

Summary of Operating Experience - 1988

The following is a summary of Grand Gulf Nuclear Station (GGNS) Unit 1 operating experience for the 1988 calendar year. During 1988, the reactor was critical for 8,498.1 hours with the generator on line for 8,252.1 hours.

GGNS exceeded two domestic General Electric (GE) BWR records during 1988:

- 1) Generating 31,130 megawatt hours in a 24 hour period
- 2) Gross generation of 9,983,960 megawatt hours

The second refueling outage officially ended on January 6, 1988. Reactor startup began on January 3, 1988 and reached criticality on January 4, 1988. The generator was synchronized on January 6 and GGNS resumed normal operation.

On January 10, 1988 the reactor scrambled due to a turbine control valve fast closure (LER 88-002). The B-phase main step-up transformer failed due to a winding fault on the high voltage side of the transformer which caused the generator and the turbine to trip. The transformer was replaced with an installed spare. The remaining two transformers were inspected and found to be suitable for continued operation. Plant operation resumed with generator synchronization on January 15, 1988. Total outage duration was 126.8 hours.

Normal plant operation continued until January 20, 1988 when a low level scram occurred following a trip of condensate and feedwater pumps (LER 88-006). An IP condenser manway cover leaked water onto the hotwell low level switches causing them to malfunction and trip the condensate pumps. Repairs were made to the leaking manway cover and generator synchronization occurred on January 22, 1988. Total outage duration was 65.2 hours.

On February 27, 1988 reactor power was reduced to approximately 55 percent following a hydrogen ignition in the condenser offgas system (LER 88-009). The charcoal beds were isolated and nitrogen purging was started to extinguish the burn and to ensure the charcoal did not reignite. Reactor power was returned to 100 percent on February 28, 1988.

Normal plant operation continued until March 15, 1988 when the reactor scrambled on low water level during the monthly channel functional surveillance for the high/low reactor water level instrumentation (LER 88-010). A loose connection in a Reactor Protection System (RPS) terminal box combined with the planned half-scram signal produced during the surveillance caused the scram of 29 control rods. The resulting void collapse caused a full reactor scram on low vessel level. The terminal box connections were cleaned and retightened and similar connections were inspected. Generator synchronization occurred on March 16, 1988. Total outage duration was 29.2 hours.

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On April 20, 1988 noise was detected from the recirculation piping of loop 'B' by the Loose Parts Monitoring System. Analyses of the noise characteristics indicate that an installed component in the flow control valve or discharge valve is the source rather than a foreign loose object. GE and SERI evaluated the potential safety concerns and justified continued plant operation until the third refueling outage. GE and SERI are also planning corrective action for repairs to this system during the upcoming third refueling outage.

On August 15, 1988 the reactor automatically scrammed due to lightning strikes which caused spikes in the Average Power Range Monitors (APRMs) C, D, G, and H (LER 88-012). The system was analyzed and determined to be functioning properly and the APRM cabinets were visually inspected for possible grounding problems. Initial walkdowns of the cabinet grounding straps and APRM cable runs did not reveal any discrepancies. Generator synchronization occurred on August 16, 1988. Total outage duration was 27.5 hours. A followup investigation with assistance from GE during November 1988 revealed that a security fence grounding cable on the Control and Turbine Building roof was routed in close vicinity of the APRM channels affected by the lightning. It was determined that voltage was induced into the APRM cables as lightning discharged through the grounding cable. The grounding cable was rerouted to the rear of the Turbine Building to prevent recurrence.

On September 5, 1988 at 1830 the reactor automatically scrammed due to a tagging error by Operations (LER 88-013). Operators had tagged out a power panel breaker which de-energized power to several containment isolation valves. The valves automatically closed causing an isolation of instrument air and resultant depressurization of the instrument air header. The low instrument air pressure caused multiple control rod drifts leading to a scram on high level in the scram discharge volume. The generator was synchronized on September 6, 1988. Total outage duration was 24.5 hours.

On September 8, 1988 unidentified leakage trended up to 4 gpm and began to approach the Technical Specification limit of 5 gpm. Reactor power was reduced from approximately 87 percent to less than 5 percent on September 8, 1988 while efforts were made to identify the source of leakage. It was discovered that two manual vent valves in series were leaking through. Two attempts were made to seal this line without success. The reactor was then placed in cold shutdown. A 3/4 inch pipe downstream of valve F026A was cut and capped and drywell leakage returned to within normal limits. Reactor startup commenced on September 12, 1988 and the generator was synchronized the same day. Total outage duration was 72.2 hours.

On October 10, 1988 the reactor automatically scrammed on low water level during a transient caused by a spurious initiation of the High Pressure Core Spray (HPCS) system (LER 88-019). The initiation occurred when an operator keyed his radio several times in the HPCS instrumentation area. This caused two of the four HPCS level instruments to actuate, initiating the Division 3 Diesel Generator and the HPCS system.

The HPCS pump was manually secured after an injection time of approximately 30 seconds. The feedwater flow was manually reduced when reactor water level approached the high level scram setpoint; however, manual recovery was not sufficient to maintain water level above the low level scram setpoint when the HPCS injection was stopped. The generator was synchronized on October 11, 1988. Total outage duration was 30.9 hours.

On November 17, 1988, reactor power was reduced to approximately 66 percent to repair a main condenser air inleakage. The leak was stopped with an epoxy sealant. Power was returned to 100 percent on November 18, 1988.



GGNS Unit 1 Annual Report

Man-REM Exposure - 1988

This section contains a tabulation of the number of station, utility, and other personnel receiving exposures greater than 100 mrem/yr and their associated man-rem exposure according to work and job function. Also included is a tabulation of the number of personnel by exposure range.

System Energy Resources, Inc.  
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11:04 AM MON., 9 JAN., 1989

ANNUAL REPORT

NUMBER OF PERSONNEL AND MAN-REM BY WORK AND JOB FUNCTION

Work & Job Function	Number of Personnel ( > 100 mrem )			Total Man-Rem		
	Station Employees	Utility Employees	Contractors and Others	Station Employees	Utility Employees	Contractors and Others
Reactor Oper & Surveillance						
Maintenance Personnel	7	0	3	1.17	0.00	.51
Operating Personnel	58	0	1	15.35	0.00	.35
Health Physics Personnel	38	0	9	32.06	0.00	2.11
Supervisory Personnel	2	0	0	.26	0.00	0.00
Engineering Personnel	0	0	0	0.00	0.00	0.00
Routine Maintenance						
Maintenance Personnel	74	0	16	29.61	0.00	24.16
Operating Personnel	10	0	0	1.76	0.00	0.00
Health Physics Personnel	2	0	1	.26	0.00	.13
Supervisory Personnel	2	0	0	.39	0.00	0.00
Engineering Personnel	0	0	0	0.00	0.00	0.00
Inservice Inspection						
Maintenance Personnel	0	0	2	0.00	0.00	.27
Operating Personnel	0	0	0	0.00	0.00	0.00
Health Physics Personnel	0	0	0	0.00	0.00	0.00
Supervisory Personnel	0	0	1	0.00	0.00	.12
Engineering Personnel	0	0	0	0.00	0.00	0.00
Special Maintenance						
Maintenance Personnel	0	0	29	0.00	0.00	7.36
Operating Personnel	0	0	0	0.00	0.00	0.00
Health Physics Personnel	0	0	0	0.00	0.00	0.00
Supervisory Personnel	0	0	3	0.00	0.00	.79
Engineering Personnel	0	0	0	0.00	0.00	0.00
Waste Processing						
Maintenance Personnel	17	0	10	4.86	0.00	8.02
Operating Personnel	1	0	2	.11	0.00	2.29
Health Physics Personnel	2	0	1	.43	0.00	.64
Supervisory Personnel	0	0	0	0.00	0.00	0.00
Engineering Personnel	0	0	0	0.00	0.00	0.00
Refueling						
Maintenance Personnel	0	0	0	0.00	0.00	0.00
Operating Personnel	0	0	0	0.00	0.00	0.00
Health Physics Personnel	0	0	0	0.00	0.00	0.00
Supervisory Personnel	0	0	0	0.00	0.00	0.00
Engineering Personnel	0	0	0	0.00	0.00	0.00
TOTAL						
Maintenance Personnel	99	0	60	35.63	0.00	40.31
Operating Personnel	69	0	3	17.22	0.00	2.65
Health Physics Personnel	42	0	11	32.75	0.00	3.07
Supervisory Personnel	4	0	4	.65	0.00	.90
Engineering Personnel	0	0	0	0.00	0.00	0.00
Grand Total	213	0	78	86.25	0.00	46.93

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Attachment II to  
AECM-89/0044

13 JAN., 1989

Number of Personnel By Exposure Range

BADGES	EXPOSURE RANGE	
1767	LESS THAN	.010 REM
398	.010 TO	.099 REM
145	.100 TO	.249 REM
80	.250 TO	.499 REM
29	.500 TO	.749 REM
11	.750 TO	.999 REM
22	1.000 TO	1.999 REM
2	2.000 TO	2.999 REM
3	3.000 TO	3.999 REM
2	4.000 TO	4.999 REM
0	5.000 TO	5.999 REM
0	6.000 TO	6.999 REM
0	7.000 TO	7.999 REM
0	8.000 TO	8.999 REM
0	9.000 TO	9.999 REM
0	10.000 TO	10.999 REM
0	11.000 TO	11.999 REM
0	12.000 OR	MORE REM
2459		

Total station dose in 1988 was 147.412 rem.