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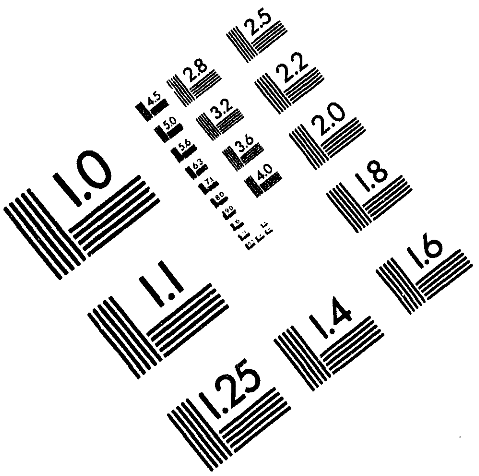

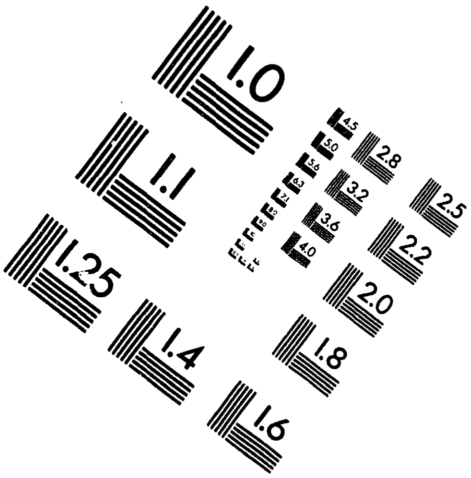

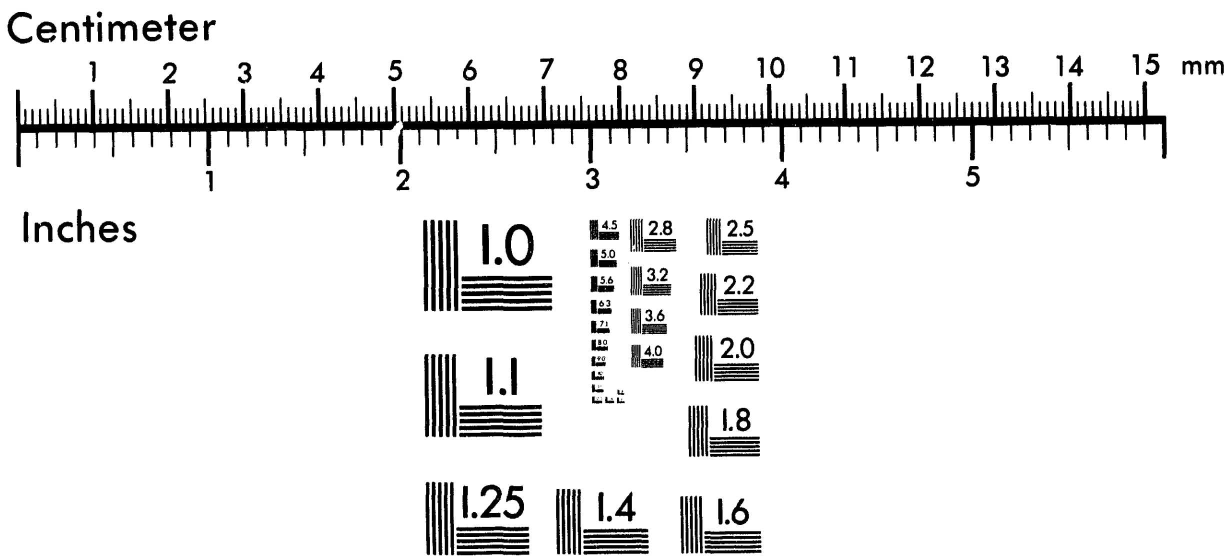

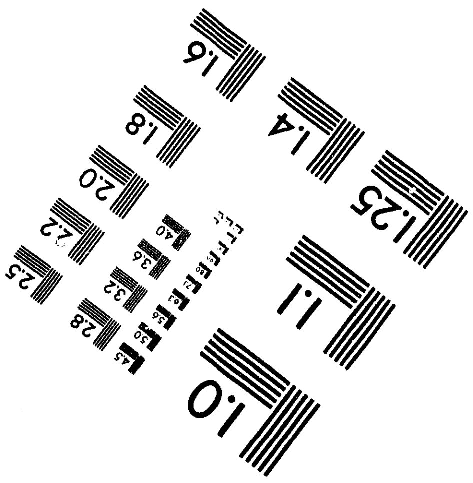

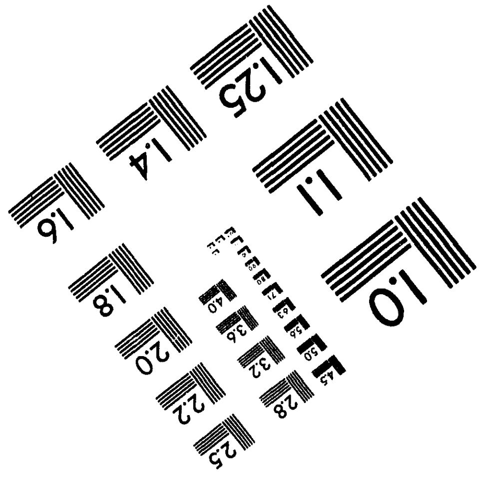

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Reactor Statistics - Section III
April, 1961 - May 15, 1962

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AUTHOR

R. C. Burke

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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:

	Primary		Secondary
***	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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	Primary	Secondary
	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. Probologging	**21. Number of tubes involved
	22. Scrams	

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

REACTOR 4 OUTAGE FUNCTION EXPECTATION REPORT APRIL 1961 TO MAY15 1962

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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	31	0	0	0	1	6	0	0	0	0	1	0	1	0	20	23	10	15	0	0	34
FUNCTION	2	11	19	0	1	0	4	0	0	0	0	0	0	0	0	24	26	5	13	0	0	32
FUNCTION	3	7	0	8	0	0	1	0	3	0	0	0	0	1	0	9	10	3	4	0	0	16
FUNCTION	4	11	2	0	11	0	4	1	8	0	0	0	0	0	1	14	14	3	12	0	0	15
FUNCTION	5	18	1	0	0	14	7	2	11	1	0	0	0	0	0	23	24	4	15	0	0	14
FUNCTION	6	13	7	1	0	1	14	0	11	1	0	0	2	0	0	16	17	5	10	0	0	17
FUNCTION	7	0	0	0	0	0	0	5	3	0	0	0	0	0	0	6	5	0	1	0	0	1
FUNCTION	8	2	0	0	0	0	0	0	40	11	2	0	1	1	0	29	33	4	12	0	0	0
FUNCTION	9	0	0	0	0	0	0	0	0	19	0	0	0	0	0	2	3	0	2	0	0	0
FUNCTION	10	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0
FUNCTION	11	2	0	0	0	0	0	0	0	0	0	8	0	0	0	4	6	0	4	0	0	0
FUNCTION	12	2	0	0	1	0	0	0	2	1	0	3	7	1	0	10	10	1	5	0	0	2
FUNCTION	13	0	0	0	0	0	0	0	0	0	0	1	3	2	0	4	4	0	0	0	0	0
FUNCTION	14	5	0	0	0	0	0	0	1	0	0	0	2	2	11	10	9	4	2	0	0	1
FUNCTION	15	24	13	3	8	10	11	6	14	1	1	5	1	1	2	0	0	0	0	0	0	0
FUNCTION	16	26	13	3	8	11	11	5	16	2	1	6	2	1	2	0	0	0	0	0	0	0
FUNCTION	17	6	3	1	2	4	4	0	10	2	3	0	0	0	1	0	0	0	0	0	0	0

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NCTICN 18	21	7	2	6	9	6	1	13	2	0	2	5	0	0	0	0	0	0	0	0	0
FUNCTION 19	0	0	0	0	0	0	0	0	0	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	0
FUNCTION 21	9	1	0	0	0	5	0	0	0	0	9	0	0	0	11	9	4	3	0	0	13
FUNCTION 22	2	0	0	0	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	0

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																					
TOT.HOURS DWN	214.2	0.	0.	0.	0.5	13.0	0.	0.	0.	0.	0.9	0.	0.5	0.	14.0	23.8	11.0	7.0	0.	0.	4567.
INCIDENTS	31	0	0	0	1	4	0	0	0	0	1	0	1	0	20	23	10	15	0	0	94
AVERAGE DOWN	6.9	0.	0.	0.	0.5	2.2	0.	0.	0.	0.	0.9	0.	0.5	0.	0.7	1.0	1.1	0.5	0.	0.	134.
VARIANCE	63.7	-0.	-0.	-0.	0.	1.8	-0.	-0.	-0.	-0.	0.	-0.	0.	-0.	0.3	0.6	1.1	0.5	-0.	-0.	59175.
STD.DEVIATION	8.0	-0.	-0.	-0.	0.	1.4	-0.	-0.	-0.	-0.	0.	-0.	0.	-0.	0.5	0.8	1.0	0.6	-0.	-0.	243.
FUNCTION 2																					
TOT.HOURS DWN	80.1	77.1	0.	11.6	0.	17.9	0.	0.	0.	0.	0.	0.	0.	0.	16.2	21.3	5.3	7.1	0.	0.	1469.
INCIDENTS	11	19	0	1	0	4	0	0	0	0	0	0	0	0	24	26	5	13	0	0	93
AVERAGE DOWN	7.3	4.1	0.	11.6	0.	4.5	0.	0.	0.	0.	0.	0.	0.	0.	0.6	0.8	1.1	0.6	0.	0.	46.
VARIANCE	23.1	4.6	-0.	0.	-0.	3.4	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	0.2	0.5	0.4	0.4	-0.	-0.	1402.
STD.DEVIATION	4.8	2.1	-0.	0.	-0.	1.8	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	0.5	0.7	0.6	0.6	-0.	-0.	37.
FUNCTION 3																					
TOT.HOURS DWN	20.5	0.	29.0	0.	0.	1.5	0.	5.9	0.	0.	0.	0.	0.2	0.	4.4	6.4	3.3	1.2	0.	0.	216.
INCIDENTS	7	0	8	0	0	1	0	3	0	0	0	0	1	0	9	10	3	4	0	0	16
AVERAGE DOWN	2.9	0.	3.6	0.	0.	1.5	0.	2.0	0.	0.	0.	0.	0.2	0.	0.5	0.6	1.1	0.3	0.	0.	14.
VARIANCE	8.4	-0.	10.1	-0.	-0.	0.	-0.	0.9	-0.	-0.	-0.	-0.	0.	-0.	0.1	0.2	0.8	0.1	-0.	-0.	1675.
STD.DEVIATION	2.9	-0.	3.2	-0.	-0.	0.	-0.	1.0	-0.	-0.	-0.	-0.	0.	-0.	0.3	0.4	0.9	0.3	-0.	-0.	41.

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FUNCTION 4															
TOT.HOURS DWN	18.0	1.3	0.	39.5	0.	15.6	7.7	40.5	0.	0.	0.	0.	0.	237.8	
INCIDENTS	11	2	0	11	0	4	1	8	0	0	0	0	0	1	
AVERAGE DOWN	1.6	0.6	0.	3.6	0.	3.9	7.7	5.1	0.	0.	0.	0.	0.	237.8	
VARIANCE	3.3	0.2	-0.	6.8	-0.	2.3	0.	18.6	-0.	-0.	-0.	-0.	-0.	0.	
STD.DEVIATION	1.8	0.5	-0.	2.6	-0.	1.5	0.	4.3	-0.	-0.	-0.	-0.	-0.	0.	
FUNCTION 4															
TOT.HOURS DWN	24.3	20.2	1.8	7.9	0.	0.	16.								
INCIDENTS	16	14	3	12	0	0	15								
AVERAGE DOWN	1.5	1.4	0.6	0.7	0.	0.	1.								
VARIANCE	2.0	1.1	0.1	0.3	-0.	-0.	0.								
STD.DEVIATION	1.4	1.0	0.3	0.5	-0.	-0.	0.								
FUNCTION 5															
TOT.HOURS DWN	63.4	0.2	0.	0.	116.7	21.7	10.0	54.3	1.5	0.	0.	0.	0.	0.	
INCIDENTS	18	1	0	0	16	7	2	11	1	0	0	0	0	0	
AVERAGE DOWN	3.5	0.2	0.	0.	7.3	3.1	5.0	4.9	1.5	0.	0.	0.	0.	0.	
VARIANCE	8.1	0.	-0.	-0.	24.2	4.8	18.2	4.0	0.	-0.	-0.	-0.	-0.	-0.	
STD.DEVIATION	2.8	0.	-0.	-0.	4.9	2.2	4.4	2.0	0.	-0.	-0.	-0.	-0.	-0.	
FUNCTION 5															
TOT.HOURS DWN	22.5	23.5	9.4	9.9	0.	0.	26.								
INCIDENTS	23	24	6	15	0	0	14								
AVERAGE DOWN	1.0	1.0	1.6	0.7	0.	0.	2.								
VARIANCE	0.3	0.2	2.0	0.2	-0.	-0.	1.								
STD.DEVIATION	0.6	0.5	1.7	0.5	-0.	-0.	1.								
FUNCTION 6															
TOT.HOURS DWN	46.0	15.7	1.5	0.	1.1	113.1	0.	566.4	1.4	0.	0.	12.7	0.	0.	
INCIDENTS	13	7	1	0	1	16	0	11	1	0	0	2	0	0	
AVERAGE DOWN	3.5	2.2	1.5	0.	1.1	7.1	0.	51.5	1.4	0.	0.	6.3	0.	0.	
VARIANCE	9.7	3.5	0.	-0.	0.	101.5	-0.	4387.5	0.	-0.	-0.	37.8	-0.	-0.	
STD.DEVIATION	3.1	1.9	0.	-0.	0.	10.1	-0.	79.9	0.	-0.	-0.	6.2	-0.	-0.	
FUNCTION 6															
TOT.HOURS DWN	31.7	35.3	1.3	21.1	0.	0.	560.								
INCIDENTS	16	17	3	10	0	0	17								
AVERAGE DOWN	2.0	2.1	1.5	2.1	0.	0.	33.								
VARIANCE	3.4	4.1	1.1	5.8	-0.	-0.	3455.								
STD.DEVIATION	1.8	2.0	1.1	2.4	-0.	-0.	59.								

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FUNCTION 7														
TOT.HOURS DWN	0.	0.	0.	0.	0.	0.	12.1	23.2	0.	0.	0.	0.	0.	0.
INCIDENTS	0	0	0	0	0	0	5	3	0	0	0	0	0	0
AVERAGE DOWN	0.	0.	0.	0.	0.	0.	2.4	7.8	0.	0.	0.	0.	0.	0.
VARIANCE	-0.	-0.	-0.	-0.	-0.	-0.	0.9	43.4	-0.	-0.	-0.	-0.	-0.	-0.
STD.DEVIATION	-0.	-0.	-0.	-0.	-0.	-0.	0.7	6.6	-0.	-0.	-0.	-0.	-0.	-0.
FUNCTION 7														
TOT.HOURS DWN	2.2	2.2	0.	0.3	0.	0.	1.							
INCIDENTS	4	3	0	1	0	0	1							
AVERAGE DOWN	0.4	0.4	0.	0.3	0.	0.	1.							
VARIANCE	0.0	0.1	-0.	0.	-0.	-0.	0.							
STD.DEVIATION	0.2	0.4	-0.	0.	-0.	-0.	0.							
FUNCTION 8														
TOT.HOURS DWN	3.5	0.	0.	0.	0.	0.	0.	294.9	34.3	9.8	0.	4.5	0.4	0.
INCIDENTS	2	0	0	0	0	0	0	40	11	2	0	1	1	0
AVERAGE DOWN	1.7	0.	0.	0.	0.	0.	0.	7.4	3.1	4.9	0.	4.5	0.4	0.
VARIANCE	3.6	-0.	-0.	-0.	-0.	-0.	-0.	26.6	8.2	14.4	-0.	0.	0.	-0.
STD.DEVIATION	1.9	-0.	-0.	-0.	-0.	-0.	-0.	5.2	2.9	3.8	-0.	0.	0.	-0.
FUNCTION 8														
TOT.HOURS DWN	26.5	51.2	1.8	10.9	0.	0.	0.							
INCIDENTS	29	33	4	12	0	0	0							
AVERAGE DOWN	0.9	1.6	0.4	0.9	0.	0.	0.							
VARIANCE	0.6	4.0	0.0	0.7	-0.	-0.	-0.							
STD.DEVIATION	0.8	2.4	0.2	0.8	-0.	-0.	-0.							
FUNCTION 9														
TOT.HOURS DWN	0.	0.	0.	0.	0.	0.	0.	0.	36.4	0.	0.	0.	0.	0.
INCIDENTS	0	0	0	0	0	0	0	0	19	0	0	0	0	0
AVERAGE DOWN	0.	0.	0.	0.	0.	0.	0.	0.	1.9	0.	0.	0.	0.	0.
VARIANCE	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	5.1	-0.	-0.	-0.	-0.	-0.
STD.DEVIATION	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	2.3	-0.	-0.	-0.	-0.	-0.
FUNCTION 9														
TOT.HOURS DWN	0.5	0.6	0.	0.4	0.	0.	0.							
INCIDENTS	2	3	0	2	0	0	0							
AVERAGE DOWN	0.2	0.2	0.	0.2	0.	0.	0.							
VARIANCE	0.0	0.0	-0.	0.0	-0.	-0.	-0.							
STD.DEVIATION	0.1	0.1	-0.	0.0	-0.	-0.	-0.							
FUNCTION 10														
TOT.HOURS DWN	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.3	0.	0.	0.	0.

AVERAGE DOWN	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.3	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 10														
TOT.HOURS DWN	0.1	0.1	0.	0.	0.	0.	0.							
INCIDENTS	1	1	0	0	0	0	0							
AVERAGE DOWN	0.1	0.1	0.	0.	0.	0.	0.							
VARIANCE	0.	0.	-0.	-0.	-0.	-0.	-0.							
STD.DEVIATION	0.	0.	-0.	-0.	-0.	-0.	-0.							
FUNCTION 11														
TOT.HOURS DWN	1.4	0.	0.	0.	0.	0.	0.	0.	0.	0.	25.4	0.	0.	0.
INCIDENTS	2	0	0	0	0	0	0	0	0	0	8	0	0	0
AVERAGE DOWN	0.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	3.2	0.	0.	0.
VARIANCE	0.3	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	5.3	-0.	-0.	-0.
STD.DEVIATION	0.4	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	2.3	-0.	-0.	-0.
FUNCTION 11														
TOT.HOURS DWN	1.0	3.7	0.	2.4	0.	0.	0.							
INCIDENTS	4	4	0	4	0	0	0							
AVERAGE DOWN	0.2	0.4	0.	0.4	0.	0.	0.							
VARIANCE	0.0	0.7	-0.	0.4	-0.	-0.	-0.							
STD.DEVIATION	0.1	0.9	-0.	0.4	-0.	-0.	-0.							
FUNCTION 12														
TOT.HOURS DWN	2.9	0.	0.	0.5	0.	0.	0.	4.0	2.0	0.	14.2	36.4	0.4	0.
INCIDENTS	2	0	0	1	0	0	0	2	1	0	3	7	1	0
AVERAGE DOWN	1.4	0.	0.	0.5	0.	0.	0.	2.0	2.0	0.	4.7	5.2	0.4	0.
VARIANCE	2.2	-0.	-0.	0.	-0.	-0.	-0.	0.0	0.	-0.	5.6	21.6	0.	-0.
STD.DEVIATION	1.5	-0.	-0.	0.	-0.	-0.	-0.	0.0	0.	-0.	2.4	4.6	0.	-0.
FUNCTION 12														
TOT.HOURS DWN	1.5	6.8	2.0	18.4	0.	0.	76.							
INCIDENTS	10	10	1	5	0	0	2							
AVERAGE DOWN	0.7	0.7	2.0	3.7	0.	0.	38.							
VARIANCE	1.0	0.8	0.	54.6	-0.	-0.	2048.							
STD.DEVIATION	1.0	0.9	0.	7.4	-0.	-0.	45.							
FUNCTION 13														
TOT.HOURS DWN	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	5.4	8.1	5.6	0.
INCIDENTS	0	0	0	0	0	0	0	0	0	0	1	3	2	0
AVERAGE DOWN	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	5.4	2.7	2.8	0.
VARIANCE	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	0.	4.0	5.1	-0.

FUNCTION 13															
TOT.HOURS DWN	2.7	2.3	0.	0.	0.	0.	0.								
INCIDENTS	4	4	0	0	0	0	0								
AVERAGE DOWN	0.7	0.6	0.	0.	0.	0.	0.								
VARIANCE	0.0	0.1	-0.	-0.	-0.	-0.	-0.								
STD.DEVIATION	0.2	0.2	-0.	-0.	-0.	-0.	-0.								
FUNCTION 14															
TOT.HOURS DWN	50.4	0.	0.	0.	0.	0.	0.	3.4	0.	0.	0.	9.6	3.4	38.1	
INCIDENTS	5	0	0	0	0	0	0	1	0	0	0	2	2	11	
AVERAGE DOWN	10.1	0.	0.	0.	0.	0.	0.	3.4	0.	0.	0.	4.8	1.7	3.5	
VARIANCE	140.5	-0.	-0.	-0.	-0.	-0.	-0.	0.	-0.	-0.	-0.	5.8	3.9	65.8	
STD.DEVIATION	11.9	-0.	-0.	-0.	-0.	-0.	-0.	0.	-0.	-0.	-0.	2.4	2.0	8.1	
FUNCTION 19															
TOT.HOURS DWN	31.0	6.0	4.8	2.3	0.	0.	6.								
INCIDENTS	10	9	4	2	0	0	1								
AVERAGE DOWN	3.1	0.7	1.2	1.1	0.	0.	6.								
VARIANCE	71.2	0.4	1.3	0.6	-0.	-0.	0.								
STD.DEVIATION	8.4	0.6	1.2	0.9	-0.	-0.	0.								
FUNCTION 15															
TOT.HOURS DWN	79.7	7.0	1.4	13.4	9.2	12.6	2.2	14.4	0.2	0.1	0.9	0.4	0.5	0.4	
INCIDENTS	24	13	3	8	10	11	6	14	1	1	5	1	1	2	
AVERAGE DOWN	3.3	0.5	0.5	1.7	0.9	1.1	0.4	1.0	0.2	0.1	0.2	0.4	0.5	0.2	
VARIANCE	10.0	0.2	0.1	2.9	0.3	0.9	0.0	0.8	0.	0.	0.0	0.	0.	0.0	
STD.DEVIATION	3.2	0.4	0.4	1.7	0.5	0.9	0.2	0.9	0.	0.	0.1	0.	0.	0.1	
FUNCTION 15															
TOT.HOURS DWN	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 16															
TOT.HOURS DWN	95.8	9.4	2.1	14.2	11.2	14.4	2.2	21.2	0.3	0.1	3.7	1.5	0.9	0.5	
INCIDENTS	24	13	3	8	11	11	5	16	2	1	4	2	1	2	
AVERAGE DOWN	3.7	0.7	0.7	1.8	1.0	1.3	0.4	1.3	0.1	0.1	0.6	0.7	0.9	0.2	
VARIANCE	23.3	0.5	0.5	1.3	0.3	1.0	0.1	1.2	0.0	0.	0.7	0.2	0.	0.0	
STD.DEVIATION	4.8	0.7	0.7	1.1	0.6	1.0	0.4	1.1	0.1	0.	0.9	0.5	0.	0.2	
FUNCTION 16															

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.							

[redacted]

FUNCTION 17														
TOT.HOURS DWN	4.1	2.1	1.9	1.9	6.8	4.3	0.	22.4	0.9	3.2	0.	0.	0.	0.7
INCIDENTS	4	3	1	2	4	4	0	10	2	3	0	0	0	1
AVERAGE DOWN	0.7	0.7	1.9	0.1	1.7	1.1	0.	2.2	0.4	1.1	0.	0.	0.	0.7
VARIANCE	0.1	0.3	0.	0.0	4.0	1.1	-0.	5.4	0.0	0.4	-0.	-0.	-0.	0.
STD.DEVIATION	0.4	0.5	0.	0.2	2.0	1.2	-0.	2.3	0.2	0.6	-0.	-0.	-0.	0.

FUNCTION 17							
TOT.HOURS DWN	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 18														
TOT.HOURS DWN	20.1	5.2	0.5	3.7	5.8	4.7	0.3	22.3	0.6	0.	2.1	18.1	0.	0.
INCIDENTS	21	7	2	4	9	4	1	13	2	0	2	5	0	0
AVERAGE DOWN	1.0	0.7	0.2	0.6	0.6	0.8	0.3	1.7	0.3	0.	1.0	3.6	0.	0.
VARIANCE	1.7	0.9	0.0	0.2	0.3	0.7	0.	4.2	0.0	-0.	0.6	55.1	-0.	-0.
STD.DEVIATION	1.3	0.7	0.2	0.4	0.5	0.8	0.	2.0	0.1	-0.	0.8	7.4	-0.	-0.

FUNCTION 18							
TOT.HOURS DWN	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 19														
TOT.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 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.

[redacted]

FUNCTION 19							
TOT.HOURS DWN	0.	0.	0.	0.	0.	0.	0.
INCIDENTS	0	0	0	0	0	0	0
AVERAGE DOWN	0.	0.	0.	0.	0.	0.	0.

STD.DEVIATION	-0.	-0.	-0.	-0.	-0.	-0.	-0.								
FUNCTION 20															
TOT.HOURS DWN	0.	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	0
AVERAGE DOWN	0.	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.	-0.
STD.DEVIATION	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.	-0.
FUNCTION 20															
TOT.HOURS DWN	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															
TOT.HOURS DWN	41.8	2.2	0.	0.	0.	10.8	0.	0.	0.	0.	36.1	0.	0.	0.	
INCIDENTS	9	1	0	0	0	5	0	0	0	0	9	0	0	0	
AVERAGE DOWN	4.4	2.2	0.	0.	0.	2.2	0.	0.	0.	0.	4.0	0.	0.	0.	
VARIANCE	10.3	0.	-0.	-0.	-0.	0.9	-0.	-0.	-0.	-0.	12.5	-0.	-0.	-0.	
STD.DEVIATION	3.2	0.	-0.	-0.	-0.	1.0	-0.	-0.	-0.	-0.	3.5	-0.	-0.	-0.	
FUNCTION 21															
TOT.HOURS DWN	11.6	5.9	4.4	1.3	0.	0.	1794.								
INCIDENTS	11	9	4	3	0	0	15								
AVERAGE DOWN	1.1	0.7	1.1	0.4	0.	0.	136.								
VARIANCE	3.0	0.2	0.7	0.3	-0.	-0.	31756.								
STD.DEVIATION	1.7	0.4	0.8	0.4	-0.	-0.	178.								
FUNCTION 22															
TOT.HOURS DWN	0.5	0.	0.	0.	0.	0.	0.	0.	0.4	0.	0.4	3.4	0.	0.	
INCIDENTS	2	0	0	0	0	0	0	0	1	0	1	2	0	0	
AVERAGE DOWN	0.2	0.	0.	0.	0.	0.	0.	0.	0.4	0.	0.4	1.7	0.	0.	
VARIANCE	0.0	-0.	-0.	-0.	-0.	-0.	-0.	-0.	0.	-0.	0.	3.9	-0.	-0.	
STD.DEVIATION	0.1	-0.	-0.	-0.	-0.	-0.	-0.	-0.	0.	-0.	0.	2.0	-0.	-0.	
FUNCTION 22															
TOT.HOURS DWN	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.								

[redacted]

SUB TOTAL DELINEATION

FUNCTION 1		ASSOCIATED DELAY TOTALS			TOTAL TUBES
SUM#BASIC&SECONDARIES	228.9	SUM OF DELAYS	55.8	SUM	4567.
NUMBER OF INCIDENTS	34	INCIDENTS	34	CNT	34
AVERAGE HOURS REQD.	6.7	AVERAGE	1.6	AVG	134.
VARIANCE	105.6	VARIANCE	3.8		
STD. DEVIATION	10.3	STD.DEVIATION	2.0		

FUNCTION 2		ASSOCIATED DELAY TOTALS			TOTAL TUBES
SUM#BASIC&SECONDARIES	184.7	SUM OF DELAYS	50.5	SUM	1409.
NUMBER OF INCIDENTS	32	INCIDENTS	32	CNT	32
AVERAGE HOURS REQD.	5.8	AVERAGE	1.6	AVG	44.
VARIANCE	50.6	VARIANCE	2.1		
STD. DEVIATION	7.1	STD.DEVIATION	1.5		

FUNCTION 3		ASSOCIATED DELAY TOTALS			TOTAL TUBES
SUM#BASIC&SECONDARIES	57.1	SUM OF DELAYS	15.3	SUM	216.
NUMBER OF INCIDENTS	19	INCIDENTS	19	CNT	19
AVERAGE HOURS REQD.	3.0	AVERAGE	0.8	AVG	11.
VARIANCE	17.0	VARIANCE	1.4		
STD. DEVIATION	4.1	STD.DEVIATION	1.2		

FUNCTION 4		ASSOCIATED DELAY TOTALS			TOTAL TUBES
SUM#BASIC&SECONDARIES	360.4	SUM OF DELAYS	54.2	SUM	16.
NUMBER OF INCIDENTS	20	INCIDENTS	20	CNT	20
AVERAGE HOURS REQD.	18.0	AVERAGE	2.7	AVG	1.
VARIANCE	3039.3	VARIANCE	5.3		
STD. DEVIATION	55.1	STD.DEVIATION	2.3		

[redacted]

FUNCTION 5		ASSOCIATED DELAY TOTALS			TOTAL TUBES
SUM#BASIC&SECONDARIES	267.8	SUM OF DELAYS	65.5	SUM	26.
NUMBER OF INCIDENTS	27	INCIDENTS	27	CNT	27
AVERAGE HOURS REQD.	9.9	AVERAGE	2.4	AVG	1.
VARIANCE	141.2	VARIANCE	3.6		

[redacted]

FUNCTION 6		ASSOCIATED DELAY TOTALS			TOTAL TUBES
SUM#BASIC&SECONDARIES	757.9	SUM OF DELAYS	95.4	SUM	580.
NUMBER OF INCIDENTS	19	INCIDENTS	19	CNT	19
AVERAGE HOURS REQD.	39.9	AVERAGE	5.0	AVG	29.
VARIANCE	4196.9	VARIANCE	26.4		
STD. DEVIATION	78.7	STD.DEVIATION	5.1		

FUNCTION 7		ASSOCIATED DELAY TOTALS			TOTAL TUBES
SUM#BASIC&SECONDARIES	35.4	SUM OF DELAYS	4.7	SUM	1.
NUMBER OF INCIDENTS	7	INCIDENTS	7	CNT	7
AVERAGE HOURS REQD.	5.1	AVERAGE	0.7	AVG	0.
VARIANCE	54.2	VARIANCE	0.4		
STD. DEVIATION	7.4	STD.DEVIATION	0.6		

FUNCTION 21		ASSOCIATED DELAY TOTALS			TOTAL TUBES
SUM#BASIC&SECONDARIES	90.9	SUM OF DELAYS	23.2	SUM	1796.
NUMBER OF INCIDENTS	14	INCIDENTS	14	CNT	14
AVERAGE HOURS REQD.	6.5	AVERAGE	1.7	AVG	128.
VARIANCE	77.4	VARIANCE	3.0		
STD. DEVIATION	8.8	STD.DEVIATION	1.7		

[redacted]

REACTOR 4 OUTAGE FUNCTION EXPECTATION REPORT APRIL 1961 TO MAY15 1962

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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 TOTAL	48	21	9	12	15	22	7	43	31	3	16	14	8	12	40	41	29	41	0	0	41

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														
TOT.HOURS RAN	541.2	96.5	30.5	51.6	103.2	190.7	29.8	994.7	75.6	11.1	82.0	73.3	10.3	275.9
INCIDENTS	40	21	9	12	15	22	7	43	31	3	16	14	8	12
AVERAGE RUN	13.5	4.6	3.4	4.3	6.9	8.7	4.3	23.1	2.4	3.7	5.1	5.2	1.3	23.0
VARIANCE	392.2	9.6	9.4	21.5	21.2	101.1	6.7	2233.9	6.2	11.6	31.2	20.2	2.5	4635.9
STD.DEVIATION	19.8	3.1	3.1	4.6	4.6	10.1	2.6	47.3	2.5	3.4	5.6	4.5	1.6	68.1
FUNCTION TOTAL														
TOT.HOURS RAN	196.2	207.3	53.3	90.2	0.	0.	8672.							
INCIDENTS	40	41	29	41	0	0	41							
AVERAGE RUN	4.9	5.1	1.8	2.2	0.	0.	212.							
VARIANCE	19.4	12.7	3.6	10.2	=0.	=0.	145685.							
STD.DEVIATION	4.4	3.6	1.9	3.2	=0.	=0.	382.							

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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 = Orifice Failure
11 = Control Rod Failure
12 = Scheduled Overbore
13 = Water Supply Failure
14 = Ball Drop - Loss of Reactivity
15 = Plugged Rear Nozzles
16 = Faulty Thermocouples

APPENDIX A-1

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DECLASSIFIED

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

**DOWN INCIDENT AVERAGE AND STANDARD DEVIATION*

	REACTOR1		REACTOR2		REACTOR3		REACTOR4		REACTOR5		REACTOR6		REACTOR7		REACTOR8	
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.
CAUSE10	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	1.1	0.
CAUSE11	0.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	58.7	3.2	0.	0.
CAUSE12	0.	0.	100.3	84.1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CAUSE13	51.4	70.4	43.4	0.	0.	0.	0.	0.	63.0	25.4	0.	0.	0.	0.	0.	0.
CAUSE14	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.
CAUSE15	18.8	25.9	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CAUSE16	3.8	3.1	5.6	7.6	0.	0.	1.5	1.6	0.	0.	1.3	0.6	0.	0.	0.	0.

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

DEPARTMENT SUMMARY

	TOTAL HOURS	TIMES DOWN	AVERAGE	STANDARD DEVIATION
CAUSE 1	2048.0	25.0	81.9	28.2
CAUSE 2	4414.8	98.0	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	13.0	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
CAUSE10	1.1	1.0	1.1	0.
CAUSE11	117.6	3.0	39.2	33.9
CAUSE12	200.6	2.0	100.3	84.1
CAUSE13	335.1	6.0	55.8	36.3
CAUSE14	170.2	9.0	18.9	23.5
CAUSE15	37.7	2.0	18.8	25.9
CAUSE16	24.3	8.0	3.0	3.7

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

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		

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		

INTERVAL BETWEEN LIKE OUTAGES BY CAUSE
CAUSE 4

REACTOR1	REACTOR2	REACTOR3	REACTOR4	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							

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		

INTERVAL BETWEEN LIKE OUTAGES BY CAUSE

CAUSE 6

REACTOR1	REACTOR2	REACTOR3	REACTOR4	REACTOR5	REACTOR6	REACTOR7	REACTOR8
	6044.2	1214.6			657.6		
		3074.2			660.1		
		1649.0					

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		

[redacted]

INTERVAL BETWEEN LIKE OUTAGES BY CAUSE
CAUSE 8

REACTOR1	REACTOR2	REACTOR3	REACTOR4	REACTOR5	REACTOR6	REACTOR7	REACTOR8

[redacted]

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					

INTERVAL BETWEEN LIKE OUTAGES BY CAUSE

CAUSE10

REACTOR1	REACTOR2	REACTOR3	REACTOR4	REACTOR5	REACTOR6	REACTOR7	REACTOR8

INTERVAL BETWEEN LIKE OUTAGES BY CAUSE

CAUSE11

REACTOR1	REACTOR2	REACTOR3	REACTOR4	REACTOR5	REACTOR6	REACTOR7	REACTOR8
						540.7	

[redacted]

INTERVAL BETWEEN LIKE OUTAGES BY CAUSE
CAUSE12

REACTOR1	REACTOR2 3112.7	REACTOR3	REACTOR4	REACTOR5	REACTOR6	REACTOR7	REACTOR8

[redacted]

INTERVAL BETWEEN LIKE OUTAGES BY CAUSE

CAUSE13

REACTOR1	REACTOR2	REACTOR3	REACTOR4	REACTOR5	REACTOR6	REACTOR7	REACTOR8
272.6				517.8			
				28.6			

INTERVAL BETWEEN LIKE OUTAGES BY CAUSE

CAUSE14

REACTOR1	REACTOR2	REACTOR3	REACTOR4	REACTOR5	REACTOR6	REACTOR7	REACTOR8
312.5			115.3	10.1	1.1		

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** INTERVAL BETWEEN LIKE OUTAGES BY CAUSE **

CAUSE15

REACTOR1	REACTOR2	REACTOR3	REACTOR4	REACTOR5	REACTOR6	REACTOR7	REACTOR8
5512.3							

INTERVAL BETWEEN LIKE OUTAGES BY CAUSE

CAUSE16

REACTOR1	REACTOR2	REACTOR3	REACTOR4	REACTOR5	REACTOR6	REACTOR7	REACTOR8
3936.5	3340.8		8137.4		0.7		

SUMMARY OF INTERVALS--AVERAGES AND STANDARD DEVIATIONS

	REACTOR1		REACTOR2		REACTOR3		REACTOR4		REACTOR5		REACTOR6		REACTOR7		REACTOR8	
CAUSE 1	0.	0.	1495.8	698.2	3685.7	4151.8	486.6	0.	0.	0.	0.	0.	1037.4	512.7	837.3	374.6
CAUSE 2	1144.2	1571.3	637.6	810.2	712.8	804.9	460.2	608.0	579.9	547.0	446.5	499.7	1197.3	2052.4	1499.0	1315.6
CAUSE 3	1794.7	0.	0.	0.	1515.0	0.	1445.1	0.	2117.4	808.5	1559.3	760.1	0.	0.	0.	0.
CAUSE 4	220.8	302.5	752.3	1088.3	386.4	480.9	641.1	806.9	486.7	619.9	321.5	316.4	0.	0.	0.	0.
CAUSE 5	1498.1	803.6	617.0	689.9	848.5	909.2	798.0	850.0	1654.1	2237.5	366.3	461.6	446.6	404.7	462.2	599.4
CAUSE 6	0.	0.	6044.2	0.	1979.3	972.8	0.	0.	0.	0.	658.9	1.7	0.	0.	0.	0.
CAUSE 7	0.	0.	4268.9	171.1	3551.9	0.	0.	0.	2686.5	3405.1	1556.9	1228.9	1079.1	0.	0.	0.
CAUSE 8	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CAUSE 9	5588.9	0.	0.	0.	1592.6	1290.9	6220.0	0.	0.	0.	0.	0.	0.	0.	0.	0.
CAUSE10	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CAUSE11	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	540.7	0.	0.	0.
CAUSE12	0.	0.	3112.7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CAUSE13	272.6	0.	0.	0.	0.	0.	0.	0.	273.2	345.9	0.	0.	0.	0.	0.	0.
CAUSE14	312.5	0.	0.	0.	0.	0.	115.3	0.	10.1	0.	1.1	0.	0.	0.	0.	0.
CAUSE15	5512.3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
CAUSE16	3936.5	0.	3340.8	0.	0.	0.	6137.4	0.	0.	0.	0.7	0.	0.	0.	0.	0.

DATE
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10/5/94
END