	4	0.0	NO	32	18	H	37%	4	0.0	NO
12	16	H	DI	2	0.0	NO	8	19	H	DI	2	0.0	NO
20	16	H	DI	2	0.0	NO	17	19	H	DI	2	0.0	NO
							17	19	H	DI	1	0.0	NO
24	16	H	DI	2	0.0	NO							
24	16	H	DI	4	0.0	NO	27	19	H	DI	1	0.0	NO
							27	19	H	DI	2	0.0	NO
32	16	H	DI	2	0.0	NO	27	19	H	DI	4	0.0	NO
32	16	H	DI	4	0.0	NO	27	19	H	DI	5	0.0	NO
32	16	H	DI	5	0.0	NO							
							6	20	H	DI	2	0.0	NO
9	17	H	DI	2	0.0	NO							
9	17	H	DI	3	0.0	NO	7	20	H	DI	3	0.0	NO

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11	20	H	DI	4	0.0	NO	22	23	H	DI	2	0.0	NO
11	20	H	DI	3	0.0	NO							
11	20	H	DI	2	0.0	NO	23	23	H	DI	1	0.0	NO
11	20	H	DI	1	0.0	NO							
11	20	H	DRT	TE	2.3	NO	30	23	H	DI	1	0.0	NO
15	20	H	DI	2	0.0	NO	33	23	H	DI	1	0.0	NO
16	20	H	DI	3	0.0	NO	19	24	H	DI	4	0.0	NO
16	20	H	DI	1	0.0	NO							
16	20	H	DI	2	0.0	NO	29	24	H	DI	2	0.0	NO
18	20	H	DI	3	0.0	NO	7	25	H	DI	1	0.0	NO
26	20	H	28%	2	44.5	NO	14	25	H	DI	3	0.0	NO
32	20	H	DI	2	0.0	NO	14	25	H	DI	2	0.0	NO
32	20	H	DI	3	0.0	NO	14	25	H	DI	1	0.0	NO
11	21	H	DI	4	0.0	NO	16	25	H	DI	3	0.0	NO
11	21	H	DI	3	0.0	NO	16	25	H	DI	2	0.0	NO
11	21	H	DI	2	0.0	NO	19	26	H	DI	2	0.0	NO
13	21	H	DI	3	0.0	NO	14	27	H	DI	5	0.0	NO
26	21	H	<20%	1	31.4	NO	14	27	H	DI	4	0.0	NO
29	21	H	DI	3	0.0	NO	14	27	H	DI	3	0.0	NO
11	22	H	DI	3	0.0	NO	14	27	H	DI	2	0.0	NO
11	22	H	DI	2	0.0	NO	14	27	H	DI	1	0.0	NO
11	22	H	DI	1	0.0	NO	28	27	H	DI	2	0.0	NO
12	22	H	DI	2	0.0	NO	31	27	H	DI	4	0.0	NO
24	22	H	DI	2	0.0	NO	9	28	H	DI	1	0.0	NO
7	23	H	DI	3	0.0	NO	14	28	H	DI	3	0.0	NO
9	23	H	DI	3	0.0	NO	14	28	H	DI	2	0.0	NO
11	23	H	DI	2	0.0	NO	14	28	H	DI	1	0.0	NO
11	23	H	DRT	TE	2.5	NO	16	28	H	DI	3	0.0	NO
12	23	H	DI	3	0.0	NO	17	28	H	DI	2	0.0	NO
							17	28	H	DI	1	0.0	NO
							27	28	H	DI	4	0.0	NO

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37	28	H	<20%	3	22.4	NO	16	33	H	DI	3	0.0	YES
40	28	H	DI	3	0.0	NO	16	33	H	DI	2	0.0	YES
40	28	H	DI	2	0.0	NO	16	33	H	DI	TS	1.6	YES
12	29	H	DI	3	0.0	NO	33	33	H	DI	2	0.0	NO
12	29	H	DI	2	0.0	NO	38	33	H	DI	2	0.0	NO
21	29	H	SQR	TE	17.6	YES	20	34	H	DI	2	0.0	NO
28	29	H	DI	3	0.0	NO	23	34	H	DI	1	0.0	NO
29	29	H	DI	1	0.0	NO	24	34	H	DI	2	0.0	NO
29	29	H	DI	2	0.0	NO	25	34	H	DI	2	0.0	NO
29	29	H	DI	3	0.0	NO	25	34	H	DI	1	0.0	NO
29	29	H	DI	5	0.0	NO	29	34	H	DI	3	0.0	NO
40	29	H	DI	1	0.0	NO	29	34	H	DI	2	0.0	NO
7	30	H	DI	4	0.0	NO	44	34	H	DI	1	0.0	NO
7	30	H	DI	1	0.0	NO	14	35	H	DI	3	0.0	NO
9	30	H	DI	1	0.0	NO	18	35	H	UDS	TS	2.4	YES
14	30	H	DI	4	0.0	NO	23	35	H	DI	1	0.0	NO
14	30	H	DI	3	0.0	NO	28	35	H	DI	1	0.0	NO
16	30	H	DI	4	0.0	NO	33	35	H	DI	5	0.0	NO
19	30	H	DI	2	0.0	NO	41	35	H	DI	1	0.0	NO
19	30	H	DRT	TE	2.6	NO	41	35	H	DI	2	0.0	NO
4	31	H	DI	3	0.0	NO	41	35	H	DI	3	0.0	NO
10	32	H	DI	5	0.0	NO	4	36	H	DI	2	0.0	NO
10	32	H	DI	2	0.0	NO	25	36	H	DI	2	0.0	NO
27	32	H	DI	2	0.0	NO	37	36	U	25%	V3	0.0	NO
29	32	H	DI	2	0.0	NO	37	36	U	<20%	V4	0.0	NO
14	33	H	DI	3	0.0	NO	42	36	U	<20%	V1	0.0	NO
14	33	H	DI	2	0.0	NO							

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45	36	H	DI	1	0.0	NO	24	45	H	46%	2	0.0	YES
4	37	H	DI	1	0.0	NO	4	46	H	DI	3	0.0	NO
18	37	H	81%	TS	.4	YES	9	46	H	DI	3	0.0	NO
42	37	H	DI	1	0.0	NO	9	46	H	DRT	TE	2.5	NO
14	38	H	DI	3	0.0	NO	15	47	H	DI	1	0.0	NO
14	38	H	DI	2	0.0	NO	15	47	H	DI	3	0.0	NO
25	38	H	DI	3	0.0	NO	16	47	H	DI	1	0.0	NO
25	38	H	DI	2	0.0	NO	24	47	H	DI	2	0.0	NO
14	39	H	DI	2	0.0	NO	29	47	H	41%	2	0.0	YES
14	39	H	DI	3	0.0	NO	29	47	H	DI	1	0.0	YES
42	39	H	DI	1	0.0	NO	31	47	H	DI	2	0.0	NO
6	40	H	DI	2	0.0	NO	11	48	H	DI	2	0.0	NO
19	40	H	DI	2	0.0	NO	11	48	H	DI	3	0.0	NO
22	40	H	DI	2	0.0	NO	45	48	C	<20%	2	0.0	NO
33	40	H	DI	2	0.0	NO	25	49	H	DI	3	0.0	NO
20	41	H	DI	TS	.6	YES	31	49	H	DI	5	0.0	NO
43	42	H	DI	5	0.0	NO	31	52	H	DI	2	0.0	NO
45	42	H	DI	2	0.0	NO	5	53	H	DI	2	0.0	NO
45	42	H	DI	1	0.0	NO	31	54	H	DI	2	0.0	NO
14	43	H	DI	TS	1.2	YES	33	54	H	DI	2	0.0	NO
17	43	H	DI	TS	1.1	YES	31	55	H	DI	3	0.0	NO
21	43	H	DI	TE	20.2	YES	11	57	H	27%	3	0.0	NO
30	43	H	DI	3	0.0	NO	31	57	H	DI	3	0.0	NO
45	43	H	DI	1	0.0	NO	13	58	H	DI	2	0.0	NO
46	43	C	<20%	2	0.0	NO	29	58	H	DI	2	0.0	NO

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2	59	H	DI	5	0.0	NO	17	73	H	DI	3	0.0	NO
2	59	H	DI	3	0.0	NO							
2	59	H	DI	2	0.0	NO	9	74	H	DI	2	0.0	NO
11	59	H	DI	3	0.0	NO	2	75	H	DI	2	0.0	NO
22	59	H	DI	3	0.0	NO	24	75	H	DI	3	0.0	NO
2	60	H	DI	2	0.0	NO	17	76	H	DI	2	0.0	NO
28	60	H	DI	3	0.0	NO	4	78	H	DI	2	0.0	NO
24	61	H	40%	TS	.4	YES	9	81	H	DI	3	0.0	NO
5	62	H	DI	2	0.0	NO	6	82	H	DI	2	0.0	NO
11	64	H	<20%	2	41.1	NO	6	82	H	DI	1	0.0	NO
27	64	U	<20%	V1	0.0	NO	6	83	H	DI	2	0.0	NO
27	64	U	22%	V2	0.0	NO	21	84	H	DI	3	0.0	NO
27	64	U	<20%	V3	0.0	NO	4	85	H	DI	3	0.0	NO
34	66	H	DI	2	0.0	NO	15	85	H	35%	2	0.0	NO
2	68	H	DI	2	0.0	NO	15	85	H	34%	3	0.0	NO
2	70	H	DI	2	0.0	NO	19	86	H	DI	2	0.0	NO
2	70	H	DI	3	0.0	NO	19	86	H	DI	1	0.0	NO
3	71	H	53%	2	0.0	YES	15	87	H	DI	3	0.0	NO
4	71	H	DI	2	0.0	NO	6	88	H	DI	2	0.0	NO
16	71	H	DI	2	0.0	NO	12	88	H	<20%	6	20.5	NO
16	71	H	DI	3	0.0	NO	4	90	H	DI	2	0.0	NO
17	71	H	INR	4	0.0	NO	4	90	H	DI	3	0.0	NO
17	71	H	DI	3	0.0	NO							
17	71	H	DI	2	0.0	NO	2	92	H	DI	2	0.0	NO
5	72	H	DI	3	0.0	NO							
7	73	H	DI	2	0.0	NO							
16	73	H	DI	3	0.0	NO							
16	73	H	DI	2	0.0	NO							

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15	4	H	DI	1	0.0	NO	23	12	H	DI	1	0.0	NO
6	5	H	DI	6	0.0	NO	15	13	H	DI	2	0.0	NO
11	5	H	<20%	TS	43.4	NO	15	13	H	37%	4	0.0	NO
11	5	H	<20%	1	16.8	NO	24	13	H	DI	2	0.0	NO
16	6	H	DI	1	0.0	NO	31	13	H	<20%	3	38.2	NO
16	6	H	DI	3	0.0	NO	31	13	H	<20%	3	40.8	NO
15	7	H	DI	1	0.0	NO	31	13	C	22%	1	0.0	NO
15	7	H	DI	2	0.0	NO	9	14	H	DI	2	0.0	NO
15	8	H	DI	2	0.0	NO	20	14	H	DI	2	0.0	NO
21	8	H	DI	2	0.0	NO	22	14	H	DI	2	0.0	NO
2	9	H	DI	2	0.0	NO	31	14	H	34%	2	0.0	NO
15	9	H	DI	4	0.0	NO	31	14	H	DI	3	0.0	NO
21	9	H	DI	1	0.0	NO	8	15	H	DI	1	0.0	NO
6	10	H	DI	1	0.0	NO	27	16	H	DI	2	0.0	NO
15	10	H	DI	2	0.0	NO	9	17	H	DI	2	0.0	NO
17	10	H	DI	1	0.0	NO	15	17	H	DI	2	0.0	NO
28	10	H	DI	1	0.0	NO	17	17	H	DI	1	0.0	NO
28	10	H	DI	2	0.0	NO	17	17	H	DI	2	0.0	NO
14	11	H	UDS	1	23.4	NO	22	17	H	DI	3	0.0	NO
15	11	H	DI	2	0.0	NO	29	17	H	DI	2	0.0	NO
16	11	H	DI	1	0.0	NO	31	17	H	DI	1	0.0	NO
16	11	H	DI	3	0.0	NO	33	17	H	28%	2	0.0	NO
20	11	H	SQR	TE	19.5	YES	7	18	H	DI	2	0.0	NO
20	11	H	DI	2	0.0	YES	31	19	H	DI	1	0.0	NO
9	12	H	DI	2	0.0	NO	36	19	H	DI	1	0.0	NO
16	12	H	DI	2	0.0	NO							

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5	20	H	SQR	TE	19.0	YES	9	28	H	DI	1	0.0	NO
20	20	H	DI	2	0.0	NO	16	28	H	DI	2	0.0	NO
22	20	C	<20%	1	47.7	NO	17	28	H	UDS	TE	20.5	YES
29	20	H	DI	2	0.0	NO	42	28	H	DI	2	0.0	NO
9	21	H	DI	1	0.0	NO	9	29	H	SQR	TE	20.7	YES
15	21	H	DI	2	0.0	NO	11	29	H	DI	1	0.0	NO
6	22	H	SQR	TE	18.2	YES	32	30	H	DI	2	0.0	NO
7	22	H	SQR	TE	19.1	YES	37	30	H	DI	1	0.0	NO
10	22	H	35%	1	0.0	NO	8	31	H	DI	1	0.0	NO
29	22	H	DI	2	0.0	NO	10	31	H	<20%	6	37.8	NO
9	23	H	DI	1	0.0	YES	10	31	H	<20%	6	31.2	NO
9	23	H	SQR	TE	19.8	YES	10	31	C	<20%	6	26.2	NO
15	23	H	DI	4	0.0	NO	16	31	H	DI	1	0.0	NO
15	23	H	DI	2	0.0	NO	24	31	H	DI	2	0.0	NO
7	24	H	DI	1	0.0	YES	6	33	H	SQR	TE	20.7	YES
7	24	H	SQR	TE	20.8	YES	42	33	C	25%	1	0.0	NO
15	24	H	DI	1	0.0	NO	43	33	C	21%	1	0.0	NO
16	24	H	DI	4	0.0	NO	10	34	H	DI	1	0.0	NO
16	24	H	DI	2	0.0	NO	43	34	C	<20%	2	0.0	NO
38	25	H	45%	1	0.0	YES	4	36	H	DI	1	0.0	NO
11	26	H	DI	1	0.0	YES	7	36	H	DI	1	0.0	NO
11	26	H	DI	TE	20.6	YES	8	36	H	DI	1	0.0	NO
32	26	H	DI	1	0.0	NO	8	36	H	DI	2	0.0	NO
11	27	H	DI	1	0.0	NO	20	36	H	DI	1	0.0	NO
11	27	H	DI	2	0.0	NO	8	38	H	DI	1	0.0	NO
14	27	H	DI	2	0.0	NO							

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7	39	H	SQR	TE	20.7	YES	30	48	H	DI	2	0.0	NO
8	39	H	DI	2	0.0	NO	39	48	H	DI	2	0.0	NO
8	41	H	DI	2	0.0	NO	40	48	H	DI	2	0.0	NO
5	42	H	SQR	TE	20.3	YES	3	49	H	DI	1	0.0	NO
5	42	H	DI	1	0.0	YES	19	50	H	DI	1	0.0	NO
2	43	H	UDS	TE	2.5	YES	19	50	H	DRT	TE	2.5	NO
27	43	H	<20%	6	4.9	NO	7	51	H	DI	1	0.0	NO
27	43	H	20%	6	12.0	NO	16	51	H	DI	TS	.5	YES
27	43	C	<20%	TS	39.3	NO	5	52	H	DI	1	0.0	NO
6	44	H	DI	2	0.0	NO	7	52	H	DI	1	0.0	NO
7	44	H	SQR	TE	20.4	YES	7	52	H	DI	2	0.0	NO
7	44	H	DI	2	0.0	YES	20	52	H	DI	1	0.0	NO
7	44	H	DI	3	0.0	YES	20	52	H	DI	2	0.0	NO
9	44	H	39%	1	0.0	NO	28	53	H	96%	TE	17.7	YES
4	45	H	DI	1	0.0	NO	28	53	H	93%	TE	18.1	YES
7	45	H	DI	1	0.0	NO	30	53	H	DRT	TE	2.5	YES
7	45	H	DI	2	0.0	NO	30	53	H	SQR	TE	17.3	YES
18	45	H	DI	2	0.0	NO	30	53	H	DI	2	0.0	YES
3	46	H	DI	3	0.0	NO	4	54	H	DI	1	0.0	NO
3	46	H	DI	1	0.0	NO	8	54	H	DI	1	0.0	NO
4	46	H	DI	1	0.0	NO	12	54	H	DI	TS	.9	YES
30	47	H	DI	2	0.0	NO	28	54	H	SQR	TE	19.8	YES
30	47	H	DI	4	0.0	NO	9	55	H	DI	TS	.5	YES
45	47	H	DI	2	0.0	NO	12	55	H	DI	TS	.5	YES
19	48	H	DI	1	0.0	NO	25	55	H	DI	2	0.0	NO
25	48	H	DI	2	0.0	NO							

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4	56	H	35%	1	0.0	NO	15	62	H	DI	2	0.0	NO
4	56	H	DI	2	0.0	NO	15	62	H	DI	3	0.0	NO
7	56	H	DRT	TE	2.4	YES	42	62	H	DI	1	0.0	NO
7	56	H	SQR	TE	20.4	YES							
7	56	H	DI	1	0.0	YES	2	63	H	DI	1	0.0	NO
7	56	H	DI	2	0.0	YES	2	63	H	DRT	TE	2.5	NO
9	56	H	DI	TS	.5	YES	7	63	H	DI	2	0.0	NO
							7	63	H	DI	4	0.0	NO
36	56	U	<20%	V3	0.0	NO							
7	57	H	DI	1	0.0	NO	8	63	H	DI	1	0.0	NO
27	57	H	DI	2	0.0	NO	9	63	H	DI	1	0.0	NO
30	57	H	DI	1	0.0	NO	9	63	H	DI	2	0.0	NO
30	57	H	DI	2	0.0	NO	9	63	H	DI	3	0.0	NO
32	57	H	DI	2	0.0	NO	8	64	H	DI	1	0.0	NO
3	58	H	DI	2	0.0	NO	10	64	H	DI	2	0.0	NO
3	58	H	DI	1	0.0	NO	10	64	H	DI	3	0.0	NO
9	58	H	DI	2	0.0	NO	23	64	H	DI	3	0.0	NO
10	58	H	DI	TS	1.1	YES	28	64	H	DI	2	0.0	NO
14	58	H	DI	1	0.0	NO	29	64	H	DI	2	0.0	NO
3	59	H	DI	1	0.0	NO	29	64	H	DI	3	0.0	NO
15	59	H	DI	2	0.0	YES	42	64	H	DI	1	0.0	NO
15	59	H	DI	TS	2.6	YES	42	64	H	DI	2	0.0	NO
7	60	H	33%	1	0.0	NO	6	65	H	DI	1	0.0	NO
14	60	H	DI	TS	2.0	YES	16	65	H	58%	TS	1.1	YES
23	60	H	DI	1	0.0	NO	25	65	U	20%	V3	0.0	NO
23	61	H	DI	1	0.0	NO	8	66	H	DI	1	0.0	NO
13	62	H	DI	4	0.0	NO	8	66	H	DI	2	0.0	NO
							16	66	H	DI	TS	.5	YES
							23	66	H	DI	2	0.0	NO

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7	67	H	DI	2	0.0	NO	12	73	H	DI	2	0.0	NO
23	67	H	DI	2	0.0	NO	12	73	H	DI	4	0.0	NO
8	69	H	DI	1	0.0	NO	20	73	H	DI	1	0.0	NO
9	69	H	DI	2	0.0	NO	20	73	H	DI	2	0.0	NO
29	69	H	DI	2	0.0	NO	21	73	H	DI	1	0.0	NO
39	69	H	DI	2	0.0	NO	21	73	H	DI	2	0.0	NO
6	70	H	DI	1	0.0	NO	21	73	H	DI	3	0.0	NO
23	70	H	DI	3	0.0	YES	21	73	H	DI	4	0.0	NO
23	70	H	DI	2	0.0	YES	31	73	H	DI	2	0.0	NO
23	70	H	UDS	TE	18.9	YES	31	73	H	DI	3	0.0	NO
27	70	H	DI	6	0.0	NO	31	73	H	DI	5	0.0	NO
27	70	C	<20%	1	23.8	NO	3	74	H	DI	5	0.0	NO
27	70	C	<20%	2	12.6	NO	3	74	H	DI	1	0.0	NO
22	71	H	DI	1	0.0	NO	7	74	H	SQR	TE	19.3	YES
5	72	C	<20%	1	4.1	NO	8	74	H	DI	1	0.0	YES
12	72	H	DI	1	0.0	NO	8	74	H	DI	3	0.0	YES
12	72	H	DI	5	0.0	NO	8	74	H	SQR	TE	17.3	YES
18	72	H	DI	1	0.0	NO	17	74	H	DI	1	0.0	NO
18	72	H	DI	2	0.0	NO	17	74	H	DI	2	0.0	NO
18	72	H	DI	3	0.0	NO	20	74	H	DI	1	0.0	NO
19	72	H	DI	1	0.0	NO	20	74	H	DI	3	0.0	NO
19	72	H	DI	2	0.0	NO	20	74	H	DI	4	0.0	NO
19	72	H	DI	4	0.0	NO	20	74	H	DI	5	0.0	NO
35	72	C	<20%	4	11.5	NO	21	74	H	DI	2	0.0	NO
35	72	C	<20%	4	4.5	NO	28	74	H	DI	3	0.0	NO
35	72	C	<20%	3	47.0	NO	17	75	H	DI	5	0.0	NO
35	72	C	<20%	3	46.8	NO	19	75	H	DI	1	0.0	NO
35	72	C	<20%	4	11.7	NO	20	75	H	DI	1	0.0	NO
35	72	C	<20%	4	4.5	NO	20	75	H	DI	2	0.0	NO
7	73	H	DI	4	0.0	NO							

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21	75	H	DI	3	0.0	NO	15	78	H	DI	1	0.0	NO
21	75	H	DI	2	0.0	NO	19	78	H	DI	5	0.0	NO
26	75	H	DI	1	0.0	NO	20	78	H	DI	2	0.0	NO
26	75	H	DI	2	0.0	NO	22	78	H	DI	2	0.0	NO
5	76	H	DI	2	0.0	NO	22	78	H	DI	3	0.0	NO
14	76	H	DI	3	0.0	NO	23	78	H	DI	2	0.0	NO
17	76	H	DI	3	0.0	NO	2	79	H	DI	1	0.0	NO
18	76	H	34%	1	0.0	NO	4	79	H	DI	2	0.0	NO
18	76	H	DI	2	0.0	NO	4	79	H	DI	1	0.0	NO
18	76	H	DI	3	0.0	NO	5	79	H	DI	4	0.0	NO
21	76	H	DI	3	0.0	NO	7	79	H	DI	2	0.0	NO
21	76	H	DI	2	0.0	NO	10	79	H	DI	4	0.0	NO
9	77	H	DI	1	0.0	NO	16	79	H	DI	1	0.0	NO
9	77	H	DI	2	0.0	NO	16	79	H	DI	2	0.0	NO
11	77	H	DI	2	0.0	NO	18	79	H	DI	1	0.0	NO
12	77	H	DI	1	0.0	NO	19	79	H	DI	1	0.0	NO
12	77	H	DI	2	0.0	NO	19	79	H	DI	2	0.0	NO
12	77	H	DI	3	0.0	NO	20	79	H	DI	2	0.0	NO
12	77	H	DI	4	0.0	NO	14	80	H	DI	2	0.0	NO
16	77	H	DI	2	0.0	NO	14	80	H	DI	3	0.0	NO
16	77	H	DI	3	0.0	NO	14	80	H	DI	4	0.0	NO
26	77	H	<20%	6	11.9	NO	14	80	H	DI	5	0.0	NO
5	78	H	SQR	TE	17.8	YES	20	80	H	DI	2	0.0	NO
7	78	H	DI	6	0.0	NO	5	81	H	DI	1	0.0	NO
12	78	H	DI	3	0.0	NO	16	81	H	DI	1	0.0	NO
14	78	H	DI	1	0.0	NO	16	81	H	DI	2	0.0	NO
14	78	H	DI	2	0.0	NO							

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12	82	H	DI	3	0.0	NO	15	87	H	DI	1	0.0	NO
15	82	H	DI	1	0.0	NO	17	87	H	DI	1	0.0	NO
17	82	H	DI	1	0.0	NO	18	87	H	DI	5	0.0	NO
20	82	H	DI	1	0.0	NO	8	88	H	DI	2	0.0	NO
21	82	H	DI	2	0.0	NO	20	88	H	DI	5	0.0	NO
5	83	H	DI	1	0.0	NO	7	89	H	DI	1	0.0	NO
19	83	H	DI	1	0.0	NO	7	89	H	DI	2	0.0	NO
22	83	H	DI	1	0.0	NO	12	89	H	DI	1	0.0	NO
19	84	H	DI	1	0.0	NO	12	89	H	DI	2	0.0	NO
19	84	H	DI	2	0.0	NO	12	89	H	DI	4	0.0	NO
19	84	H	DI	3	0.0	NO	15	89	H	DI	1	0.0	NO
12	85	H	DI	1	0.0	NO	17	89	H	DI	2	0.0	NO
14	85	H	DI	1	0.0	NO	18	89	H	DI	3	0.0	NO
19	85	H	DI	1	0.0	NO	19	89	H	DI	1	0.0	NO
26	85	H	DI	2	0.0	NO	19	89	H	DI	3	0.0	NO
6	86	H	DI	4	0.0	NO	5	90	H	DI	1	0.0	NO
8	86	H	DI	1	0.0	NO	10	90	H	DI	2	0.0	NO
18	86	H	DI	1	0.0	NO	3	91	H	DI	3	0.0	NO
20	86	H	DI	1	0.0	NO	3	91	H	DI	2	0.0	NO
25	86	H	DI	1	0.0	NO	5	91	H	DI	1	0.0	NO
12	87	H	DI	4	0.0	NO	8	91	H	DI	1	0.0	NO
14	87	H	DI	1	0.0	NO	8	91	H	DI	3	0.0	NO
							7	92	H	DI	2	0.0	NO
							14	92	H	DI	4	0.0	NO
							2	93	H	DI	2	0.0	NO
							5	93	H	DI	2	0.0	NO
							7	94	H	DI	1	0.0	NO

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4	2	H	DI	2	0.0	NO	35	17	U	20%	V2	0.0	NO
11	2	H	DI	3	0.0	NO	35	17	U	39%	V3	0.0	NO
							35	17	U	21%	V4	0.0	NO
4	3	H	DI	1	0.0	NO	16	18	H	DI	1	0.0	NO
7	3	H	DI	3	0.0	NO	28	18	C	<20%	2	41.7	NO
8	4	H	DI	1	0.0	NO	28	18	C	<20%	2	42.0	NO
8	4	H	DI	2	0.0	NO	28	18	C	<20%	2	42.1	NO
9	4	H	DI	2	0.0	NO	30	18	H	DI	1	0.0	NO
17	4	H	DI	3	0.0	NO	10	19	H	DI	1	0.0	YES
							10	19	H	SQR	TE	20.0	YES
12	6	H	DI	2	0.0	NO	31	19	H	DI	2	0.0	NO
7	8	H	DI	1	0.0	NO	16	20	H	DI	1	0.0	NO
17	8	H	DI	1	0.0	NO	35	20	U	<20%	V3	0.0	NO
17	8	H	DI	2	0.0	NO	35	20	U	25%	V4	0.0	NO
17	8	H	DI	4	0.0	NO	22	21	C	<20%	3	33.2	NO
17	9	H	DI	2	0.0	NO	32	22	H	DI	2	0.0	NO
15	11	H	DI	4	0.0	NO	34	25	H	DI	2	0.0	NO
16	11	H	DI	2	0.0	NO	36	25	U	<20%	V1	0.0	NO
22	11	H	DI	1	0.0	NO	36	25	U	27%	V2	0.0	NO
29	11	U	23%	V3	0.0	NO	34	26	H	DI	3	0.0	NO
26	12	U	<20%	V2	0.0	NO	34	26	H	DI	2	0.0	NO
28	13	H	DI	3	0.0	NO	37	26	H	DI	2	0.0	NO
28	13	H	DI	2	0.0	NO	8	27	H	66%	TE	20.3	YES
29	13	U	<20%	V1	0.0	NO	14	27	H	DI	1	0.0	NO
16	14	H	DI	4	0.0	NO	38	28	H	DI	2	0.0	NO
28	17	H	DI	3	0.0	NO	15	29	H	<20%	TS	1.5	YES
29	17	H	DI	2	0.0	NO	37	29	H	DI	1	0.0	NO
							37	29	H	DI	2	0.0	NO

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5	30	H	SQR	TE	16.9	YES	34	36	H	DI	1	0.0	NO
7	30	H	SQR	TE	18.7	YES	39	36	H	DI	2	0.0	NO
34	30	H	DI	1	0.0	NO	44	36	H	DI	2	0.0	NO
39	30	H	DI	1	0.0	YES	15	37	H	DI	TS	3.3	YES
39	30	H	72%	2	0.0	YES	17	37	H	50%	TS	2.2	YES
40	30	H	DI	2	0.0	NO	35	37	H	DI	4	0.0	NO
24	31	H	UDS	TE	18.8	YES	41	37	H	DI	1	0.0	NO
42	31	H	DI	3	0.0	NO	41	37	H	DI	2	0.0	NO
39	32	H	DI	1	0.0	NO	8	39	H	SQR	TE	15.9	YES
11	33	H	DRT	TE	2.5	YES	11	39	H	66%	TS	.8	YES
11	33	H	28%	TS	1.5	YES	34	39	H	DI	2	0.0	NO
24	33	H	SQR	TE	19.6	YES	9	40	H	UDS	TE	19.0	YES
42	33	H	DI	3	0.0	NO	17	41	H	DI	TS	.8	YES
44	33	H	DI	4	0.0	NO	46	41	C	23%	2	0.0	NO
15	34	H	23%	TS	3.3	YES	36	42	H	DI	2	0.0	NO
15	34	H	<20%	TS	2.7	YES	46	42	C	DI	2	0.0	NO
32	34	H	DI	2	0.0	NO	2	43	H	DI	1	0.0	NO
41	34	H	DI	2	0.0	NO	41	44	H	DI	2	0.0	NO
41	34	H	DI	3	0.0	NO	10	45	H	DI	2	0.0	NO
42	34	H	DI	1	0.0	NO	6	46	H	SQR	TE	20.6	YES
10	35	H	DI	TS	1.3	YES	35	46	H	DI	2	0.0	NO
11	36	H	DRT	TE	2.5	YES	46	46	H	DI	2	0.0	NO
11	36	H	44%	TS	.6	YES	11	47	H	SQR	TE	20.2	YES
24	36	H	DI	3	0.0	NO							
28	36	H	DI	5	0.0	NO							

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10	48	H	DI	2	0.0	NO	22	63	H	DI	2	0.0	NO
36	51	H	DI	2	0.0	NO	32	63	H	DI	2	0.0	NO
34	52	H	DI	2	0.0	NO	16	64	H	SQR	TE	20.3	YES
34	52	H	DI	3	0.0	NO	18	64	U	25%	V2	0.0	YES
10	54	H	DI	1	0.0	NO	18	64	H	SQR	TE	20.5	YES
44	54	H	DI	2	0.0	NO	19	65	H	SQR	TE	18.9	YES
5	55	H	DI	2	0.0	NO	24	65	U	25%	V1	0.0	NO
41	55	H	DI	3	0.0	NO	24	65	U	26%	V2	0.0	NO
12	56	H	SQR	TE	18.6	YES	6	66	H	SQR	TE	19.8	YES
36	56	H	DI	2	0.0	NO	17	66	H	SQR	TE	20.1	YES
3	57	H	DI	2	0.0	NO	21	66	H	SQR	TE	20.4	YES
22	57	H	DI	1	0.0	NO	16	67	H	DI	2	0.0	YES
22	57	H	DI	2	0.0	NO	16	67	H	UDS	TE	20.2	YES
1	58	H	96%	TE	19.1	YES	19	68	H	SQR	TE	19.8	YES
22	58	H	DI	2	0.0	NO	22	69	H	DI	2	0.0	NO
41	58	U	31%	V3	0.0	NO	15	70	H	UDS	TE	17.5	YES
41	58	U	27%	V4	0.0	NO	7	71	H	L	TE	20.3	YES
36	59	H	DI	2	0.0	NO	7	71	H	SQR	TE	20.2	YES
38	59	U	32%	V2	0.0	NO	21	71	H	DI	3	0.0	NO
38	59	U	29%	V3	0.0	NO	4	74	H	DI	2	0.0	NO
17	61	H	DI	1	0.0	NO	23	74	H	DI	2	0.0	NO
24	61	U	<20%	V2	0.0	NO	27	75	H	DI	1	0.0	NO
24	61	U	29%	V3	0.0	NO	37	76	H	DI	1	0.0	NO
24	61	U	<20%	V4	0.0	NO	5	77	H	SQR	TE	20.1	YES
21	62	H	DI	2	0.0	NO	32	77	H	DI	2	0.0	NO
24	62	U	24%	V1	0.0	NO							
24	62	U	21%	V3	0.0	NO							

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4	79	H	SQR	TE	17.2	YES							
5	79	H	SQR	TE	16.0	YES							
32	79	C	<20%	1	0.0	NO							
5	80	H	SQR	TE	18.4	YES							
4	81	H	SQR	TE	19.7	YES							
15	85	H	DI	1	0.0	NO							
17	85	H	DI	TE	2.5	YES							
28	85	H	DI	1	0.0	NO							
28	85	H	DI	2	0.0	NO							
25	87	H	DI	1	0.0	NO							
6	90	H	DI	2	0.0	NO							
8	90	H	DI	1	0.0	NO							
5	91	H	DI	2	0.0	NO							
9	91	H	DI	3	0.0	NO							
4	92	H	DI	2	0.0	NO							
12	92	H	DI	2	0.0	NO							
13	92	H	39%	2	0.0	NO							
11	93	H	DI	2	0.0	NO							

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7	1	H	29%	4	44.4	NO	38	27	H	DI	1	0.0	NO
7	1	H	<20%	4	6.1	NO	38	27	H	DI	2	0.0	NO
7	1	H	20%	2	22.6	NO							
7	1	H	<20%	1	24.6	NO	30	29	C	<20%	TS	3.6	NO
14	4	H	54%	2	0.0	YES	42	29	H	39%	2	0.0	NO
20	10	H	DI	2	0.0	NO	42	29	C	<20%	1	0.0	NO
6	13	H	DI	2	0.0	NO	9	30	H	<20%	4	38.7	NO
16	14	H	DI	4	0.0	NO	41	32	C	33%	1	0.0	NO
16	14	H	DI	1	0.0	NO	42	32	H	DI	2	0.0	NO
6	15	H	DI	2	0.0	NO	43	32	H	DI	2	0.0	NO
6	15	H	DI	1	0.0	NO	44	33	C	<20%	1	0.0	NO
10	16	C	<20%	1	17.1	NO	35	36	H	DI	1	0.0	NO
14	16	H	DI	2	0.0	NO	27	37	U	20%	V2	0.0	NO
16	16	H	DRT	TE	2.5	YES	27	37	U	<20%	V3	0.0	NO
16	16	H	DI	TS	0.0	YES	32	37	U	<20%	V2	0.0	NO
33	16	H	DI	2	0.0	NO	32	37	U	26%	V3	0.0	NO
7	18	H	DI	TS	0.2	YES	7	38	H	DI	1	0.0	NO
34	18	C	26%	1	0.0	NO	8	38	H	DI	1	0.0	NO
36	18	H	DI	1	0.0	NO	8	38	C	22%	6	30.3	NO
10	20	H	<20%	TS	10.4	NO	16	38	U	<20	V3	0.0	NO
34	20	H	DI	2	0.0	NO	9	39	H	DI	2	0.0	NO
36	20	H	DI	2	0.0	NO	29	39	H	DI	1	0.0	NO
6	22	H	DI	1	0.0	NO	30	39	H	DI	2	0.0	NO
11	23	H	SQR	TE	20.0	YES	30	39	H	DI	1	0.0	NO
8	25	H	DI	2	0.0	YES	34	39	H	DI	2	0.0	NO
8	25	H	55%	1	0.0	YES	41	39	H	DI	2	0.0	NO
							41	39	H	DI	1	0.0	NO

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3	40	H	DI	4	0.0	NO	20	53	H	DI	1	0.0	NO
3	40	H	DI	3	0.0	NO	8	54	H	DI	1	0.0	NO
10	41	H	DI	1	0.0	NO	17	56	H	98%	TE	15.4	YES
39	42	H	DI	2	0.0	NO	40	56	H	DI	1	0.0	NO
39	43	U	<20%	V3	0.0	NO	42	56	H	DI	1	0.0	NO
39	43	U	21%	V4	0.0	NO	13	57	H	DI	TS	0.4	YES
22	44	H	54%	1	0.0	YES	40	57	H	DI	1	0.0	NO
39	47	H	DI	1	0.0	NO	14	58	H	DI	1	0.0	NO
43	47	H	DI	1	0.0	NO	27	58	H	DI	1	0.0	NO
40	48	H	DI	2	0.0	NO	27	58	H	DI	2	0.0	NO
40	48	H	DI	1	0.0	NO	33	59	U	<20%	V1	0.0	NO
10	49	H	DI	1	0.0	NO	33	59	U	33%	V2	0.0	NO
12	49	H	DI	1	0.0	NO	33	59	U	29%	V3	0.0	NO
20	49	H	DI	2	0.0	YES	22	60	H	SCR	TE	19.5	YES
20	49	H	52%	1	0.0	YES	44	60	H	DI	1	0.0	NO
27	49	H	DI	1	0.0	NO	13	61	H	48%	TS	1.1	YES
32	49	U	27%	V2	0.0	NO	40	61	H	DI	1	0.0	NO
32	49	U	27%	V3	0.0	NO	43	61	H	DI	1	0.0	NO
32	49	U	30%	V4	0.0	NO	44	61	H	DI	1	0.0	NO
39	49	H	DI	1	0.0	NO	27	63	H	<20%	5	43.7	NO
8	50	H	DI	1	0.0	NO	33	63	H	DI	1	0.0	NO
16	50	H	DI	1	0.0	YES	9	64	C	DI	3	8.2	NO
16	50	H	UDS	TS	0.7	YES	9	64	C	DI	3	46.3	NO
18	52	H	DI	5	0.0	NO	35	64	H	DI	2	0.0	NO
18	52	H	DI	1	0.0	NO	43	64	H	DI	1	0.0	NO
25	52	H	DI	1	0.0	NO							
11	53	H	DI	3	0.0	NO							

STEAM GENERATOR NUMBER 24March of 1987

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
28	65	H	48%	2	0.0	YES	35	69	H	DI	2	0.0	NO
34	65	H	DI	2	0.0	NO	41	69	U	<20%	V1	0.0	NO
35	65	H	DI	2	0.0	NO	41	69	U	<20%	V2	0.0	NO
36	65	H	DI	4	0.0	NO	7	70	H	DI	3	0.0	NO
36	65	H	DI	2	0.0	NO	7	70	H	DI	1	0.0	NO
23	66	U	23%	V2	0.0	NO	20	70	H	SQR	TE	20.1	YES
23	66	U	23%	V3	0.0	NO	13	72	H	DI	1	0.0	NO
26	66	H	SQR	TE	20.3	NO	13	72	H	DI	3	0.0	NO
32	66	H	<20%	1	0.0	NO	35	72	H	DI	1	0.0	NO
32	66	H	DI	2	0.0	NO	19	73	U	<20%	V1	0.0	NO
34	66	H	DI	2	0.0	NO	19	73	U	24%	V2	0.0	NO
35	66	H	DI	2	0.0	NO	32	73	H	DI	2	0.0	NO
6	67	H	DI	1	0.0	NO	10			DI	1	0.0	NO
26	67	H	DI	2	0.0	NO	17	74	H	DI	1	0.0	NO
31	67	H	DI	2	0.0	NO	25	75	H	DI	5	0.0	NO
31	67	H	DI	1	0.0	NO	9	76	H	61%	1	0.0	YES
32	67	H	DI	3	0.0	NO	19	76	H	DI	1	0.0	NO
11	68	H	DI	3	0.0	NO	21	76	H	DI	2	0.0	NO
22	68	U	<20%	V4	0.0	NO	26	76	H	DI	3	0.0	NO
22	68	U	<20%	V3	0.0	NO	26	76	H	DI	2	0.0	NO
22	68	U	<20%	V2	0.0	NO	21	77	H	DI	2	0.0	NO
22	68	U	<20%	V1	0.0	NO	23	77	H	DI	3	0.0	NO
25	68	U	<20%	V3	0.0	YES	23	77	H	DI	2	0.0	NO
25	68	H	SQR	TE	18.6	YES	23	77	H	DI	1	0.0	NO
40	68	H	DI	3	0.0	NO	17	78	H	DI	2	0.0	NO
41	68	H	DI	1	0.0	NO	22	78	H	34%	1	0.0	NO
41	68	U	<20%	V1	0.0	NO	33	78	C	33%	1	0.0	NO
12	69	H	DI	3	0.0	NO							

STEAM GENERATOR NUMBER 24March of 1987

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
2	79	H	<20%	4	26.6	NO	23	83	H	DI	2	0.0	NO
14	79	H	DI	1	0.0	NO	29	83	C	39%	1	0.0	NO
18	79	H	DI	1	0.0	NO	30	83	H	DI	3	0.0	NO
19	79	H	DI	1	0.0	NO	3	84	H	DI	1	0.0	NO
22	79	H	DI	1	0.0	NO	17	84	H	DI	1	0.0	NO
7	80	H	DI	2	0.0	NO	18	84	H	DI	5	0.0	YES
7	80	H	DI	1	0.0	NO	18	84	H	DI	2	0.0	YES
							18	84	H	60%	1	0.0	YES
14	80	H	DI	1	0.0	NO	19	84	H	DI	4	0.0	NO
15	80	H	DI	1	0.0	NO	19	84	H	DI	2	0.0	NO
19	80	H	DI	1	0.0	NO	19	84	H	DI	1	0.0	NO
21	80	H	DI	1	0.0	NO	12	85	H	DI	1	0.0	NO
21	80	H	37%	2	0.0	NO	17	85	H	DI	2	0.0	NO
21	80	H	DI	2	0.0	NO	20	85	H	DI	2	0.0	NO
14	81	H	42%	1	0.0	YES	18	86	H	DI	?	0.0	NO
17	81	H	DI	1	0.0	NO	18	86	H	DI	1	0.0	NO
24	81	H	DI	4	0.0	NO	19	86	H	DI	1	0.0	YES
24	81	H	DI	1	0.0	NO	19	86	H	52%	2	0.0	YES
8	82	H	DI	1	0.0	NO	21	86	H	DI	2	0.0	NO
10	82	H	DI	2	0.0	NO	21	86	H	DI	1	0.0	NO
16	82	H	28%	1	0.0	NO	2	87	H	DI	2	0.0	NO
21	82	H	DI	3	0.0	YES	12	87	H	DI	5	0.0	NO
21	82	H	49%	2	0.0	YES	12	87	H	DI	2	0.0	NO
21	82	H	46%	1	0.0	YES	12	87	H	DI	1	0.0	NO
23	82	H	DI	1	0.0	NO	14	87	H	DI	2	0.0	NO
							14	87	H	DI	1	0.0	NO
10	83	H	DI	1	0.0	NO	19	87	H	DI	3	0.0	NO
21	83	H	DI	1	0.0	NO	19	87	H	DI	2	0.0	NO
							7	88	H	DI	1	0.0	NO

STEAM GENERATOR NUMBER 24March of 1987

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
15	88	H	DI	3	0.0	NO							
15	88	H	DI	2	0.0	NO							
18	88	H	DI	2	0.0	NO							
18	88	H	DI	1	0.0	NO							
22	88	H	DI	3	0.0	NO							
22	88	H	DI	2	0.0	NO							
17	89	H	DI	2	0.0	NO							
17	89	H	DI	1	0.0	NO							
18	89	H	DI	1	0.0	NO							
17	90	H	DI	1	0.0	NO							
7	93	H	DI	1	0.0	NO							
9	93	H	DI	1	0.0	YES							
9	93	H	79%	2	0.0	YES							

STEAM GENERATOR TUBE INSERVICE INSPECTION REPORTUNIT 2 September 1987

On August 26, 1987 the decision was made to bring Unit 2 down to repair the reactor coolant pump hatches. On September 1, 1987 the decision was made to perform 100% eddy current inspection of all four steam generators. This inspection was scheduled for October, but was moved up one month due to the unit being down anyway. All tubes were tested from the tube end hot leg to the seventh support plate hot leg.

On steam generator 21, 3,229 tubes were tested. Fourteen tubes were removed from service by mechanical plugging.

On steam generator 22, 3,144 tubes were tested. Seventeen tubes were removed from service by mechanical plugging.

On steam generator 23, 3,140 tubes were tested. Seventeen tubes were removed from service by mechanical plugging.

On steam generator 24, 3,166 tubes were tested. Thirty tubes were removed from service by mechanical plugging.

Attached are summary reports of indications found, their location and whether or not the tube was plugged.

STEAM GENERATOR NUMBER 21

September of 1987

ROW	COL	LEG	INDIC	LOC	INCH	PLUGGED	ROW	COL	LEG	INDIC	LOC	INCH	PLUGGED
12	4	H	DI	4	0.0	NO	15	14	H	DI	1	0.0	NO
14	4	H	DI	3	0.0	NO	22	14	H	DI	1	0.0	NO
16	6	H	DI	2	0.0	NO	24	14	H	DI	3	0.0	NO
9	8	H	DI	1	0.0	NO	24	14	H	DI	2	0.0	NO
25	8	H	DI	2	0.0	NO	12	15	H	DI	3	0.0	NO
14	9	H	DI	3	0.0	NO	14	15	H	DI	2	0.0	NO
20	9	H	38%	2	0.0	NO	9	16	H	DRT	TE	2.3	NO
20	9	H	DI	3	0.0	NO	11	16	H	DI	4	0.0	NO
5	10	H	DI	2	0.0	NO	11	16	H	DI	1	0.0	NO
11	10	H	DRT	TE	2.3	NO	11	16	H	DI	2	0.0	NO
11	10	H	DI	3	0.0	NO	11	16	H	DI	3	0.0	NO
9	11	H	DRT	TE	1.5	NO	9	17	H	23%	3	0.0	NO
22	11	H	DI	3	0.0	NO	11	17	H	DI	1	0.0	NO
25	11	H	DI	2	0.0	NO	14	17	H	DI	4	0.0	NO
25	11	H	DI	1	0.0	NO	25	17	H	DI	4	0.0	NO
25	11	H	DI	3	0.0	NO	3	18	H	DI	3	0.0	NO
11	12	H	84%	TE	2.6	YES	3	18	H	DI	2	0.0	NO
11	12	H	DI	3	0.0	YES	5	18	H	DRT	TE	2.6	NO
13	12	H	DI	2	0.0	NO	11	18	H	DI	2	0.0	NO
13	12	H	DI	3	0.0	NO	11	18	H	DI	5	0.0	NO
20	12	H	DI	2	0.0	NO	11	18	H	DI	3	0.0	NO
11	13	H	88%	TE	0.0	YES	12	18	H	DI	3	0.0	NO
14	13	H	DI	3	0.0	NO	24	18	H	DI	1	0.0	NO
27	13	H	DI	2	0.0	NO	32	18	H	28%	4	0.0	NO
10	14	H	82%	TE	2.8	YES	27	19	H	DI	4	0.0	NO
12	14	H	DI	2	0.0	NO	27	19	H	DI	5	0.0	NO
12	14	H	DI	3	0.0	NO	27	19	H	DI	1	0.0	NO
							27	19	H	DI	2	0.0	NO

STEAM GENERATOR NUMBER 21September of 1987

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
30	19	H	DI	3	0.0	NO	30	23	H	DI	1	0.0	NO
4	20	H	DRT	TE	2.4	NO	2	24	H	DRT	TE	2.4	NO
7	20	H	DI	3	0.0	NO	25	24	H	DI	1	0.0	NO
9	20	H	DRT	TE	2.6	NO	29	24	H	DI	2	0.0	NO
11	20	H	DI	4	0.0	NO	30	24	H	DRT	TE	2.6	NO
11	20	H	35%	2	0.0	NO	2	25	H	DRT	TE	2.7	NO
11	20	H	DRT	TE	2.4	NO	5	25	H	DRT	TE	2.7	NO
11	20	H	DI	1	0.0	NO	6	25	H	DRT	TE	2.7	NO
11	20	H	DI	3	0.0	NO	7	25	H	DI	1	0.0	NO
12	20	H	DRT	TE	2.4	NO	8	25	H	DRT	TE	2.7	NO
17	20	H	DRT	TE	2.6	NO	12	25	H	DRT	TE	2.7	NO
20	20	H	DRT	TE	2.5	NO	12	25	H	DI	3	0.0	NO
26	20	H	29%	2	44.5	NO	14	25	H	DI	1	0.0	NO
32	20	H	DI	1	0.0	NO	14	25	H	DI	2	0.0	NO
32	20	H	DI	3	0.0	NO	14	25	H	DI	3	0.0	NO
6	21	H	DRT	TE	2.5	NO	16	25	H	41%	2	0.0	YES
11	21	H	DI	5	0.0	NO	16	25	H	37%	2	0.0	YES
11	21	H	DI	3	0.0	NO	12	26	H	DRT	TE	2.5	NO
11	21	H	DI	2	0.0	NO	19	26	H	DI	2	0.0	NO
13	21	H	DI	3	0.0	NO	26	26	H	DRT	TE	2.3	NO
29	21	H	DI	3	0.0	NO	29	26	H	DRT	TE	2.3	NO
17	22	H	DRT	TE	2.5	NO	10	27	H	DRT	TE	2.4	NO
24	22	H	DI	2	0.0	NO	12	27	H	DRT	TE	2.2	NO
7	23	H	DI	3	0.0	NO	16	27	H	DRT	TE	2.4	NO
11	23	H	DRT	TE	2.6	NO	16	27	H	DI	3	0.0	NO
11	23	H	DI	2	0.0	NO							
12	23	H	55%	3	0.0	YES							

STEAM GENERATOR NUMBER 21September of 1987

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
19	27	H	DRT	TE	2.4	NO	14	30	H	DI	4	0.0	NO
26	27	H	DRT	TE	2.3	NO	16	30	H	DI	4	0.0	NO
28	27	H	DI	2	0.0	NO	18	30	H	DRT	TE	2.5	NO
30	27	H	DRT	TE	2.3	NO	19	30	H	DI	2	0.0	NO
3	28	H	DRT	TE	2.4	NO	19	30	H	DRT	TE	2.4	NO
26	28	H	DRT	TE	2.3	NO	21	30	H	DRT	TE	2.4	NO
40	28	H	DI	1	0.0	NO	30	30	H	DRT	TE	2.4	NO
40	28	H	DI	3	0.0	NO	31	30	H	DRT	TE	2.7	NO
7	29	H	DRT	TE	2.4	NO	33	30	H	DI	2	0.0	NO
11	29	H	DRT	TE	2.4	NO	2	31	H	DRT	TE	2.5	NO
12	29	H	DI	3	0.0	NO	6	31	H	DRT	TE	2.7	NO
12	29	H	DRT	TE	2.5	NO	35	31	H	DRT	TE	2.5	NO
12	29	H	DI	1	0.0	NO	6	32	H	DRT	TE	2.3	NO
12	29	H	DI	2	0.0	NO	10	32	H	DI	2	0.0	NO
25	29	H	DI	2	0.0	NO	22	32	H	DRT	TE	2.5	NO
28	29	H	DI	3	0.0	NO	23	32	H	DRT	TE	2.4	NO
29	29	H	DI	5	0.0	NO	24	32	H	DRT	TE	2.4	NO
29	29	H	DI	2	0.0	NO	27	32	H	DRT	TE	2.5	NO
29	29	H	DI	3	0.0	NO	27	32	H	DI	2	0.0	NO
31	29	H	DRT	TE	2.5	NO	31	32	H	DRT	TE	2.5	NO
36	29	H	DI	2	0.0	NO	14	33	H	DI	3	0.0	NO
40	29	H	DI	1	0.0	NO	14	33	H	DI	2	0.0	NO
4	30	H	DI	2	0.0	NO	24	33	H	DRT	TE	2.5	NO
5	30	H	DRT	TE	2.4	NO	25	33	H	DRT	TE	2.2	NO
6	30	H	DRT	TE	2.6	NO	33	33	H	DI	2	0.0	NO
7	30	H	DRT	TE	2.6	NO							
7	30	H	DI	1	0.0	NO							

STEAM GENERATOR NUMBER 21September of 1987

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
38	33	H	DI	2	0.0	NO	17	37	H	DRT	TE	2.4	NO
9	34	H	DRT	TE	2.6	NO	26	37	H	DRT	TE	2.4	NO
25	34	H	DRT	TE	2.4	NO	27	37	H	DRT	TE	2.2	NO
25	34	H	DI	2	0.0	NO	28	37	H	DRT	TE	2.4	NO
26	34	H	DRT	TE	2.3	NO	2	38	H	DRT	TE	2.3	NO
27	34	H	DRT	TE	2.4	NO	5	38	H	DRT	TE	2.7	NO
28	34	H	DRT	TE	2.4	NO	6	38	H	DRT	TE	2.3	NO
31	35	H	DRT	TE	2.5	NO	7	38	H	DRT	TE	2.3	NO
2	36	H	DRT	TE	2.4	NO	11	38	H	DRT	TE	2.5	NO
6	36	H	DRT	TE	2.7	NO	14	38	H	DI	1	0.0	NO
9	36	H	DRT	TE	2.3	NO	14	38	H	38%	2	0.0	NO
11	36	H	DRT	TE	2.4	NO	25	38	H	DI	3	0.0	NO
12	36	H	DI	2	0.0	NO	25	38	H	DI	2	0.0	NO
12	36	H	DRT	TE	2.4	NO	2	39	H	DRT	TE	2.3	NO
14	36	H	DRT	TE	2.5	NO	6	39	H	DRT	TE	2.4	NO
17	36	H	DRT	TE	2.5	NO	8	39	H	60%	TE	2.4	YES
18	36	H	DRT	TE	2.5	NO	9	39	H	DRT	TE	2.6	NO
27	36	H	DRT	TE	2.4	NO	10	39	H	DRT	TE	2.3	NO
29	36	H	DRT	TE	2.5	NO	11	39	H	DI	TE	20.5	YES
2	37	H	DRT	TE	2.7	NO	14	39	H	DI	2	0.0	NO
4	37	H	43%	1	0.0	YES	29	39	H	DRT	TE	2.5	NO
7	37	H	DRT	TE	2.6	NO	32	39	H	DRT	TE	2.4	NO
11	37	H	DRT	TE	2.6	NO	2	40	H	44%	TE	2.3	YES
12	37	H	DRT	TE	2.6	NO	6	40	H	48%	2	0.0	YES

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<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
9	40	H	85%	TS	0.0	YES	7	42	H	DRT	TE	2.6	NO
19	40	H	DI	2	0.0	NO	12	42	H	DRT	TE	2.5	NO
19	40	H	DI	1	0.0	NO	15	42	H	DRT	TE	2.5	NO
22	40	H	DI	2	0.0	NO	27	42	H	DRT	TE	2.6	NO
25	40	H	DRT	TE	2.4	NO	2	43	H	DRT	TE	2.6	NO
26	40	H	DRT	TE	2.4	NO	9	43	H	DRT	TE	2.3	NO
33	40	H	DI	2	0.0	NO	12	43	H	DRT	TE	2.6	NO
2	41	H	DRT	TE	2.6	NO	20	43	H	97%	TE	18.0	YES
5	41	H	DRT	TE	2.5	NO	20	43	H	91%	TE	16.6	YES
7	41	H	DRT	TE	2.3	NO	6	44	H	DRT	TE	2.3	NO
8	41	H	DRT	TE	2.3	NO	11	44	H	DRT	TE	2.3	NO
9	41	H	DRT	TE	2.3	NO	28	44	H	DRT	TE	2.4	NO
12	41	H	DRT	TE	2.4	NO	29	44	H	DRT	TE	2.6	NO
17	41	H	DRT	TE	2.5	NO	35	44	H	DRT	TE	2.5	NO
22	41	H	DRT	TE	2.5	NO	6	45	H	DRT	TE	2.7	NO
23	41	H	DRT	TE	2.6	NO	9	45	H	DRT	TE	2.3	NO
26	41	H	DRT	TE	2.5	NO	10	45	H	DRT	TE	2.3	NO
27	41	H	DRT	TE	2.4	NO	14	45	H	DRT	TE	2.6	NO
29	41	H	DRT	TE	2.5	NO	16	45	H	DRT	TE	2.2	NO
30	41	H	DRT	TE	2.5	NO	26	45	H	DRT	TE	2.4	NO
31	41	H	DRT	TE	2.5	NO	32	45	H	DRT	TE	2.4	NO
3	42	H	DRT	TE	2.3	NO	5	46	H	DRT	TE	2.5	NO
6	42	H	DRT	TE	2.5	NO	6	46	H	DRT	TE	2.4	NO

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<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
9	46	H	DRT	TE	2.2	NO	11	57	H	24%	3	0.0	NO
10	46	H	DRT	TE	2.1	NO	13	58	H	DI	2	0.0	NO
11	46	H	DRT	TE	2.3	NO	14	58	H	DRT	TE	2.5	NO
12	46	H	85%	TE	2.7	YES	29	58	H	DI	2	0.0	NO
2	47	H	DRT	TE	2.3	NO	2	60	H	37%	2	0.0	NO
6	47	H	DRT	TE	2.0	NO	4	60	H	DRT	TE	2.5	NO
9	47	H	DRT	TE	2.0	NO	15	60	H	DRT	TE	0.0	NO
16	47	H	DI	1	0.0	NO	28	60	H	DI	3	0.0	NO
23	47	H	DRT	TE	2.3	NO	11	61	H	DRT	TE	0.0	NO
28	47	H	DRT	TE	2.1	NO	17	61	H	DRT	TE	2.5	NO
31	47	H	DI	2	0.0	NO	16	62	H	DRT	TE	2.5	NO
20	48	H	DRT	TE	2.3	NO	14	67	H	DRT	TE	2.3	NO
25	49	H	25%	3	0.0	NO	2	70	H	DI	3	0.0	NO
12	50	H	SQR	TE	19.3	YES	3	70	H	DI	3	0.0	NO
5	52	H	DRT	TE	2.3	NO	12	70	H	DI	2	0.0	NO
20	52	H	DI	1	0.0	NO	15	70	H	DI	2	0.0	NO
15	53	H	DI	2	0.0	NO	38	70	H	DI	2	0.0	NO
5	54	H	DRT	TE	2.7	NO	16	71	H	DI	3	0.0	NO
19	54	H	DI	1	0.0	NO	17	71	H	DI	3	0.0	NO
31	54	H	DI	2	0.0	NO	16	73	H	34%	2	0.0	NO
33	54	H	DI	2	0.0	NO	17	73	H	DI	3	0.0	NO
30	55	H	DRT	TE	2.8	NO	17	76	H	37%	2	0.0	NO
31	55	H	DI	3	0.0	NO	4	78	H	DI	2	0.0	NO

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6	82	H	DI	2	0.0	NO							
15	85	H	35%	2	0.0	NO							
15	85	H	34%	3	0.0	NO							
2	92	H	DI	2	0.0	NO							

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5	1	H	DI	2	0.0	NO	24	13	H	DI	4	0.0	NO
							24	13	H	DI	2	0.0	NO
15	3	H	DI	2	0.0	NO							
15	3	H	DI	1	0.0	NO	4	14	H	DRT	TE	2.8	NO
15	4	H	DI	1	0.0	NO	9	14	H	DI	2	0.0	NO
10	5	H	DI	1	0.0	NO	12	14	H	DRT	TE	2.1	NO
11	5	H	13%	TS	43.2	NO	20	14	H	20%	2	0.0	NO
11	5	H	16%	1	16.4	NO	28	14	H	36%	2	0.0	NO
3	6	H	DRT	TE	2.7	NO	31	14	H	DI	3	0.0	NO
16	6	H	DI	2	0.0	NO	31	14	H	38%	2	0.0	NO
16	6	H	DI	1	0.0	NO							
16	6	H	DI	3	0.0	NO	2	15	H	DRT	TE	3.4	NO
4	7	H	DRT	TE	2.8	NO	8	15	H	DI	2	0.0	NO
15	7	H	39%	1	0.0	NO	11	16	H	DRT	TE	2.4	NO
15	8	H	DI	2	0.0	NO	23	16	H	DRT	TE	2.4	NO
21	8	H	DI	2	0.0	NO	27	16	H	DI	2	0.0	NO
8	9	H	DI	1	0.0	NO	9	17	H	DI	2	0.0	NO
15	9	H	DI	4	0.0	NO	15	17	H	DI	2	0.0	NO
21	9	H	DI	1	0.0	NO	15	17	H	DI	1	0.0	NO
28	10	H	DI	2	0.0	NO	17	17	H	DI	1	0.0	NO
							17	17	H	DI	2	0.0	NO
15	11	H	20%	2	0.0	NO	22	17	H	DI	3	0.0	NO
16	11	H	37%	3	0.0	NO	29	17	H	DI	2	0.0	NO
9	12	H	DI	2	0.0	NO	33	17	H	DI	2	0.0	NO
10	12	H	DRT	TE	2.2	NO	10	18	H	DRT	TE	2.4	NO
15	13	H	20%	2	0.0	NO	2	19	H	DRT	TE	2.9	NO
15	13	H	30%	4	0.0	NO	29	19	H	DI	1	0.0	NO

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31	19	H	DI	1	0.0	NO	3	26	H	DRT	TE	2.7	NO
32	19	H	DRT	TE	2.5	NO	5	28	H	DRT	TE	2.3	NO
36	19	H	DI	1	0.0	NO	9	28	H	DI	1	0.0	NO
20	20	H	DI	2	0.0	NO	16	28	H	DI	2	0.0	NO
26	20	H	DRT	TE	2.5	NO	25	28	H	DRT	TE	2.1	NO
29	20	H	DI	2	0.0	NO	12	29	H	DRT	TE	2.4	YES
4	21	H	DRT	TE	2.7	NO	12	29	F	SQR	TE	17.3	YES
9	21	H	DI	1	0.0	NO	32	30	H	DI	2	0.0	NO
26	21	H	DRT	TE	2.2	NO	6	31	H	DRT	TE	2.1	NO
28	21	H	39%	2	0.0	NO	9	31	H	DRT	TE	2.1	NO
10	22	H	28%	1	0.0	NO	11	31	H	DI	TE	20.8	YES
26	22	H	DRT	TE	2.2	NO	27	31	H	DRT	TE	2.3	NO
6	23	H	DI	TE	20.5	YES	32	32	H	DRT	TE	2.2	NO
15	23	H	DI	2	0.0	NO	3	33	H	DRT	TE	2.6	NO
26	23	H	94%	TE	2.1	YES	16	33	H	39%	1	0.0	NO
30	23	H	DRT	TE	1.5	NO	27	33	H	DRT	TE	2.0	NO
2	24	H	DRT	TE	2.8	NO	10	34	H	37%	1	0.0	NO
3	24	H	DRT	TE	2.8	NO	19	34	H	DRT	TE	1.9	NO
15	24	H	DI	1	0.0	NO	28	34	H	DRT	TE	2.3	NO
16	24	H	37%	2	0.0	NO	32	34	H	DRT	TE	2.6	NO
16	24	H	DI	4	0.0	NO	8	36	H	DI	2	0.0	NO
28	24	H	DRT	TE	2.4	NO	8	36	H	DI	1	0.0	NO
3	25	H	DRT	TE	2.5	NO	20	36	H	DI	1	0.0	NO
5	25	H	DRT	TE	2.9	NO	30	36	H	DI	2	0.0	NO

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4	37	H	DRT	TE	3.0	NO	26	44	H	DRT	TE	2.3	NO
5	37	H	DRT	TE	2.2	NO	7	45	H	DI	1	0.0	NO
12	38	H	DI	1	0.0	NO	7	45	H	DI	2	0.0	NO
13	38	H	DRT	TE	2.2	NO	12	45	H	DRT	TE	2.5	NO
17	38	H	DRT	TE	2.5	NO	4	46	H	37%	1	0.0	NO
8	39	H	DI	2	0.0	NO	3	48	H	DRT	TE	2.6	NO
9	39	H	DRT	TE	2.2	NO	5	48	H	DRT	TE	2.3	NO
27	39	H	DRT	TE	2.1	NO	9	48	H	DRT	TE	2.2	NO
28	39	H	DRT	TE	2.0	NO	10	48	H	DRT	TE	2.6	NO
33	39	H	DRT	TE	2.2	NO	2	49	H	DRT	TE	2.8	NO
3	40	H	DRT	TE	2.7	NO	3	49	H	DI	1	0.0	NO
5	40	H	DRT	TE	2.2	NO	5	49	H	DI	2	0.0	NO
35	40	H	DRT	TE	2.4	NO	6	49	H	DRT	TE	2.0	NO
13	41	H	DRT	TE	2.2	NO	17	49	H	DRT	TE	1.6	NO
16	41	H	DI	1	0.0	NO	2	50	H	DRT	TE	2.7	NO
3	42	H	DRT	TE	2.4	NO	12	50	H	DRT	TE	2.4	NO
5	43	H	DRT	TE	2.2	NO	19	50	H	DRT	TE	2.6	NO
32	43	H	DRT	TE	2.4	NO	12	51	H	DRT	TE	2.6	NO
40	43	H	DI	TE	19.5	YES	2	52	H	DRT	TE	2.4	NO
4	44	H	DRT	TE	2.6	NO	3	52	H	DRT	TE	2.7	NO
9	44	H	37%	1	0.0	NO	5	52	H	DI	1	0.0	NO
11	44	H	DRT	TE	2.2	NO	12	52	H	DRT	TE	2.5	NO
24	44	H	SQR	TE	20.4	YES	16	52	H	DRT	TE	2.3	NO
							18	52	H	DRT	TE	2.4	NO

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20	52	H	DI	1	0.0	NO	11	57	H	DI	TS	0.1	YES
							11	57	H	DI	TS	1.3	YES
30	52	H	DRT	TE	2.5	NO	27	57	H	DI	2	0.0	NO
2	53	H	DRT	TE	2.4	NO	30	57	H	DI	1	0.0	NO
3	53	H	DRT	TE	2.4	NO	32	57	H	DI	2	0.0	NO
12	53	H	DRT	TE	2.4	NO	5	58	H	DI	1	0.0	NO
21	53	H	DRT	TE	2.5	NO	9	58	H	DI	1	0.0	NO
2	54	H	DRT	TE	2.5	NO	9	58	H	DI	2	0.0	NO
4	54	H	DI	1	0.0	NO	12	58	H	DI	TS	1.4	YES
8	54	H	DI	1	0.0	NO	27	58	H	DRT	3	0.0	NO
17	54	H	DRT	TE	2.4	NO	30	58	H	DI	1	0.0	NO
30	54	H	97%	TE	2.5	YES	30	59	H	DRT	TE	2.2	NO
31	54	H	DI	1	0.0	NO	31	59	H	DI	2	0.0	NO
19	55	H	DRT	TE	2.5	NO	2	60	H	DRT	TE	2.3	NO
25	55	H	DI	2	0.0	NO	3	60	H	DRT	TE	2.2	NO
33	55	H	DI	1	0.0	NO	7	60	H	34%	1	0.0	NO
33	55	H	DI	3	0.0	NO	23	60	H	DI	1	0.0	NO
2	56	H	DRT	TE	2.6	NO	28	60	H	DRT	TE	2.2	NO
4	56	H	DI	2	0.0	YES	3	61	H	DI	1	0.0	NO
4	56	H	44%	1	0.0	YES	8	61	H	DI	1	0.0	NO
6	56	H	DRT	TE	2.5	NO	10	61	H	DRT	TE	2.2	NO
8	56	H	79%	TE	2.5	YES	15	62	H	DI	2	0.0	NO
11	56	H	DI	TS	0.7	YES	24	62	H	DRT	TE	2.2	NO
16	56	H	DRT	TE	2.3	NO	39	62	H	DI	2	0.0	NO
27	56	H	DRT	TE	2.4	NO							

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42	62	H	54%	1	0.0	YES	10	70	H	DRT	TE	2.2	NO
2	63	H	DRT	TE	2.4	NO	26	71	H	DRT	TE	2.2	NO
2	63	H	DI	1	0.0	NO	18	72	H	DI	1	0.0	NO
8	63	H	DI	1	0.0	NO	18	72	H	DI	2	0.0	NO
9	63	H	DI	2	0.0	NO	18	72	H	DI	3	0.0	NO
19	63	H	93%	TS	0.6	YES	19	72	H	37%	1	0.0	NO
10	63	H	DI	2	0.0	NO	19	72	H	DI	2	0.0	NO
12	64	H	DRT	TE	2.5	NO	7	73	H	DI	4	0.0	NO
23	64	H	DI	3	0.0	NO	12	73	H	DI	4	0.0	NO
42	64	H	DI	1	0.0	NO	15	73	H	DRT	TE	3.2	NO
3	65	H	DRT	TE	2.4	NO	20	73	H	DI	1	0.0	NO
12	65	H	DRT	TE	2.4	NO	20	73	H	DI	2	0.0	NO
12	66	H	DRT	TE	2.3	NO	21	73	H	DI	2	0.0	NO
9	67	H	DRT	TE	2.3	NO	31	73	H	DI	2	0.0	NO
20	68	H	DRT	TE	2.6	NO	3	74	H	DI	5	0.0	NO
4	69	H	DRT	TE	2.5	NO	14	74	H	DRT	TE	2.1	NO
8	69	H	DI	1	0.0	NO	17	74	H	DI	2	0.0	NO
10	69	H	DRT	TE	2.2	NO	19	75	H	DI	1	0.0	NO
12	69	H	DRT	TE	2.2	NO	20	74	H	DI	1	0.0	NO
16	69	H	DRT	TE	2.2	NO	20	74	H	DI	5	0.0	NO
23	69	H	DI	2	0.0	NO	21	74	H	DI	2	0.0	NO
29	69	H	DI	2	0.0	NO	15	75	H	DRT	TE	2.4	NO
39	69	H	57%	2	0.0	YES	17	75	H	DI	5	0.0	NO
							20	75	H	DI	1	0.0	NO
							26	75	H	DI	1	0.0	NO
							26	75	H	DI	2	0.0	NO
							31	75	H	DI	3	0.0	NO

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14	76	H	DRT	TE	2.6	NO	18	84	H	DI	1	0.0	NO
18	76	H	31%	1	0.0	NO	19	84	H	DI	2	0.0	NO
18	76	H	DI	2	0.0	NO	19	84	H	DI	1	0.0	NO
							19	84	H	DI	3	0.0	NO
11	77	H	DI	2	0.0	NO	12	85	H	DI	1	0.0	NO
12	77	H	DI	1	0.0	NO	14	85	H	57%	1	0.0	YES
16	77	H	DI	2	0.0	NO	15	85	H	DI	1	0.0	NO
15	78	H	DI	1	0.0	NO	26	85	H	DI	2	0.0	NO
4	79	H	DI	2	0.0	NO	26	85	H	DI	1	0.0	NO
4	79	H	DI	1	0.0	NO	6	86	H	DI	4	0.0	NO
7	79	H	DI	2	0.0	NO	18	86	H	DI	1	0.0	NO
16	79	H	DI	2	0.0	NO	20	86	H	DI	1	0.0	NO
19	79	H	DI	1	0.0	NO	25	86	H	DI	1	0.0	NO
20	79	H	DI	2	0.0	NO	14	87	H	DI	1	0.0	NO
20	79	H	DI	3	0.0	NO	17	87	H	DI	1	0.0	NO
29	79	H	DI	3	0.0	NO	18	87	H	DI	5	0.0	NO
14	80	H	DI	5	0.0	NO	8	88	H	DI	2	0.0	NO
14	80	H	DI	4	0.0	NO	20	88	H	DI	5	0.0	NO
4	81	H	DI	2	0.0	NO	7	89	H	DI	1	0.0	NO
5	81	H	DI	1	0.0	NO	12	89	H	DI	1	0.0	NO
16	81	H	DI	1	0.0	NO	17	89	H	DI	2	0.0	NO
12	82	H	DI	3	0.0	NO	19	89	H	DI	3	0.0	NO
15	82	H	39%	1	0.0	NO	19	89	H	DI	1	0.0	NO
21	82	H	DI	2	0.0	NO	3	90	H	DI	2	0.0	NO
12	83	H	DI	1	0.0	NO	5	90	H	DI	1	0.0	NO
12	83	H	DI	4	0.0	NO							
22	83	H	44%	1	0.0	YES							

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8	90	H	DI	1	0.0	NO							
3	91	H	DI	2	0.0	NO							
3	91	H	DI	3	0.0	NO							
5	91	H	DI	5	0.0	NO							
5	91	H	DI	1	0.0	NO							
14	92	H	DI	1	0.0	NO							
7	94	H	DI	1	0.0	NO							

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4	2	H	DI	2	0.0	NO	23	12	H	DRT	TE	2.6	NO
7	3	H	DI	3	0.0	NO	21	13	H	DRT	TE	2.4	NO
7	4	H	DI	1	0.0	NO	22	13	H	DRT	TE	2.5	NO
8	4	H	DI	2	0.0	YES	28	13	H	DI	2	0.0	NO
8	4	H	DI	TE	16.7	YES	28	13	H	DI	3	0.0	NO
8	4	H	DI	1	0.0	YES	7	14	H	DRT	TE	2.5	NO
17	4	H	DI	3	0.0	NO	8	14	H	DI	TE	17.8	YES
6	7	H	DRT	TE	2.2	NO	14	14	H	DI	2	0.0	NO
7	7	H	DI	2	0.0	NO	16	14	H	DI	2	0.0	NO
15	7	H	DI	2	0.0	NO	16	14	H	DI	4	0.0	NO
5	8	H	DRT	TE	2.3	NO	18	14	H	DRT	TE	2.5	NO
7	8	H	DI	1	0.0	NO	21	14	H	DRT	TE	2.6	NO
17	8	H	DI	1	0.0	NO	27	14	H	DI	1	0.0	NO
7	10	H	DI	1	0.0	NO	15	15	H	DRT	TE	2.2	NO
8	10	H	DRT	TE	2.3	NO	25	15	H	DRT	TE	2.6	NO
17	10	H	DI	2	0.0	NO	10	16	H	DRT	TE	2.5	NO
15	11	H	DI	4	0.0	NO	19	16	H	DRT	TE	2.6	NO
15	11	H	DI	2	0.0	NO	20	16	H	DRT	TE	2.6	NO
16	11	H	DI	2	0.0	NO	21	16	H	DRT	TE	2.5	NO
20	11	H	DRT	TE	2.2	NO	4	17	H	DRT	TE	2.0	NO
5	12	H	DRT	TE	2.2	NO	20	17	H	DRT	TE	2.6	NO
6	12	H	DRT	TE	2.8	NO	23	17	H	DRT	TE	2.6	NO
8	12	H	DRT	TE	2.8	NO	28	17	H	DI	4	0.0	NO
13	12	H	DRT	TE	2.4	NO	28	17	H	39%	3	0.0	NO
21	12	H	DRT	TE	2.9	NO	30	17	H	DI	TE	18.2	YES

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<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
10	18	H	DRT	TE	2.3	NO	4	24	H	DRT	TE	2.4	NO
15	18	H	DRT	TE	2.2	NO	5	24	H	DRT	TE	2.2	NO
16	18	H	DI	1	0.0	NO	15	24	H	DRT	TE	2.4	NO
17	18	H	DI	1	0.0	NO	32	24	H	DI	2	0.0	NO
25	18	H	DRT	TE	2.7	NO	9	25	H	DRT	TE	2.2	NO
33	18	H	DRT	TE	2.6	NO	3	26	H	DRT	TE	2.4	NO
15	20	H	DRT	TE	2.2	NO	9	26	H	DRT	TE	2.2	NO
16	20	H	DI	1	0.0	NO	11	26	H	77%	TE	2.2	YES
30	20	H	DI	TE	18.6	YES	39	26	H	DI	1	0.0	NO
12	21	H	DRT	TE	2.2	NO	2	27	H	DRT	TE	2.2	NO
15	21	H	DRT	TE	2.3	NO	3	27	H	DRT	TE	2.2	NO
37	21	H	DI	2	0.0	NO	4	27	H	DRT	TE	2.3	NO
3	22	H	DRT	TE	2.3	NO	11	27	H	DRT	TE	2.4	NO
5	22	H	DRT	TE	2.2	NO	14	27	H	DI	1	0.0	NO
15	22	H	DRT	TE	2.3	NO	26	27	H	DRT	TE	2.2	NO
19	22	H	DRT	TE	2.5	NO	5	28	H	DRT	TE	2.6	NO
21	22	H	DRT	TE	2.6	NO	10	28	H	DRT	TE	2.3	NO
25	22	H	DRT	TE	2.2	NO	38	28	H	DI	2	0.0	NO
29	22	H	DRT	TE	2.9	NO	4	29	H	DRT	TE	2.3	NO
8	23	H	DRT	TE	2.2	NO	11	29	H	80%	TE	2.4	NO
15	23	H	DRT	TE	2.2	NO	37	29	H	DI	1	0.0	NO
21	23	H	DRT	TE	2.2	NO	37	29	H	DI	2	0.0	NO
3	24	H	DRT	TE	2.4	NO	39	29	H	DI	2	0.0	NO
							39	29	H	DI	1	0.0	NO

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<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
2	30	H	DRT	TE	2.3	NO	41	37	H	DI	2	0.0	NO
4	30	H	DRT	TE	2.3	NO	5	38	H	DRT	TE	2.4	NO
34	30	H	DI	1	0.0	NO	36	38	H	DI	2	0.0	NO
40	30	H	DI	2	0.0	NO	14	39	H	DI	TS	2.3	YES
4	31	H	DRT	TE	2.3	NO	4	40	H	DRT	TE	2.6	NO
10	31	H	DRT	TE	2.3	NO	36	42	H	DI	2	0.0	NO
39	31	H	DI	2	0.0	NO	2	43	H	DI	1	0.0	NO
39	31	H	DI	1	0.0	NO	44	43	H	DI	2	0.0	NO
42	31	H	DI	3	0.0	NO	11	45	H	80%	TE	20.1	YES
5	32	H	DRT	TE	2.2	NO	46	45	H	DI	2	0.0	NO
39	32	H	DI	2	0.0	NO	35	46	H	DI	2	0.0	NO
2	33	H	DRT	TE	2.5	NO	46	46	H	DI	2	0.0	NO
5	33	H	DRT	TE	2.1	NO	3	47	H	DRT	TE	2.4	NO
23	33	H	86%	TE	20.2	YES	22	48	H	DI	1	0.0	NO
44	33	H	DI	3	0.0	NO	20	49	H	DRT	TE	2.5	NO
5	34	H	DRT	TE	2.4	NO	20	51	H	DRT	TE	2.2	NO
22	34	H	97%	TE	20.2	YES	36	51	H	DI	2	0.0	NO
41	34	H	DI	2	0.0	NO	14	56	H	DRT	TE	2.1	NO
41	34	H	DI	3	0.0	NO	22	56	H	DRT	TE	2.3	NO
3	35	H	DRT	TE	2.4	NO	36	56	H	DI	2	0.0	NO
4	35	H	DRT	TE	2.5	NO	3	57	H	DI	2	0.0	NO
10	37	H	DRT	TE	2.1	NO	10	57	H	DRT	TE	2.2	NO
22	37	H	SQR	TE	18.4	YES	22	57	H	87%	TE	19.9	YES
35	37	H	DI	4	0.0	NO							

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22	59	H	DRT	TE	2.5	NO	9	89	H	DI	1	0.0	NO
36	59	H	DI	2	0.0	NO	5	91	H	DI	2	0.0	NO
13	60	H	DRT	TE	2.5	NO	13	92	H	38%	2	0.0	NO
17	61	H	DI	1	0.0	NO							
23	61	H	DI	TE	20.4	YES							
20	62	H	DRT	TE	2.5	NO							
3	63	H	DRT	TE	2.2	NO							
11	63	H	SQR	TE	20.4	YES							
2	65	H	DRT	TE	2.2	NO							
9	65	H	DRT	TE	2.5	NO							
10	65	H	DRT	TE	2.5	NO							
18	65	H	DRT	TE	2.5	NO							
20	65	H	73%	TE	2.5	YES							
2	66	H	DRT	TE	2.2	NO							
14	67	H	DRT	TE	2.2	NO							
3	68	H	DRT	TE	2.2	NO							
8	69	H	DRT	TE	2.5	NO							
22	69	H	DRT	TE	2.4	NO							
12	71	H	DI	TE	20.1	YES							
9	72	H	DI	TE	20.3	YES							
25	72	H	DRT	TE	2.4	NO							
4	82	H	DRT	TE	2.4	NO							
5	82	H	DI	1	0.0	NO							

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6	1	H	DI	2	0.0	NO	9	13	H	DRT	TE	2.2	NO
7	1	H	19%	2	22.6	NO	11	13	H	DRT	TE	2.2	NO
7	1	H	17%	4	6.1	NO	13	13	H	DRT	TE	2.2	NO
7	1	H	17%	1	24.6	NO	15	13	H	DRT	TE	2.2	NO
7	1	H	14%	4	44.4	NO	27	13	H	DI	2	0.0	NO
6	2	H	DI	2	0.0	NO	3	14	H	DRT	TE	2.5	NO
10	5	H	DRT	TE	2.2	NO	10	14	H	DRT	TE	2.4	NO
11	7	H	DRT	TE	2.5	NO	11	14	H	DRT	TE	2.5	NO
15	7	H	DI	2	0.0	NO	14	14	H	DRT	TE	2.5	NO
3	8	H	DRT	TE	2.2	NO	16	14	H	DI	1	0.0	NO
10	8	H	DRT	TE	2.2	NO	19	14	H	DRT	TE	2.4	NO
11	8	H	DRT	TE	2.2	NO	5	15	H	DRT	TE	2.5	NO
5	9	H	DRT	TE	2.2	NO	6	15	H	DI	1	0.0	NO
20	10	H	DI	2	0.0	NO	6	15	H	DI	2	2.5	NO
2	11	H	DRT	TE	2.2	NO	11	15	H	DRT	TE	2.5	NO
3	11	H	DRT	TE	2.4	NO	13	15	H	DRT	TE	2.5	NO
9	11	H	DRT	TE	2.7	NO	15	15	H	DRT	TE	2.5	NO
10	11	H	DRT	TE	2.5	NO	16	15	H	DRT	TE	2.4	NO
11	11	H	DRT	TE	2.2	NO	2	16	H	DRT	TE	2.4	NO
13	11	H	DRT	TE	2.2	NO	9	16	H	DRT	TE	2.4	NO
6	12	H	DRT	TE	2.2	NO	13	16	H	DRT	TE	2.4	NO
9	12	H	DRT	TE	2.4	NO	14	16	H	DI	2	0.0	NO
15	12	H	DRT	TE	2.2	NO	15	16	H	DRT	TE	2.5	NO
18	12	H	DRT	TE	2.5	NO	16	17	H	DRT	TE	2.4	NO
5	13	H	DRT	TE	2.2	NO							

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<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
18	17	H	DRT	TE	2.4	NO	18	21	H	DRT	TE	2.5	NO
9	18	H	SQR	TE	17.9	YES	26	21	H	DRT	TE	2.7	NO
9	18	H	DRT	TE	2.3	YES	4	22	H	DRT	TE	2.4	NO
11	18	H	79%	TE	2.6	YES	6	22	H	DI	1	0.0	NO
16	18	H	DRT	TE	2.2	NO	11	22	H	DRT	TE	2.4	NO
18	18	H	DRT	TE	2.2	NO	16	22	H	DRT	TE	2.4	NO
36	18	H	DI	1	0.0	NO	18	22	H	DRT	TE	2.4	NO
4	19	H	DRT	TE	2.3	NO	24	22	H	DRT	TE	2.5	NO
9	19	H	SQR	TE	19.8	YES	2	23	H	DRT	TE	2.3	NO
10	19	H	DRT	TE	2.4	NO	14	23	H	DRT	TE	2.3	NO
12	19	H	DRT	TE	2.5	NO	18	23	H	DRT	TE	2.4	NO
13	19	H	DRT	TE	2.5	NO	23	23	H	DI	3	0.0	NO
18	19	H	DRT	TE	2.7	NO	2	24	H	DRT	TE	2.4	NO
20	19	H	DRT	TE	2.6	NO	9	24	H	DRT	TE	2.5	NO
24	19	H	DRT	TE	2.6	NO	10	24	H	DRT	TE	2.5	NO
10	20	H	DRT	TE	2.6	NO	13	24	H	DRT	TE	2.5	NO
11	20	H	60%	TE	2.4	YES	14	24	H	DRT	TE	2.4	NO
16	20	H	DRT	TE	2.5	NO	18	24	H	DRT	TE	2.5	NO
3	21	H	DI	2	0.0	NO	19	24	H	DRT	TE	2.5	NO
5	21	H	DRT	TE	2.6	NO	35	24	H	DI	1	0.0	NO
8	21	H	DRT	TE	2.6	NO	10	25	H	DRT	TE	2.3	NO
11	21	H	DRT	TE	2.5	NO	33	25	H	DRT	TE	2.2	NO
12	21	H	DRT	TE	2.5	NO	34	25	H	DI	1	0.0	NO

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<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
2	26	H	DI	?	0.0	NO	2	32	H	80%	TE	2.7	YES
3	26	H	DI	TE	20.0	YES	10	32	H	DRT	TE	2.2	NO
12	26	H	DRT	TE	2.2	NO	11	32	H	DRT	TE	2.5	NO
16	26	H	DRT	TE	2.2	NO	17	32	H	DRT	TE	2.3	NO
18	26	H	DRT	TE	2.2	NO	18	32	H	DRT	TE	2.3	NO
4	27	H	DRT	TE	2.2	NO	22	32	H	DRT	TE	2.2	NO
38	27	H	35%	1	0.0	NO	8	33	H	DRT	TE	2.5	NO
39	27	H	DI	2	0.0	NO	5	34	H	DRT	TE	2.5	NO
7	28	H	DI	1	0.0	NO	7	34	H	DRT	TE	2.4	NO
8	28	H	DI	2	0.0	NO	10	34	H	72%	TE	2.7	YES
11	28	H	DRT	TE	2.2	NO	16	34	H	DRT	TE	2.4	NO
12	28	H	DRT	TE	2.1	NO	18	34	H	DRT	TE	2.4	NO
16	28	H	DRT	TE	2.3	NO	39	34	H	DRT	TE	2.5	NO
18	28	H	DRT	TE	2.4	NO	5	35	H	DRT	TE	2.6	NO
22	28	H	DRT	TE	2.2	NO	18	35	H	DRT	TE	2.4	NO
34	28	H	DI	1	0.0	NO	10	36	H	84%	TE	2.6	YES
36	28	H	DI	1	0.0	NC	12	36	H	81%	TE	2.8	YES
18	29	H	SQR	TE	17.6	YES	13	36	H	DRT	TE	2.5	NO
18	29	H	DRT	TE	2.0	YES	30	36	H	DRT	TE	2.6	NO
32	29	H	DRT	TE	2.7	NO	31	36	H	DRT	TE	17.6	NO
42	29	H	30%	2	0.0	NO	33	36	H	DRT	TE	2.6	NO
10	31	H	DRT	TE	2.2	NO	35	36	H	DI	1	0.1	NO
21	31	H	SQR	TE	20.1	YES	39	36	H	DI	2	0.0	NO
24	31	H	DRT	TE	2.2	NO							

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12	37	H	DRT	TE	2.5	NO	45	47	H	DRT	TE	2.4	NO
18	37	H	DRT	TE	2.8	NO	2	48	H	DI	TE	19.4	YES
27	37	H	DRT	TE	2.6	NO	18	48	H	85%	TE	19.9	YES
2	38	H	DRT	TE	2.6	NO	40	48	H	DI	2	0.0	NO
10	38	H	DRT	TE	2.5	NO	40	48	H	DI	1	0.0	NO
12	38	H	DRT	TE	2.5	NO	10	49	H	DI	1	0.0	NO
27	38	H	DRT	TE	2.6	NO	13	49	H	DI	1	0.0	NO
30	38	H	DRT	TE	2.8	NO	21	49	H	DI	1	0.0	NO
9	39	H	DI	2	0.0	NO	39	49	H	DI	1	0.0	NO
18	39	H	DRT	TE	2.3	NO	41	49	H	DI	2	0.0	NO
30	39	H	DI	1	0.0	NO	8	50	H	DI	1	0.0	NO
41	39	H	DI	2	0.0	NO	31	50	H	DRT	TE	2.3	NO
41	39	H	DI	1	0.0	NO	41	50	H	DI	2	0.0	NO
3	40	H	DI	4	0.0	NO	21	51	H	DI	1	0.0	NO
10	41	H	DI	1	0.0	NO	30	51	H	DI	TE	20.2	YES
10	42	H	DRT	TE	2.2	NO	30	51	H	DI	1	0.0	YES
11	42	H	DRT	TE	2.3	NO	38	51	H	DI	1	0.0	NO
24	42	H	DI	TE	20.0	YES	8	52	H	DI	TE	20.4	YES
19	43	H	DRT	TE	2.1	NO	13	52	H	DRT	TE	2.5	NO
20	45	H	DI	1	0.0	NO	18	52	H	79%	TE	0.0	YES
27	45	H	DRT	TE	2.2	NO	18	52	H	DI	1	0.0	YES
22	46	H	DI	1	0.0	NO	25	52	H	DI	1	0.0	NO
9	47	H	DI	1	0.0	NO	11	53	H	DI	3	0.0	NO
24	47	H	DRT	TE	2.5	NO	20	53	H	DI	1	0.0	NO
							8	54	H	DI	1	0.0	NO

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14	54	H	77%	TE	17.6	YES	39	60	H	DRT	TE	2.6	NO
18	54	H	DI	1	0.0	NO	40	60	H	DRT	TE	2.5	NO
26	54	H	DI	1	0.0	NO	44	60	H	DRT	TE	2.6	NO
38	54	H	DRT	TE	2.4	NO	44	60	H	DI	1	0.0	NO
41	54	H	DI	2	0.0	NO	3	61	H	DRT	TE	2.5	NO
15	55	H	98%	TS	0.0	YES	16	61	H	DRT	TE	2.2	NO
27	55	H	DRT	TE	2.5	NO	23	61	H	DI	TE	19.0	YES
16	56	H	DI	1	0.0	NO	25	61	H	DRT	TE	2.1	NO
40	56	H	DI	1	0.0	NO	33	61	H	DRT	TE	2.4	NO
43	56	H	DRT	TE	2.4	NO	38	61	H	DRT	TE	2.7	NO
44	56	H	DRT	TE	2.3	NO	39	61	H	DRT	TE	2.6	NO
22	57	H	74%	TE	20.4	YES	40	61	H	DRT	TE	2.4	NO
36	57	H	DI	1	0.0	NO	41	61	H	DRT	TE	2.4	NO
40	57	H	39%	1	0.0	NO	43	61	H	DI	1	0.0	NO
11	58	H	DRT	TE	2.5	NO	44	61	H	38%	1	0.0	NO
13	58	H	82%	TE	15.3	YES	24	62	H	DRT	TE	2.4	NO
14	58	H	DI	1	0.0	NO	29	62	H	DRT	TE	2.4	NO
5	59	H	DRT	TE	2.6	NO	33	62	H	DRT	TE	2.3	NO
14	59	H	DI	TS	1.6	YES	38	62	H	DRT	TE	2.6	NO
24	59	H	DRT	TE	2.3	NO	39	62	H	DRT	TE	2.7	NO
17	60	H	DRT	TE	2.5	NO	44	62	H	DI	1	0.0	NO
37	60	H	DRT	TE	2.7	NO	24	63	H	DRT	TE	2.3	NO
38	60	H	DRT	TE	2.7	NO	35	63	H	DRT	TE	2.4	NO
							39	63	H	DRT	TE	2.5	NO

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41	63	H	DI	1	0.0	NO	6	68	H	DRT	TE	2.5	NO
2	64	H	DRT	TE	2.1	NO	30	68	H	DI	2	0.0	NO
3	64	H	DRT	TE	2.1	NO	32	68	H	DRT	TE	2.5	NO
5	64	H	DRT	TE	2.6	NO	33	68	H	DRT	TE	2.5	NO
12	64	H	DRT	TE	2.2	NO	36	68	H	DI	3	0.0	NO
28	64	H	DRT	TE	2.5	NO	12	69	H	DI	3	0.0	NO
29	64	H	DRT	TE	2.5	NO	18	69	H	DI	TS	1.0	YES
32	64	H	DRT	TE	2.5	NO	20	69	H	DI	TS	0.3	YES
34	64	H	DRT	TE	2.5	NO	26	69	H	DI	1	0.0	NO
35	64	H	DRT	TE	2.7	NO	29	69	H	DRT	TE	2.5	NO
38	64	H	DRT	TE	2.5	NO	31	69	H	DRT	TE	2.4	NO
39	64	H	DRT	TE	2.6	NO	33	69	H	DRT	TS	2.7	NO
43	64	H	DI	1	0.0	NO	35	69	H	DI	2	0.0	NO
34	65	H	DI	2	0.0	NO	41	69	H	DI	1	0.0	NO
35	65	H	DI	2	0.0	NO	5	70	H	DRT	TE	2.1	NO
35	65	H	DI	1	0.0	NO	7	70	H	55%	1	0.0	YES
36	65	H	DI	2	0.0	NO	4	71	H	DI	1	0.0	NO
23	66	H	DRT	TE	2.6	NO	32	71	H	DRT	TE	2.4	NO
32	66	H	DI	1	0.0	NO	13	72	H	DI	1	0.0	NO
34	66	H	DI	2	0.0	NO	19	72	H	DI	1	0.0	YES
35	66	H	DI	2	0.0	NO	19	72	H	DI	TE	18.7	YES
6	67	H	DI	1	0.0	NO	35	72	H	DI	1	0.0	NO
25	67	H	DRT	TE	2.5	NO	38	72	H	DI	1	0.0	NO
31	67	H	DI	2	0.0	NO	11	73	H	DRT	TE	2.8	NO

STEAM GENERATOR NUMBER 24September of 1987

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
12	73	H	DRT	TE	2.6	NO	19	79	H	DI	1	0.0	NO
14	73	H	DI	1	0.0	NO	7	80	H	DI	2	0.0	NO
17	73	H	DI	2	0.0	NO	7	80	H	DI	3	0.0	NO
17	74	H	DI	1	0.0	NO	7	80	H	DI	1	0.0	NO
24	74	H	DRT	TE	2.3	NO	14	80	H	DI	1	0.0	NO
26	74	H	DI	1	0.0	NO	15	80	H	DI	1	0.0	NO
7	75	H	DI	1	0.0	NO	17	80	H	DI	1	0.0	NO
8	75	H	DRT	TE	2.6	NO	19	80	H	39%	1	0.0	NO
7	76	H	DRT	TE	2.3	NO	21	80	H	40%	1	0.0	YES
21	76	H	DI	2	0.0	NO	21	80	H	27%	2	0.0	YES
26	76	H	DI	3	0.0	NO	23	80	H	DI	3	0.0	NO
26	76	H	DI	2	0.0	NO	21	81	H	DI	2	0.0	NO
2	77	H	DRT	TE	2.2	NO	21	81	H	DI	3	0.0	NO
21	77	H	DI	2	0.0	NO	25	81	H	DI	2	0.0	NO
23	77	H	DRT	TE	2.3	NO	29	81	H	DI	2	0.0	NO
23	77	H	33%	1	0.0	NO	10	83	H	DI	1	0.0	NO
23	77	H	27%	2	0.0	NO	21	83	H	DI	1	0.0	NO
6	78	H	DRT	TE	2.2	NO	21	83	H	DI	2	0.0	NO
9	78	H	DRT	TE	2.4	NO	22	83	H	DI	1	0.0	NO
17	78	H	DI	2	0.0	NO	22	83	H	DI	2	0.0	NO
35	78	H	DRT	TE	2.5	NO	23	83	H	DI	2	0.0	NO
8	79	H	DRT	TE	2.3	NO	3	84	H	DI	1	0.0	NO
13	79	H	DRT	TE	2.2	NO	19	84	H	DI	3	0.0	YES
14	79	H	DI	1	0.0	NO	19	84	H	59%	1	0.0	YES
18	79	H	DI	1	0.0	NO	15	85	H	DI	2	0.0	NO
							18	86	H	DI	2	0.0	NO
							21	86	H	DI	2	0.0	NO
							21	86	H	DI	1	0.0	NO

STEAM GENERATOR NUMBER 24September of 1987

<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>	<u>ROW</u>	<u>COL</u>	<u>LEG</u>	<u>INDIC</u>	<u>LOC</u>	<u>INCH</u>	<u>PLUGGED</u>
12	87	H	DI	1	0.0	NO							
14	87	H	DI	1	0.0	NO							
19	87	H	DI	2	0.0	NO							
19	87	H	DI	1	0.0	NO							
7	88	H	DI	1	0.0	NO							
15	88	H	DI	3	0.0	NO							
18	88	H	DI	1	0.0	NO							
22	88	H	46%	2	0.0	YES							
22	88	H	DI	3	0.0	YES							
17	89	H	DI	2	0.0	NO							
17	89	H	DI	1	0.0	NO							
18	89	H	DI	1	0.0	NO							
17	90	H	DI	5	0.0	NO							
17	90	H	DI	1	0.0	NO							

CHANGES TO FACILITY

Brief descriptions and summary safety evaluations for design changes (RFCs) made to the facility as described in the Donald C. Cook Nuclear Plant Final Safety Analysis Report (FSAR) are presented in this section. These changes were completed pursuant to the provisions of Title 10, Code of Federal Regulations subsection 50.59 (a).

RFC-12-1729

Brief Description

RFC-DC-12-1729 installed an overvoltage alarm relay on the Plant battery buses 1-AB, 1-CD, 2-AB & 2-CD. The alarm relay will be activated at voltages exceeding 280 VDC.

The change was initiated because of the failure of two 120-volt A.C. vital buses during a battery equalizing charge of the CD batteries. This failure, caused by battery charger voltage being in excess of the DC input limit, resulted in a reactor trip and safety injection. The installation of the alarms will alert the operator should an overvoltage condition occur.

Safety Evaluation

The subject RFC has been classified as safety-interface. NS&L reviewed this design change with no unresolved open items and concluded that this RFC does not constitute an unreviewed safety question as defined in 10 CFR 50.59, nor does it create a substantial hazard to the health and safety of the public.

RFC-DC-12-1797 (Shared System)

Brief Description

RFC-12-1797 provides for the installation of a 2" diameter tie line between the CVCS holdup tanks and the gas decay tank vent header. This new tie line will permit purging nitrogen into one CVCS tank, venting this tank to the Aux. Bldg. exhaust system via the gas decay tank normal release line while maintaining a normal vent lineup (to the suction of the waste gas compressors) on the remaining holdup tanks. Four tie-ins to existing systems were required and consist of one in each CVCS HUT room between the tanks and vent isolation valves CS-152, 153, 154 and between RRV-305 and WD-297.

CHANGES TO FACILITY (CONT.)

Safety Evaluation

This RFC has been classified as safety interface because it involves modifications to the Hold Up Tanks which is a Seismic Class II System. The new tie line being installed is Seismic Class II piping up to and including the first isolation valve. The rest of the tie line is classified as Seismic Class III.

Nuclear Safety and Licensing has reviewed the proposed change as per the review criteria in NS&L Procedure No.7. As a result of the review, to the extent available information permits, the following items have been identified for review.

- Item 1. The Seismic Analysis and installation of the tie line must be performed as per the alternate analysis criterion.
- Item 2. Upon completion of the installation of the subject tie line/valves a leak tight testing must be performed to assure uncontrolled release of the waste gases will not occur.

The purpose of this review is for procurement, design and installation. With this in mind, it is concluded that this RFC does not constitute and unreviewed safety questions as defined in 10 CFR 50.59, nor does it create a substantial hazard to the health and safety of the public.

RFC-12-2912 (Unit 1 Only)

Brief Description

RFC-DC-12-2912 removed the AFW automatic pump trip on low suction pressure. The trip function was replaced by operator/alarm action. The low suction pressure trip system, which consisted of three pressure switches (per pump), one gage protector, 2 out of 3 logic and a 5.5 second time delay relay, was replaced with one pressure switch (alarm function only), which does not require a gage protector and is equipped with a 10 second time delay relay.

The time delay has been increased due to an inherent pressure oscillation in the AFW suction line which occurs during pump start-up.

Safety Evaluation

RFC-DC-12-2912 is classified "safety-interface" because the pressure switch activates an alarm and alerts the operators of a potential problem with a safety related system (AFW).

The Nuclear Safety and Licensing Section (NS&L) reviewed RFC-DC-12-2912 under the provisions of NS&L Section Procedure No. 7, "Safety Review of Design Changes".

CHANGES TO FACILITY (CONT.)

The results of this review were that no open items exist with regard to RFC-DC-12-2912.

Based on NS&L's review it is concluded that RFC-DC-12-2912 does not constitute an unreviewed safety question as defined in 10 CFR 50.59, nor does it create a substantial hazard to the health and safety of the public.

CHANGES TO PROCEDURES

Brief descriptions and summary safety evaluations for changes made to procedures as described in the Donald C. Cook Nuclear Plant Final Safety Analysis Report are presented in this section.

Emergency Operating Procedures

The Unit 1 and Unit 2 Emergency Operating Procedures (49 procedures on each unit) were revised to incorporate the Westinghouse Owners Group Emergency Response Guidelines and were issued pursuant to NUREG 0737, Item I.C.I., "Guidance for the evaluation and development of procedures for transients and accidents". Emergency Operating Procedures for Unit 1 were issued on March 31, 1986, and for Unit 2 in June of 1986.

The safety evaluation concluded that the procedure revisions did not constitute an unreviewed safety question as defined in 10 CFR 50.59.

10 CFR Part 50, Appendix R, III.L Procedures

Safe shutdown procedures and plant modification/repair procedures were issued to implement the requirements of 10 CFR 50, Appendix R, Section III.L, "Alternative and dedicated shutdown capability". The procedures were issued in June, 1986.

The safety evaluations of these procedures determined that they did not constitute an unreviewed safety question as defined in 10 CFR 50.59 although the draft procedure was modified as the result of the 50.59 review process.

Loss of D.C. Power Procedures

Emergency operating procedures were issued for Units 1 and 2 (two per unit) to implement recommendation #7 of INPO SOER 83-5, "DC Power System Failures", and recommendation #2.C of INPO SOER 81-15 "Partial Loss of D.C. Power".

The safety evaluations of these procedures determined that they did not constitute an unreviewed safety question as defined in 10 CFR 50.59.

Unit 1 Main Steam Safety Valve Set Point Verification Procedure

The change in main steam safety valve set point verification consisted of a new procedure, 1 MHP SP.126, which allowed setpoint testing of main steam safety valves in modes 1 through 3. One safety valve is tested at a time. During testing the valve is considered inoperable per T/S 3.7.1.1. Thus per the action statement, the Power Range Neutron Flux High Setpoint is reduced per Table 3.7-1. The most likely problem with the test would be the safety valve sticking open. Since only one valve at a time would be tested, any transient resulting from a stuck-open valve is bounded by the Unit 1 steam line break analysis, found in Appendix 146 to the Updated FSAR. This conclusion is valid in modes 1, 2, and 3. Accident analysis assumptions which rely on the safety valve to open to relieve pressure, are maintained by adherence to T/S 3.7.1.1. As the test has some potential for causing a stuck-open safety valve during power operation, there is a possibility of a reactor trip. Although this potential exists, its possibility is minimized by providing a hydraulic closing device. Even if a trip occurs the consequences are bounded by the existing accident analyses.

A change to Section 10.2.4 of the Updated FSAR was requested as this section states that safety valves are tested "during scheduled outages".

NS&L concluded that testing of the main steam safety valves in Modes 1, 2, or 3 does not constitute an unreviewed safety question as defined in 10 CFR 50.59.

TEST AND EXPERIMENTS

One test not described in the FSAR was performed on Unit 1 that had the potential of operating the plant outside of the bounds of the initial conditions and assumptions used in the FSAR or in a manner not described in the FSAR and/or which could have an adverse effect on reactor safety.

**1 THP SP.141, Unit 1 Turbine Volumetric Flow Test, was performed in May 1987 to obtain data to support the T-Hot reduction program planned for Unit 1. The objective of the test was to determine the minimum main steam pressure and the equivalent Tav_g possible for full power operation on Unit 1.

Westinghouse Electric Corporation performed the safety evaluation to address the validity of the current Unit 1 licensing basis during the proposed test. The evaluation justified a Reactor Coolant System (RCS) temperature reduction of 20°F for a duration of 18 hours. The evaluation encompassed the following items:

- 1) Test affect on Primary Components - Reactor Vessel and Steam Generator.
- 2) Test effects on Non-Loss of Coolant (LOCA) Analysis
Rupture from Nuclear Boiling (DNB); Non-DNB
operations, Boron Dilution, Loss of Load, Loss of Normal
Water/Station Blackout, Rupture of Main Feedwater Line,
Controlled Rod Cluster Control Assembly (RCCA) Withdrawal
at Power, Locked Rotor and Hot Full Power (HFP) Rod Ejection
and Steamline Break Mass and Energy Release.
- 3) Large Break LOCA Evaluation.
- 4) Containment Evaluation - Long term and Short term.
- 5) Small Break LOCA Evaluation.
- 6) LOCA Forces.
- 7) Steam Generator Tube Rupture (SGTR) Evaluation.

The analysis concluded that the test did not involve any unreviewed safety question as defined in 10 CFR 50.59.

CHALLENGES TO PRESSURIZER POWER OPERATED
RELIEF VALVES AND SAFETY VALVES

There were no challenges to the pressurizer power operated relief valves (PORVs) or the safety valves resulting from an actual overpressure condition. One event occurred on Unit 2 on March 4, 1987, that caused an actuation of pressurizer PORV, NRV-152. The actuation occurred in the cold overpressure protection mode with the RCS in Mode 5, Cold Shutdown.

During cold shutdown operation, loop 1 hot leg wide range RCS pressure actuates pressurizer PORV, NRV-152 and loop 2 hot leg wide range RCS pressure actuates pressurizer PORV, NRV-153. The setpoint for both valves is 420 psig $\pm$ 15 psig.

The operators were manually controlling RCS pressure based on loop 2 hot leg wide range pressure indication. This indication was at approximately 385 psig when NRV-152 was actuated. Checks of the loop 1 and 2 hot leg wide range RCS pressure instruments determined that both were within allowable tolerances. It is therefore concluded that this event occurred as a result of instrument tolerance stack-up which resulted in the actuation at an indicated pressure of 385 psig on the pressure channel being monitored.

The event was reported pursuant to the requirements of Technical Specification 3.4.9.3, Action(c) via a Special Report dated April 3, 1987.

Results of Irradiated Fuel Inspections

During 1987, two separate examinations were performed on the fuel assemblies discharged from Unit 1 Cycle 9. These examinations were conducted in parallel with or just after the core was unloaded, and the intent was to determine fuel pin failure as well as gross structural defects in the assemblies.

The first examination was a routine binocular inspection of the fuel assemblies (**12 THP 6040 PER.353). As each assembly is brought into the Spent Fuel Pool, it is examined on all four sides visually. The examiner is looking specifically for torn or missing grid straps, missing or damaged fuel pins, excessive clad hydriding, or rod bow to gap closure. This inspection is primarily intended to detect fuel damage caused by mechanical interaction between assemblies or baffle jetting, and is done during each refueling. There was no visual indication of any fuel damage found.

Due to Iodine and Cesium levels in the RCS high enough to indicate leaking fuel assemblies, AEPSC issued a contract to Advanced Nuclear Fuels (ANF) to provide an Ultrasonic (UT) inspection of all assemblies from the Cycle 9 core. The Ultrasonic System works by a probe transceiver sending a high frequency sound wave into a fuel pin and measuring the strength of the returning signal or "ring back". By monitoring the strength of this ring back a determination can be made as to whether or not the fuel pin contains water. In this way, not only can an assembly be determined to be leaking, but the individual failed pin can be located for a potential replacement effort to make the assembly usable.

The Ultrasonic Testing sequence is as follows:

1. The assembly is placed in the can with a given orientation.
2. The probes are inserted between each of the rows of fuel pins following the XY Table's indexing.
3. When the last row is scanned, the assembly is rotated 90° and the process repeated once more.
4. The data is reviewed, and any questionable areas are re-scanned and/or the other two assembly faces are tested (scanning two sides is one complete test).
5. The assembly is removed, and another is brought in.

Results of the testing:

Assemblies tested: 193
 Assemblies with Failures: 20
 Number of Failed Fuel Pins: 30

<u>Fuel Batch</u>	<u>Assemblies Tested</u>	<u>Failed Assemblies</u>	<u>Failed Pins</u>
H (3 times burned)	14	7	10
J (3 times burned)	20	11	17
K (2 times burned)	79	1	1
AA (1 time burned)	80	1	2
TOTAL	193	20	30

Of the assemblies determined to have failed fuel pins, only one had been scheduled to reinsertion into Cycle 10. This assembly was not reinserted, and the core was redesigned to make use of the available non-leaking fuel. Through 3500 MWD/MTU of Unit 1 Cycle 10, there has been no indication of any fuel failures.

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February 25, 1988

United States Nuclear Regulatory Commission
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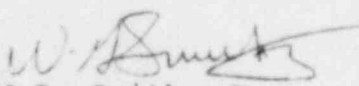
Donald C. Cook Nuclear Plant
Docket Nos. 50-315/50-316
License Nos. DPR-58/DPR-74

Document Control Manager:

Two copies of the 1987 Annual Operating Report for the Donald Cook Nuclear Plant are being transmitted to you under this cover letter. The information contained in this report covers the activities delineated in the Donald C. Cook Nuclear Plant Technical Specifications, Section 6.9.1.5, and the requirements of 10 CFR 50.59.

Copies of this report have been transmitted to the Regional Administrator, the Director of Inspection and Enforcement, the Director, Office of Management Information and Program Control of the United States Nuclear Regulatory Commission and the NRC Resident Inspector as specified in 10 CFR 50.4 and 10 CFR 50.59.

Respectfully,


W.G. Smith, Jr.
Plant Manager

/jas

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