

1 of 1

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June 13, 1962

REACTOR SIMULATION STUDY

The following discussion and attached summary report is sent to you to illustrate the type of information that is currently in data processing machine language and available to those who require it. During the progress meetings at which these reports were discussed, several persons indicated a desire to have a documented explanation of the report and a personal copy to scan. This is the answer to these requests.

The reports are comprised of three major sections. The first is a map indicating the number of recordings of data in the category defined by the function number code. The second is a summary of the data, in terms of hours, for each of the functions performed during an outage, except secondary function code number 21 which is the number of tubes associated with the basic function performed. The third is a summary of the secondary functions performed within a basic function class, the associated delay total, and the number of tubes involved for those functions where a delineation by tube count may be of interest.

The function code numbers relate directly to the definitions of the hours expended for charge-discharge, rupture removal, tube leak repair, tube replacement, and so forth. These definitive classes are taken from the distribution records supplied by the various reactor analysts and summarized by the Reports and Statistics group in the IPD Production Operation. The listing and record count map are an enlargement of the summary form designed in April of 1961. The codes are as follows:

	<u>Primary</u>	<u>Secondary</u>
***	1. Charge discharge - normal	1. Same as primary
Functions	2. Charge discharge - special	2. Same
	3. Charge discharge - problem	3. Same
	4. Rupture Removal	4. Same
	5. Water leak repair	5. Same
	6. Tube replacement	6. Same
	7. Tube replacement - abnormal	7. Same
	8. Mechanical Maintenance	8. Same
	9. Instrument Maintenance	9. Same
	10. Electrical Maintenance	10. Same

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	<u>Primary</u>		<u>Secondary</u>
	11. Standard Check	11.	Same as Primary
	12. Production Test	12.	Same
	13. Project Work	13.	Same
	14. Miscellaneous - Other	14.	Same
***	15. Cooling Time	15.	Same
Delays	16. Startup Time	16.	Same
	17. Equipment Breakdown	17.	Same
	18. Delays - Man	18.	Same
	19. Turco	19.	Same
	20. Miscellaneous	20.	Same
	21. Probalogging	**21.	Number of tubes involved
	22. Scrums		

One will notice immediately that the various time elements across any given function code row (primary function) do not necessarily have equal total values. The reason here is that some tasks are distributed according to the function governing or controlling the outage during different periods of the given outage. As an example, the records indicate that tube leak work was performed while normal charge-discharge was governing or the time controlling portion of a given outage. Therefore, one will find the tube leak repair hour requirements in row 1 under secondary function number 5 indicating the leak work was performed during the period when charge-discharge was the outage controlling function. The same distribution pattern will be especially noticeable with regard to associated maintenance time requirements. To determine the amount of time associated with a specific function one should look at the diagonal element for that particular function. For example, tube leak work during tube leak controlling periods will show up on the function row number 5 under secondary function column 5, and so forth.

The number of elements involved in this analysis versus the width of the paper on which to write the information required a slight modification. Therefore, it will be noted that each row is split with regard to the secondary functional relationship. The first fourteen functions are corrective in nature and the remaining are the unavoidable delays required to perform the necessary corrective work. Therefore, each row is broken at this logical point. The corrective first, followed by the associated delays ending with the corresponding tube count.

The third portion of each reactor report is a summary of the corrective time requirements, a summary of the associated delays, followed by the tube count for the period reported.

This report summarizes all the recorded data starting April 1, 1961 to May 15, 1962. This same analysis can be run for any reactor for any incremental period considering any one or combinations of causes for an outage during the above mentioned period. For example, one can get an analysis for B reactor, for the period July 1, 1961 through December 31, 1961 covering the outages for tube leaks and ruptures.

The last page of the report is a summation of all the hours expended during the period for each of the recovery functions. This summary presents a reasonably good picture of the distribution of the total outage time to the various activities. One can, if he desires, calculate the percentage of time attributed to charge-discharge, rupture removal, mechanical maintenance and so forth. The averages, variance and standard deviation associated with tube count, in this case, are valueless.

Appendix A is an updated analysis which parallels the report HW-57166, but covers the period April 1, 1961 to May 16, 1962.

R. C. Burke

R. C. Burke
OPERATIONS RESEARCH & SYNTHESIS

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REACTOR 2 OUTAGE FUNCTION EXPECTATION REPORT APRIL 1961 TO MAY 15 1962

DE-57760 B
Page 4

THIS IS AN EXEMPLARY REPORT ILLUSTRATING
AVERAGE TIME REQUIREMENTS AND EXPECTED
VARIANCES FOR THE BASIC TASKS REQUIRED
TO RE-ESTABLISH ON-LINE PRODUCTION STATUS.
**ALL DATA IN HOURS-EXCEPT SECONDARY FUNCTION#21#TUBE COUNT.

** INCIDENT EXPERIENCE BY CAUSE FUNCTION **

SECONDARY FUNCTION NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
FUNCTION 1	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	14	7	5	0	0	18
FUNCTION 2	9	13	0	0	0	0	0	0	0	0	0	0	0	0	15	17	3	3	0	0	0	20
FUNCTION 3	0	0	1	0	0	1	0	2	0	0	0	0	0	0	1	1	0	0	0	0	0	2
FUNCTION 4	9	0	0	9	0	2	0	0	0	0	0	0	0	0	11	11	0	1	0	0	0	6
FUNCTION 5	12	0	0	0	3	1	0	12	0	0	0	0	0	0	11	12	2	3	0	0	0	6
FUNCTION 6	3	0	0	0	0	3	0	7	0	0	0	0	0	0	6	6	0	1	0	0	0	8
FUNCTION 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FUNCTION 8	1	0	0	0	0	0	0	33	13	4	0	0	2	0	25	28	2	2	1	0	0	0
FUNCTION 9	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
FUNCTION 10	1	0	0	0	0	0	1	1	3	1	1	0	0	1	1	0	0	0	0	0	0	0
FUNCTION 11	1	0	0	0	0	0	0	0	0	0	9	0	0	0	3	3	0	0	0	0	0	0
FUNCTION 12	10	5	0	0	0	0	0	13	0	0	2	5	0	0	14	15	0	1	1	0	0	1
FUNCTION 13	0	0	0	0	0	0	0	0	0	0	0	3	5	0	4	5	0	0	0	0	0	0
FUNCTION 14	1	1	0	0	1	0	0	2	0	0	0	1	8	0	1	0	0	0	0	0	0	0
FUNCTION 15	20	5	1	6	1	5	0	7	0	0	2	5	2	0	0	0	0	0	0	0	0	0
FUNCTION 16	21	6	1	6	1	5	0	9	0	0	2	6	3	1	0	0	0	0	0	0	0	0

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FUNCTION 18	8	1	0	1	0	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0
FUNCTION 19	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
FUNCTION 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FUNCTION 21	9	0	0	0	0	3	0	0	1	0	7	0	0	0	10	10	2	1	0	0
FUNCTION 22	0	0	0	0	0	0	2	0	0	0	0	8	0	0	0	0	0	0	0	0

SI-57168 B
Page 5
[REDACTED]

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SECONDARY
FUNCTION NUMBER

1 2 3 4 5 6 7 8 9 10 11 12 13 14
15 16 17 18 19 20 21

HW-57160 B
Page 6

FUNCTION 1
TCT.HOURS DWN 254.2 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
INCIDENTS 19 0 0 0 0 0 0 0 0 0 0 0 0 0
AVERAGE DOWM 13.4 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
VARIANCE 91.1 -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0.
STD.DEVIATION 9.5 -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0.

FUNCTION 1
TCT.HOURS DWN 12.5 24.0 4.9 8.5 0. 0. 5020.
INCIDENTS 13 14 7 5 0 0 18
AVERAGE DOWM 1.0 1.7 1.3 1.7 0. 0. 279.
VARIANCE 0.2 1.0 0.5 0.7 -0. -0. 49449.
STD.DEVIATION 0.5 1.0 0.7 0.8 -0. -0. 222.

FUNCTION 2
TCT.HOURS DWN 95.2 116.4 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
INCIDENTS 9 13 0 0 0 0 0 0 0 0 0 0 0 0
AVERAGE DOWM 10.4 9.0 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
VARIANCE 48.9 30.6 -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0.
STD.DEVIATION 7.0 5.5 -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0.

FUNCTION 2
TCT.HOURS DWN 10.4 21.8 4.9 5.1 0. 0. 2543.
INCIDENTS 15 17 3 3 0 0 20
AVERAGE DOWM 0.7 1.3 1.6 1.7 0. 0. 128.
VARIANCE 0.1 0.6 4.4 2.4 -0. -0. 4427.
STD.DEVIATION 0.4 0.8 2.1 1.6 -0. -0. 67.

FUNCTION 3
TCT.HOURS DWN 0. 0. 0.5 0. 0. 2.3 0. 1.1 0. 0. 0. 0. 0. 0.
INCIDENTS 0 0 1 0 0 1 0 2 0 0 0 0 0 0
AVERAGE DOWM 0. 0. 0.5 0. 0. 2.3 0. 0.5 0. 0. 0. 0. 0. 0.
VARIANCE -0. -0. 0. -0. -0. 0. -0. 0.1 -0. -0. -0. -0. -0. -0.
STD.DEVIATION -0. -0. 0. -0. -0. 0. -0. 0.4 -0. -0. -0. -0. -0. -0.

FUNCTION 3
TCT.HOURS DWN 0.1 0.2 0. 0. 0. 0. 2.
INCIDENTS 1 1 0 0 0 0 2
AVERAGE DOWM 0.1 0.2 0. 0. 0. 0. 1.
VARIANCE 0. 0. -0. -0. -0. -0. 0

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FUNCTION 4															
TCT.HOURS OWN	40.0	0.	0.	34.8	0.	9.3	0.	39.0	0.	0.	0.	0.	0.	0.	0.
INCIDENTS	9	0	0	9	0	2	0	8	0	0	0	0	0	0	0
AVERAGE DOWN	4.4	0.	0.	4.1	0.	4.6	0.	4.9	0.	0.	0.	0.	0.	0.	0.
VARIANCE	30.1	-0.	-0.	17.1	-0.	0.8	-0.	47.3	-0.	-0.	-0.	-0.	-0.	-0.	-0.
STD.DEVIATION	5.5	-0.	-0.	4.1	-0.	0.9	-0.	6.9	-0.	-0.	-0.	-0.	-0.	-0.	-0.

HW-57266 B
PAGE 7

FUNCTION 4							
TCT.HOURS OWN	20.3	19.0	0.	0.4	0.	0.	7.
INCIDENTS	11	11	0	1	0	0	4
AVERAGE DOWN	1.8	1.7	0.	0.4	0.	0.	1.
VARIANCE	2.3	1.9	-0.	0.	-0.	-0.	0.
STD.DEVIATION	1.5	1.4	-0.	0.	-0.	-0.	0.

FUNCTION 5															
TCT.HOURS OWN	75.7	0.	0.	0.	41.5	4.2	0.	93.3	0.	0.	0.	0.	0.	0.	0.
INCIDENTS	12	0	0	0	3	1	0	12	0	0	0	0	0	0	0
AVERAGE DOWN	6.3	0.	0.	0.	13.8	4.2	0.	7.8	0.	0.	0.	0.	0.	0.	0.
VARIANCE	32.8	-0.	-0.	-0.	12.6	0.	-0.	30.3	-0.	-0.	-0.	-0.	-0.	-0.	-0.
STD.DEVIATION	5.7	-0.	-0.	-0.	3.6	0.	-0.	5.5	-0.	-0.	-0.	-0.	-0.	-0.	-0.

FUNCTION 5							
TCT.HOURS OWN	24.1	33.3	7.4	6.1	0.	0.	7.
INCIDENTS	11	12	2	3	0	0	4
AVERAGE DOWN	2.2	2.8	3.8	2.0	0.	0.	1.
VARIANCE	0.9	2.8	5.8	5.4	-0.	-0.	0.
STD.DEVIATION	0.9	1.7	2.4	2.4	-0.	-0.	0.

FUNCTION 6															
TCT.HOURS OWN	28.8	0.	0.	0.	0.	12.0	0.	127.7	0.	0.	0.	0.	0.	0.	0.
INCIDENTS	3	0	0	0	0	3	0	7	0	0	0	0	0	0	0
AVERAGE DOWN	9.6	0.	0.	0.	0.	4.0	0.	18.2	0.	0.	0.	0.	0.	0.	0.
VARIANCE	136.7	-0.	-0.	-0.	-0.	10.2	-0.	987.1	-0.	-0.	-0.	-0.	-0.	-0.	-0.
STD.DEVIATION	11.7	-0.	-0.	-0.	-0.	3.2	-0.	31.4	-0.	-0.	-0.	-0.	-0.	-0.	-0.

FUNCTION 6							
TCT.HOURS OWN	7.5	11.9	0.	2.3	0.	0.	143.
INCIDENTS	4	6	0	1	0	0	8
AVERAGE DOWN	1.2	2.0	0.	2.3	0.	0.	18.
VARIANCE	1.5	3.9	-0.	0.	-0.	-0.	1682.
STD.DEVIATION	1.2	2.0	-0.	0.	-0.	-0.	41.

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FUNCTION 7														
TGT.HOURS DWN	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
INCIDENTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AVERAGE DWN	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
VARIANCE	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
STD.DEVIATION	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.

HW-57168 3
Page 8

FUNCTION 7														
TGT.HOURS DWN	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
INCIDENTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AVERAGE DWN	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
VARIANCE	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
STD.DEVIATION	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.

FUNCTION 8														
TGT.HOURS DWN	5.0	0.	0.	0.	0.	0.	0.	348.7	40.8	8.9	0.	0.	1.8	0.
INCIDENTS	1	0	0	0	0	0	0	33	13	4	0	0	2	0
AVERAGE DWN	5.0	0.	0.	0.	0.	0.	0.	11.2	3.1	2.2	0.	0.	0.9	0.
VARIANCE	0.	-0.	-0.	-0.	-0.	-0.	-0.	187.7	9.6	1.1	-0.	-0.	0.7	-0.
STD.DEVIATION	0.	-0.	-0.	-0.	-0.	-0.	-0.	13.7	3.1	1.0	-0.	-0.	0.8	-0.

FUNCTION 8														
TGT.HOURS DWN	27.4	45.3	2.2	1.4	17.0	0.	0.							
INCIDENTS	25	28	2	2	1	0	0							
AVERAGE DWN	1.1	1.6	1.1	0.8	17.0	0.	0.							
VARIANCE	0.9	1.7	0.3	0.2	0.	-0.	-0.							
STD.DEVIATION	0.9	1.3	0.4	0.4	0.	-0.	-0.							

FUNCTION 9														
TGT.HOURS DWN	0.	0.	0.	0.	0.	0.	0.	0.	9.9	0.	0.	0.	0.	0.
INCIDENTS	0	0	0	0	0	0	0	0	9	0	0	0	0	0
AVERAGE DWN	0.	0.	0.	0.	0.	0.	0.	0.	2.0	0.	0.	0.	0.	0.
VARIANCE	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	0.9	-0.	-0.	-0.	-0.	-0.
STD.DEVIATION	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	0.7	-0.	-0.	-0.	-0.	-0.

FUNCTION 9														
TGT.HOURS DWN	0.	0.	0.	0.	0.	0.	0.							
INCIDENTS	0	0	0	0	0	0	0							
AVERAGE DWN	0.	0.	0.	0.	0.	0.	0.							
VARIANCE	-0.	-0.	-0.	-0.	-0.	-0.	-0.							
STD.DEVIATION	-0.	-0.	-0.	-0.	-0.	-0.	-0.							

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FUNCTION 10														
TGT.HOURS DWN	31.0	0.	0.	0.	0.	0.	0.	113.7	3.0	7.3	5.0	15.4	0.	0.

AVERAGE DOWN	31.0	0.	0.	0.	0.	0.	0.	113.7	3.0	2.4	5.0	15.6	0.	0.
VARIANCE	0.	-0.	-0.	-0.	-0.	-0.	-0.	0.	0.	10.7	0.	0.	-0.	-0.
STD.DEVIATION	0.	-0.	-0.	-0.	-0.	-0.	-0.	0.	0.	3.3	0.	0.	-0.	-0.

FUNCTION 10														
TCT.HOURS DOWN	2.2	13.2	0.	0.	0.	0.	0.							
INCIDENTS	1	1	0	0	0	0	0							
AVERAGE DOWN	2.2	13.2	0.	0.	0.	0.	0.							
VARIANCE	0.	0.	-0.	-0.	-0.	-0.	-0.							
STD.DEVIATION	0.	0.	-0.	-0.	-0.	-0.	-0.							

HW-57168 D

Page 9

FUNCTION 11														
TCT.HOURS DOWN	0.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	22.1	0.	0.	0.
INCIDENTS	1	0	0	0	0	0	0	0	0	0	9	0	0	0
AVERAGE DOWN	0.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	2.5	0.	0.	0.
VARIANCE	0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	3.0	-0.	-0.	-0.
STD.DEVIATION	0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	1.7	-0.	-0.	-0.

FUNCTION 11														
TCT.HOURS DOWN	0.9	2.1	0.	0.	0.	0.	0.							
INCIDENTS	3	3	0	0	0	0	0							
AVERAGE DOWN	0.3	0.7	0.	0.	0.	0.	0.							
VARIANCE	0.0	0.3	-0.	-0.	-0.	-0.	-0.							
STD.DEVIATION	0.2	0.6	-0.	-0.	-0.	-0.	-0.							

FUNCTION 12														
TCT.HOURS DOWN	82.9	12.1	0.	0.	0.	0.	0.	159.6	0.	0.	2.7	73.0	0.	0.
INCIDENTS	10	5	0	0	0	0	0	13	0	0	2	5	0	0
AVERAGE DOWN	8.3	2.4	0.	0.	0.	0.	0.	12.3	0.	0.	1.3	14.6	0.	0.
VARIANCE	110.7	2.4	-0.	-0.	-0.	-0.	-0.	634.9	-0.	-0.	0.2	158.9	-0.	-0.
STD.DEVIATION	10.5	1.5	-0.	-0.	-0.	-0.	-0.	25.2	-0.	-0.	0.5	12.6	-0.	-0.

FUNCTION 12														
TCT.HOURS DOWN	21.0	29.4	0.	2.3	7.9	0.	9.							
INCIDENTS	14	15	0	1	1	0	1							
AVERAGE DOWN	1.5	2.0	0.	2.3	7.9	0.	9.							
VARIANCE	2.3	2.7	-0.	0.	0.	-0.	0.							
STD.DEVIATION	1.5	1.7	-0.	0.	0.	-0.	0.							

FUNCTION 13														
TCT.HOURS DOWN	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	18.3	14.7	0.
INCIDENTS	0	0	0	0	0	0	0	0	0	0	0	3	5	0
AVERAGE DOWN	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	6.1	2.9	0.
VARIANCE	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	0.0	2.1	-0.
STD.DEVIATION	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	0.0	1.4	-0.

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FUNCTION 13														
TCT.HOURS OWN	1.0	2.7	0.	0.	0.	0.	0.							
INCIDENTS	4	5	0	0	0	0	0							
AVERAGE DCWN	0.2	0.5	0.	0.	0.	0.	0.							
VARIANCE	0.0	0.1	-0.	-0.	-0.	-0.	-0.							
STD.DEVIATION	0.1	0.3	-0.	-0.	-0.	-0.	-0.							

HW-57168 B
Page 10

FUNCTION 14														
TCT.HOURS OWN	3.2	3.2	0.	0.	1.6	0.	0.	2.4	0.	0.	0.	3.2	3.5	15.2
INCIDENTS	1	1	0	0	1	0	0	2	0	0	0	1	8	8
AVERAGE DCWN	3.2	3.2	0.	0.	1.6	0.	0.	1.2	0.	0.	0.	3.2	0.4	1.9
VARIANCE	0.	0.	-0.	-0.	0.	-0.	-0.	0.5	-0.	-0.	-0.	0.	0.0	15.4
STD.DEVIATION	0.	0.	-0.	-0.	0.	-0.	-0.	0.7	-0.	-0.	-0.	0.	0.2	3.9

FUNCTION 14														
TCT.HOURS OWN	0.	1.8	0.	0.	0.	0.	0.							
INCIDENTS	0	1	0	0	0	0	0							
AVERAGE DCWN	0.	1.8	0.	0.	0.	0.	0.							
VARIANCE	-0.	0.	-0.	-0.	-0.	-0.	-0.							
STD.DEVIATION	-0.	0.	-0.	-0.	-0.	-0.	-0.							

FUNCTION 15														
TCT.HOURS OWN	79.9	3.1	0.1	10.7	2.2	4.9	0.	8.3	0.	0.	0.4	4.4	0.5	0.
INCIDENTS	20	5	1	4	1	5	0	7	0	0	2	5	2	0
AVERAGE DCWN	4.0	0.6	0.1	1.8	2.2	1.0	0.	1.2	0.	0.	0.2	1.3	0.2	0.
VARIANCE	5.4	0.1	0.	2.2	0.	0.7	-0.	0.9	-0.	-0.	0.0	2.5	0.0	-0.
STD.DEVIATION	2.4	0.2	0.	1.5	0.	0.8	-0.	0.9	-0.	-0.	0.1	1.4	0.1	-0.

FUNCTION 15														
TCT.HOURS OWN	0.	0.	0.	0.	0.	0.	0.							
INCIDENTS	0	0	0	0	0	0	0							
AVERAGE DCWN	0.	0.	0.	0.	0.	0.	0.							
VARIANCE	-0.	-0.	-0.	-0.	-0.	-0.	-0.							
STD.DEVIATION	-0.	-0.	-0.	-0.	-0.	-0.	-0.							

FUNCTION 16														
TCT.HOURS OWN	123.4	9.7	0.2	8.7	2.0	6.6	0.	16.0	0.	0.	1.5	12.4	1.6	1.8
INCIDENTS	21	6	1	6	1	5	0	9	0	0	2	6	3	1
AVERAGE DCWN	5.9	1.6	0.2	1.4	2.0	1.3	0.	1.8	0.	0.	0.7	2.1	0.5	1.8
VARIANCE	30.3	0.8	0.	1.5	0.	0.5	-0.	1.6	-0.	-0.	0.6	3.7	0.1	0.
STD.DEVIATION	5.5	0.9	0.	1.2	0.	0.7	-0.	1.3	-0.	-0.	0.8	1.9	0.3	0.

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INCIDENTS 0 0 0 0 0 0 0 0 0 0
 AVERAGE DOWM 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
 VARIANCE -0. -0. -0. -0. -0. -0. -0. -0. -0. -0.
 STD.DEVIATION -0. -0. -0. -0. -0. -0. -0. -0. -0. -0.

FUNCTION 17
 TCT.HOURS DWN 3.4 4.4 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
 INCIDENTS 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 AVERAGE DOWM 1.7 2.2 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
 VARIANCE 0.7 7.2 -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0.
 STD.DEVIATION 0.6 2.7 -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0.

FUNCTION 17
 TCT.HOURS DWN 0.
 INCIDENTS 0
 AVERAGE DOWM 0.
 VARIANCE -0.
 STD.DEVIATION -0.

FUNCTION 18
 TCT.HOURS DWN 20.5 0.7 0. 0. 0.6 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
 INCIDENTS 6 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 AVERAGE DOWM 2.6 0.7 0. 0. 0.6 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
 VARIANCE 6.4 0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0.
 STD.DEVIATION 2.5 0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0.

FUNCTION 18
 TCT.HOURS DWN 0.
 INCIDENTS 0
 AVERAGE DOWM 0.
 VARIANCE -0.
 STD.DEVIATION -0.

FUNCTION 19
 TCT.HOURS DWN 0.
 INCIDENTS 0
 AVERAGE DOWM 0.
 VARIANCE -0.
 STD.DEVIATION -0.

FUNCTION 19
 TCT.HOURS DWN 0.
 INCIDENTS 0
 AVERAGE DOWM 0.
 VARIANCE -0.
 STD.DEVIATION -0.

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STD.DEVIATION -0. -0. -0. -0. -0. -0. -0.

FUNCTION 20
 TCT.HOURS DOWN 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
 INCIDENTS 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 AVERAGE DOWN 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
 VARIANCE -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0.
 STD.DEVIATION -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0. -0.

NS-57168 B
 Page 18

FUNCTION 20
 TCT.HOURS DOWN 0. 0. 0. 0. 0. 0. 0.
 INCIDENTS 0 0 0 0 0 0 0
 AVERAGE DOWN 0. 0. 0. 0. 0. 0. 0.
 VARIANCE -0. -0. -0. -0. -0. -0. -0.
 STD.DEVIATION -0. -0. -0. -0. -0. -0. -0.

FUNCTION 21
 TCT.HOURS DOWN 63.0 0. 0. 0. 0. 14.6 0. 0. 2.2 0. 37.3 0. 0. 0.
 INCIDENTS 9 0 0 0 0 3 0 0 1 0 7 0 0 0
 AVERAGE DOWN 7.0 0. 0. 0. 0. 5.5 0. 0. 2.2 0. 5.3 0. 0. 0.
 VARIANCE 15.1 -0. -0. -0. -0. 14.4 -0. -0. 0. -0. 19.7 -0. -0. -0.
 STD.DEVIATION 3.9 -0. -0. -0. -0. 4.0 -0. -0. 0. -0. 4.4 -0. -0. -0.

FUNCTION 21
 TCT.HOURS DOWN 4.9 13.1 2.8 7.4 0. 0. 1885.
 INCIDENTS 10 10 2 1 0 0 9
 AVERAGE DOWN 0.7 1.3 1.4 7.4 0. 0. 209.
 VARIANCE 0.2 0.9 0.7 0. -0. -0. 42070.
 STD.DEVIATION 0.5 1.0 0.8 0. -0. -0. 205.

FUNCTION 22
 TCT.HOURS DOWN 0. 0. 0. 0. 0. 0. 0. 1.8 0. 0. 0. 3.5 0. 0.
 INCIDENTS 0 0 0 0 0 0 0 2 0 0 0 0 0
 AVERAGE DOWN 0. 0. 0. 0. 0. 0. 0. 0.9 0. 0. 0. 0.4 0. 0.
 VARIANCE -0. -0. -0. -0. -0. -0. -0. 0.7 -0. -0. -0. 0.0 -0. -0.
 STD.DEVIATION -0. -0. -0. -0. -0. -0. -0. 0.8 -0. -0. -0. 0.2 -0. -0.

FUNCTION 22
 TCT.HOURS DOWN 0. 0. 0. 0. 0. 0. 0.
 INCIDENTS 0 0 0 0 0 0 0
 AVERAGE DOWN 0. 0. 0. 0. 0. 0. 0.
 VARIANCE -0. -0. -0. -0. -0. -0. -0.
 STD.DEVIATION -0. -0. -0. -0. -0. -0. -0.

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SUB TOTAL DELINEATION

FUNCTION 1		ASSOCIATED DELAY TOTALS		TOTAL TUBES
SUM#BASICS&SECONCARIES	254.2	SUM OF DELAYS	53.9	SUM 5020.
NUMBER OF INCIDENTS	19	INCIDENTS	19	CNT 19
AVERAGE HOURS REQD.	13.4	AVERAGE	2.8	AVG 264.
VARIANCE	280.1	VARIANCE	5.1	
STD. DEVIATION	16.7	STD.DEVIATION	2.3	

SI-57168 B
Page 13

FUNCTION 2		ASSOCIATED DELAY TOTALS		TOTAL TUBES
SUM#BASICS&SECONCARIES	211.7	SUM OF DELAYS	42.4	SUM 2543.
NUMBER OF INCIDENTS	22	INCIDENTS	22	CNT 22
AVERAGE HOURS REQD.	9.6	AVERAGE	1.9	AVG 117.
VARIANCE	133.8	VARIANCE	2.9	
STD. DEVIATION	11.4	STD.DEVIATION	1.7	

FUNCTION 3		ASSOCIATED DELAY TOTALS		TOTAL TUBES
SUM#BASICS&SECONCARIES	3.9	SUM OF DELAYS	0.3	SUM 2.
NUMBER OF INCIDENTS	3	INCIDENTS	3	CNT 3
AVERAGE HOURS REQD.	1.3	AVERAGE	0.1	AVG 1.
VARIANCE	3.5	VARIANCE	0.0	
STD. DEVIATION	1.9	STD.DEVIATION	0.2	

FUNCTION 4		ASSOCIATED DELAY TOTALS		TOTAL TUBES
SUM#BASICS&SECONCARIES	125.1	SUM OF DELAYS	39.9	SUM 7.
NUMBER OF INCIDENTS	14	INCIDENTS	14	CNT 14
AVERAGE HOURS REQD.	8.9	AVERAGE	2.8	AVG 1.
VARIANCE	177.7	VARIANCE	6.9	
STD. DEVIATION	13.3	STD.DEVIATION	2.6	

FUNCTION 5		ASSOCIATED DELAY TOTALS		TOTAL TUBES
SUM#BASICS&SECONCARIES	216.7	SUM OF DELAYS	71.1	SUM 7.
NUMBER OF INCIDENTS	14	INCIDENTS	14	CNT 14
AVERAGE HOURS REQD.	15.5	AVERAGE	5.1	AVG 1.
VARIANCE	325.4	VARIANCE	17.6	

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FUNCTION 6		ASSOCIATED DELAY TOTALS		TOTAL TUBES	
SUM#BASICS#SECONCARRIES	148.5	SUM OF DELAYS	21.7	SUM	143.
NUMBER OF INCIDENTS	8	INCIDENTS	8	CNT	8
AVERAGE HOURS REQD.	21.1	AVERAGE	2.7	AVG	18.
VARIANCE	1871.0	VARIANCE	14.5		
STD. DEVIATION	43.3	STD.DEVIATION	3.8		

SM-57168 B
Page 14

FUNCTION 7		ASSOCIATED DELAY TOTALS		TOTAL TUBES	
SUM#BASICS#SECONCARRIES	0.	SUM OF DELAYS	0.	SUM	0.
NUMBER OF INCIDENTS	0	INCIDENTS	0	CNT	0
AVERAGE HOURS REQD.	0.	AVERAGE	0.	AVG	0.
VARIANCE	-0.	VARIANCE	-0.		
STD. DEVIATION	-0.	STD.DEVIATION	-0.		

FUNCTION 21		ASSOCIATED DELAY TOTALS		TOTAL TUBES	
SUM#BASICS#SECONCARRIES	119.1	SUM OF DELAYS	30.4	SUM	1005.
NUMBER OF INCIDENTS	10	INCIDENTS	10	CNT	10
AVERAGE HOURS REQD.	11.9	AVERAGE	3.0	AVG	109.
VARIANCE	227.3	VARIANCE	16.0		
STD. DEVIATION	15.1	STD.DEVIATION	4.0		

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REACTOR 2 OUTAGE FUNCTION EXPECTATION REPORT

APRIL 1961 TO MAY 15 1962

THIS IS AN EXEMPLARY REPORT ILLUSTRATING
AVERAGE TIME REQUIREMENTS AND EXPECTED
VARIATIONS FOR THE BASIC TASKS REQUIRED
TO RE-ESTABLISH ON-LINE PRODUCTION STATUS.

**ALL DATA IN HOURS-EXCEPT SECONDARY FUNCTION=21=TUBE COUNT.

** INCIDENT EXPERIENCE BY CAUSE FUNCTION **

SECONDARY FUNCTION NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
FUNCTION TOTAL	30	13	1	9	4	9	0	41	18	6	16	9	15	8	35	35	11	12	2	0	31

HW-57
16
[REDACTED]

[REDACTED]

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HW-57168 B
 Page 16

FUNCTION NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14
*****	15	14	17	18	19	20	21							
FUNCTION TOTAL	671.9	431.7	0.5	36.8	43.1	46.4	0.	922.5	55.9	16.2	67.1	110.9	20.0	15.2
TOT. POINTS	30	13	1	9	4	9	0	41	18	6	16	9	15	8
INCIDENTS	22.4	19.1	0.5	4.1	10.8	5.2	0.	22.5	3.1	2.7	4.2	12.3	1.3	1.9
AVERAGE	487.9	41.5	0.	17.1	45.8	7.5	0.	1141.9	9.7	12.1	16.9	110.2	2.5	15.4
VARIANCE	22.1	6.4	0.	4.1	6.8	2.7	-0.	33.8	3.1	3.5	4.1	10.5	1.6	3.9
STD. DEVIATION														

FUNCTION TOTAL	134.7	217.8	26.4	34.1	24.9	0.	9587.							
TOT. POINTS	35	35	11	12	2	0	31							
INCIDENTS	3.8	6.2	2.4	2.8	12.4	0.	309.							
AVERAGE	0.9	19.2	6.1	5.6	41.4	-0.	142267.							
VARIANCE	1.0	4.4	2.5	2.4	6.4	-0.	377.							
STD. DEVIATION														

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	TOTAL HOURS DOWN							
	REACTOR1	REACTOR2	REACTOR3	REACTOR4	REACTOR5	REACTOR6	REACTOR7	REACTOR8
CAUSE 1	0.	448.5	308.3	173.2	43.1	0.	431.8	643.1
CAUSE 2	516.4	978.0	584.2	742.7	373.3	642.8	334.0	243.3
CAUSE 3	805.1	192.1	538.8	794.8	699.4	1148.4	0.	0.
CAUSE 4	1681.8	526.7	1172.7	831.3	829.6	917.8	0.	33.4
CAUSE 5	4.1	10.2	50.6	173.8	133.3	127.7	663.6	334.1
CAUSE 6	31.1	72.4	146.4	35.3	1.8	4.7	0.	38.0
CAUSE 7	0.	56.0	5.4	0.	134.6	116.5	2.1	0.
CAUSE 8	0.	3.6	0.	0.	6.3	0.	0.	0.
CAUSE 9	72.6	0.5	121.5	274.1	41.8	0.	0.6	92.7
CAUSE10	0.	0.	0.	0.	0.	0.	0.	1.1
CAUSE11	0.1	0.	0.	0.	0.	0.	117.5	0.
CAUSE12	0.	200.6	0.	0.	0.	0.	0.	0.
CAUSE13	102.8	43.4	0.	0.	188.9	0.	0.	0.
CAUSE14	52.9	0.	0.5	89.2	27.1	0.5	0.	0.
CAUSE15	37.7	0.	0.	0.	0.	0.	0.	0.
CAUSE16	7.5	11.1	0.	3.1	0.	2.5	0.	0.

- Cause 1 - Scheduled Charge-Discharge
- 2 - Rupture
- 3 - Tube Replacement
- 4 - Water Leaks
- 5 - Control Trips (Panellit, Beckman, etc.)
- 6 - Front Face Leaks
- 7 - Rear Face Leaks
- 8 - Production Test
- 9 - Electrical Power Failure
- 10 - Oriface Failure
- 11 - Control Rod Failure
- 12 - Scheduled Overhaul
- 13 - Water Supply Failure
- 14 - Ball Drop - Loss of Reactivity
- 15 - Plugged Rear Nozzles
- 16 - Faulty Thermocouples

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APPENDIX

A-1

EM-57168 B

	TOTAL DOWN INCIDENTS							
	REACTOR1	REACTOR2	REACTOR3	REACTOR4	REACTOR5	REACTOR6	REACTOR7	REACTOR8
CAUSE 1	0	4	3	2	1	0	6	9
CAUSE 2	9	14	13	18	9	21	8	6
CAUSE 3	2	1	2	2	4	6	0	0
CAUSE 4	29	11	22	14	15	25	0	1
CAUSE 5	4	16	10	12	5	24	21	19
CAUSE 6	1	2	4	1	1	3	0	1
CAUSE 7	0	3	2	0	4	4	2	0
CAUSE 8	0	1	0	0	1	0	0	0
CAUSE 9	2	1	5	2	1	0	1	1
CAUSE10	0	0	0	0	0	0	0	1
CAUSE11	1	0	0	0	0	0	2	0
CAUSE12	0	2	0	0	0	0	0	0
CAUSE13	2	1	0	0	3	0	0	0
CAUSE14	2	0	1	2	2	2	0	0
CAUSE15	2	0	0	0	0	0	0	0
CAUSE16	2	2	0	2	0	2	0	0

A-2

BM-57168 B

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	REACTOR1		REACTOR2		**DOWN INCIDENT AVERAGE AND STANDARD DEVIATION*				REACTOR5		REACTOR6		REACTOR7		REACTOR8	
					REACTOR3	REACTOR4	REACTOR5	REACTOR6								
CAUSE 1	0.	0.	112.1	38.3	102.8	18.4	86.6	68.5	43.1	0.	0.	0.	72.0	9.7	71.5	9.6
CAUSE 2	57.4	28.4	69.9	73.0	44.9	21.2	41.3	5.1	41.5	21.7	30.6	13.8	41.8	35.6	40.6	27.4
CAUSE 3	402.5	27.6	192.1	0.	269.4	168.8	397.4	75.6	174.8	142.4	191.4	148.6	0.	0.	0.	0.
CAUSE 4	58.0	36.5	47.9	30.3	53.3	16.2	59.4	24.9	55.3	17.0	36.7	25.4	0.	0.	33.4	0.
CAUSE 5	1.0	1.2	0.6	0.5	5.1	12.6	14.5	20.9	26.7	26.5	5.3	10.5	31.6	25.9	17.6	16.6
CAUSE 6	31.1	0.	36.2	0.5	36.6	29.3	35.3	0.	1.8	0.	1.6	0.6	0.	0.	38.0	0.
CAUSE 7	0.	0.	18.7	30.7	2.7	3.1	0.	0.	33.6	37.3	29.1	57.7	1.1	0.1	0.	0.
CAUSE 8	0.	0.	3.6	0.	0.	0.	0.	0.	6.3	0.	0.	0.	0.	0.	0.	0.
CAUSE 9	36.3	8.5	0.5	0.	24.3	22.4	137.0	142.5	41.8	0.	0.	0.	0.6	0.	92.7	0.
CAUSE 10	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.1	0.
CAUSE 11	0.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	58.7	3.2	0.	0.
CAUSE 12	0.	0.	100.3	84.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CAUSE 13	51.4	70.4	43.4	0.	0.	0.	0.	0.	63.0	25.4	0.	0.	0.	0.	0.	0.
CAUSE 14	26.5	36.1	0.	0.	0.5	0.	44.6	23.9	13.5	5.5	0.2	0.0	0.	0.	0.	0.
CAUSE 15	18.8	25.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CAUSE 16	3.8	3.1	5.6	7.6	0.	0.	1.5	1.6	0.	0.	1.3	0.6	0.	0.	0.	0.

A-3

BM-57168 B

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DOWN INCIDENT SUMMARY- TOTAL HOURS, PERCENTAGE OF TOTAL DEPARTMENT HOURS AND TIME OPERATING EFFICIENCY

	REACTOR1	REACTOR2	REACTOR3	REACTOR4	REACTOR5	REACTOR6	REACTOR7	REACTOR8
TOTAL	3312.2	2543.2	2928.4	3117.4	2479.1	2961.0	1549.8	1385.7
PERCENT	16.335	12.542	14.442	15.374	12.226	14.603	7.643	6.834
EFFNCY	0.664	0.742	0.703	0.684	0.749	0.700	0.843	0.860

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A-4

BM-57158 B

	TOTAL HOURS	PER DEPARTMENT SUMMARY** TIMES DOWN	AVERAGE	STANDARD DEVIATION
CAUSE 1	2048.0	25.0	81.9	28.2
CAUSE 2	4414.8	96.0	45.0	34.7
CAUSE 3	4178.7	17.0	245.8	146.4
CAUSE 4	5993.4	117.0	51.2	27.5
CAUSE 5	1497.4	111.0	13.5	19.9
CAUSE 6	329.8	15.0	25.4	22.1
CAUSE 7	314.6	15.0	21.0	36.3
CAUSE 8	9.8	2.0	4.9	1.9
CAUSE 9	603.7	13.0	46.4	63.1
CAUSE 10	1.1	1.0	1.1	0.
CAUSE 11	117.6	3.0	39.2	33.9
CAUSE 12	200.6	2.0	100.3	84.1
CAUSE 13	335.1	6.0	55.8	36.3
CAUSE 14	170.2	9.0	18.9	23.5
CAUSE 15	37.7	2.0	18.8	25.9
CAUSE 16	24.3	8.0	3.0	3.7

A-5

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BM-57168

****INTERVAL BETWEEN LIKE OUTAGES BY CAUSE****
CAUSE 1

REACTOR1	REACTOR2	REACTOR3	REACTOR4	REACTOR5	REACTOR6	REACTOR7	REACTOR8
	1040.3	749.9	486.6			977.6	857.7
	1147.4	6621.5				1069.4	747.8
	2299.6					760.5	1055.8
						826.8	1591.4
						1552.7	473.2
							412.3
							642.9
							917.2

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INTERVAL BETWEEN LIKE OUTAGES BY CAUSE
CAUSE 2

REACTOR1	REACTOR2	REACTOR3	REACTOR4	REACTOR5	REACTOR6	REACTOR7	REACTOR8
334.6	170.0	444.1	502.2	189.2	418.9	1.8	2864.7
138.2	834.2	2898.2	1965.7	136.1	2.4	186.8	594.2
3.3	34.7	36.2	395.5	1528.8	1274.2	538.6	2881.2
1067.0	2970.2	253.5	142.1	207.0	1165.6	395.0	16.1
4788.8	251.7	545.9	203.7	62.9	519.5	5722.4	1138.6
1136.8	1007.9	1085.8	41.3	2.0	26.6	1439.6	
193.3	360.6	978.1	93.7	900.2	74.9	96.4	
1491.5	224.7	494.8	74.2	12.7	660.8		
	375.9	395.8	28.1		1625.4		
	1415.7	1309.1	38.0		198.3		
	212.1	6.6	1120.8		129.8		
	402.9	105.0	270.4		45.6		
	27.9		1720.8		127.2		
			916.8		12.2		
			105.4		183.4		
			88.2		79.0		
			116.9		64.1		
					1083.4		
					337.1		
					901.9		

A-7

EM-57168 B

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****INTERVAL BETWEEN LIKE OUTAGES BY CAUSE****
CAUSE 3

REACTOR1	REACTOR2	REACTOR3	REACTOR4	REACTOR5	REACTOR6	REACTOR7	REACTOR8
1794.7		1515.0	1445.1	1934.1	1050.3		
				3004.4	2841.2		
				1419.6	1117.1		
					1675.2		
					1112.3		

DECLASSIFIED

8-7

BM-57168 B

INTERVAL BETWEEN LIKE OUTAGES BY CAUSE

REACTOR1	REACTOR2	REACTOR3	REACTOR4	CAUSE 4 REACTOR5	REACTOR6	REACTOR7	REACTOR8
81.4	2.7	1402.1	61.3	6.6	2.9		
1472.5	666.8	506.1	425.8	2107.1	538.4		
430.9	69.0	335.7	103.0	16.2	453.2		
49.7	99.5	326.7	522.0	105.8	192.0		
111.1	184.4	174.3	162.5	577.0	580.9		
229.2	3507.2	776.9	529.8	399.6	203.4		
255.5	1255.8	31.2	69.1	278.4	584.7		
89.1	76.1	81.8	3096.1	1461.8	356.5		
12.0	1360.7	519.0	281.9	6.7	314.1		
99.5	300.8	195.8	1082.6	105.0	182.5		
109.2		132.5	458.2	352.5	92.5		
124.4		139.8	506.7	326.2	73.4		
156.2		43.1	1035.5	139.8	92.3		
2.3		385.6		959.0	448.3		
148.4		266.2			160.7		
49.4		119.0			70.7		
121.0		76.2			140.6		
75.6		145.6			113.6		
62.5		197.4			304.5		
347.6		270.0			136.8		
137.6		1989.8			1457.5		
903.5					69.2		
36.2					781.4		
152.3					365.5		
365.8							
150.1							
249.0							
161.1							

DECLASSIFIED

A-9

BM-57168 6

INTERVAL BETWEEN LIKE OUTAGES BY CAUSE
CAUSE 5

REACTOR1	REACTOR2	REACTOR3	REACTOR4	REACTOR5	REACTOR6	REACTOR7	REACTOR8
631.1	1203.3	1393.1	2782.2	73.3	305.1	353.6	15.6
1645.3	3.3	2963.8	293.5	4878.6	308.2	323.1	574.4
2217.9	2368.3	529.6	622.6	210.8	205.6	628.3	322.8
	968.9	786.1	286.9	1453.6	357.5	1252.5	712.5
	36.1	358.8	326.6		1094.9	148.0	41.6
	136.6	1045.7	117.7		1.1	585.2	2462.0
	1183.7	0.1	69.6		1044.4	308.2	1008.4
	63.1	492.5	925.7		0.3	130.9	714.7
	1050.3	66.3	1139.2		1.4	558.4	51.5
	987.1		1881.9		0.6	226.4	330.9
	411.6		332.0		1407.1	792.9	0.2
	840.6				11.7	208.3	1.1
	1.3				3.3	357.8	0.7
	0.5				15.5	646.0	70.2
	0.4				5.3	483.7	457.1
					65.6	4.1	179.2
					110.9	1586.2	447.9
					0.9	1.4	928.0
					1063.7	19.1	
					742.6	317.3	
					702.6		
					0.6		
					975.2		

DECLASSIFIED

A-10

BM-57168 8

****INTERVAL BETWEEN LIKE OUTAGES BY CAUSE****
CAUSE 6

REACTOR1	REACTOR2	REACTOR3	REACTOR4	REACTOR5	REACTOR6	REACTOR7	REACTOR8
	604.2	1214.6 3074.2 1649.0			657.6 660.1		

DECLASSIFIED

A-11

BM-57158 8

****INTERVAL BETWEEN LIKE OUTAGES BY CAUSE****
CAUSE 7

REACTOR1	REACTOR2	REACTOR3	REACTOR4	REACTOR5	REACTOR6	REACTOR7	REACTOR8
	4389.9	3551.9		529.7	704.3	1079.1	
	4147.9			753.4	1000.8		
				6536.2	2965.5		

DECLASSIFIED

A-12

BM-57L68

8

****INTERVAL BETWEEN LIKE OUTAGES BY CAUSE****
CAUSE 8

REACTOR1

REACTOR2

REACTOR3

REACTOR4

REACTOR5

REACTOR6

REACTOR7

REACTOR8

DECLASSIFIED

A-13

BM-57168

8

****INTERVAL BETWEEN LIKE OUTAGES BY CAUSE****
CAUSE 9

REACTOR1	REACTOR2	REACTOR3	REACTOR4	REACTOR5	REACTOR6	REACTOR7	REACTOR8
5588.9		1373.5	6220.0				
		17.8					
		3146.1					
		1833.2					

DECLASSIFIED

A-14

BM-57168 6

****INTERVAL BETWEEN LIKE OUTAGES BY CAUSE****
CAUSE10

REACTOR1

REACTOR2

REACTOR3

REACTOR4

REACTOR5

REACTOR6

REACTOR7

REACTOR8

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A-15

EM-57168

6

REACTOR1

REACTOR2

REACTOR3

REACTOR4

REACTOR5

REACTOR6

REACTOR7
540.7

REACTOR8

****INTERVAL BETWEEN LIKE OUTAGES BY CAUSE****
CAUSE11

A-16

BM-57168 B

DECLASSIFIED

****INTERVAL BETWEEN LIKE OUTAGES BY CAUSE****

REACTOR1

REACTOR2
3112.7

REACTOR3

REACTOR4

CAUSE12

REACTOR5

REACTOR6

REACTOR7

REACTOR8

DECLASSIFIED

A-17

BM-57168

8

••INTERVAL BETWEEN LIKE OUTAGES BY CAUSE••
CAUSE13

REACTOR1
272.6

REACTOR2

REACTOR3

REACTOR4

REACTOR5
517.8
28.6

REACTOR6

REACTOR7

REACTOR8



A-18

BM-57768 3

DECLASSIFIED



****INTERVAL BETWEEN LIKE OUTAGES BY CAUSE****

REACTOR1
312.5

REACTOR2

REACTOR3

REACTOR4
115.3

REACTOR5
10.1

REACTOR6
1.1

REACTOR7

REACTOR8

A-19

BM-57158 8

DECLASSIFIED

INTERVAL BETWEEN LIKE OUTAGES BY CAUSE**
CAUSE15

REACTOR1
5512.3

REACTOR2

REACTOR3

REACTOR4

REACTOR5

REACTOR6

REACTOR7

REACTOR8

DECLASSIFIED

A-20

BM-57168 B

****INTERVAL BETWEEN LIKE OUTAGES BY CAUSE****
CAUSE16

REACTOR1
3936.5

REACTOR2
3340.8

REACTOR3

REACTOR4
8137.4

REACTOR5

REACTOR6
0.7

REACTOR7

REACTOR8

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A-21

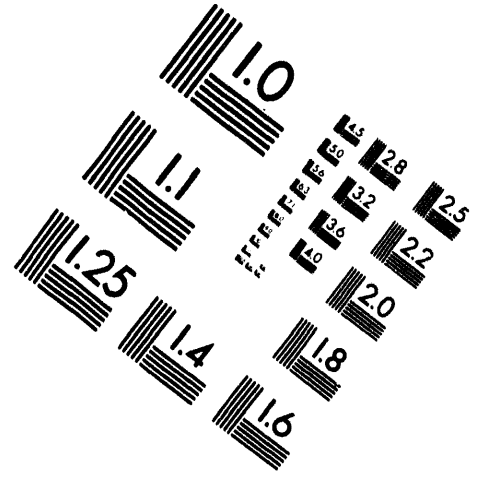
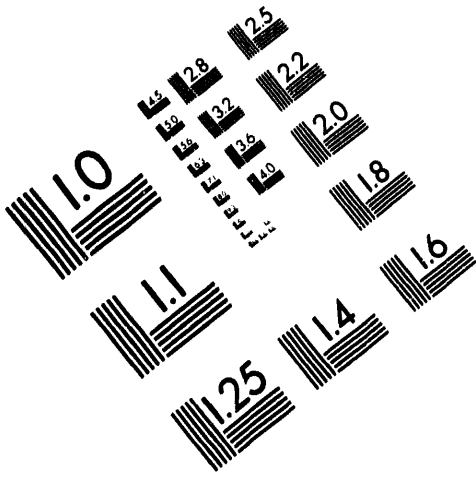
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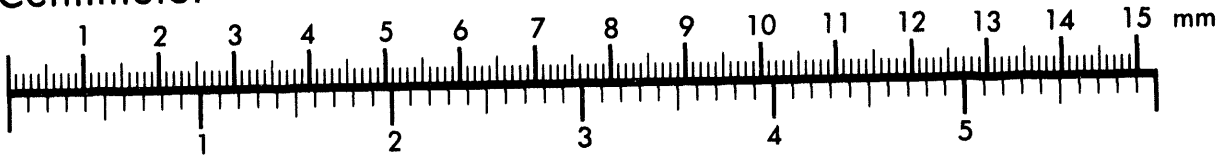
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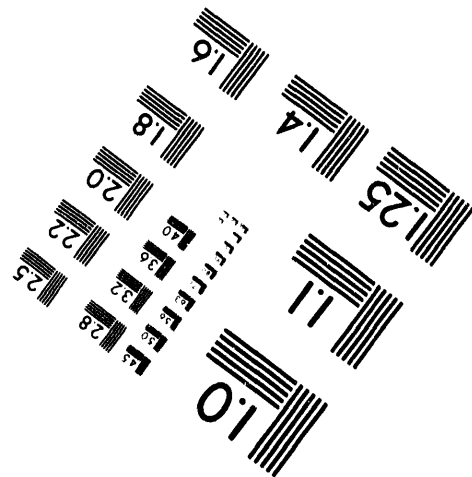
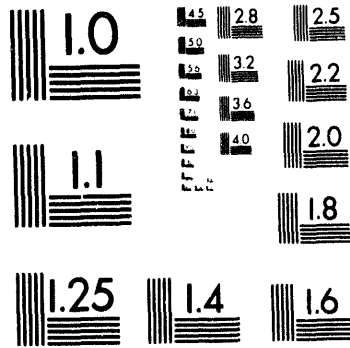
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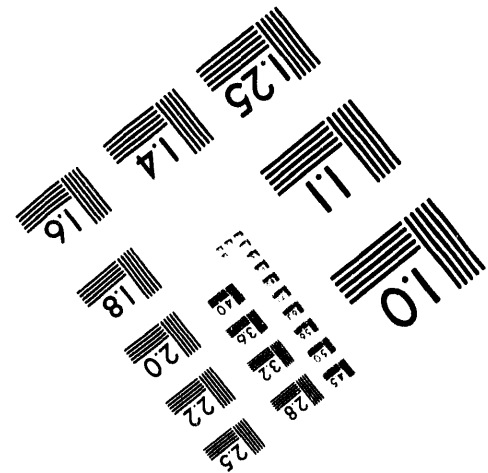
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