ENCLOSURE 1

SALP REPORT - R. E. GINNA
50-244/96-99

I. BACKGROUND

The SALP board convened on September 5, 1996, to assess the nuclear safety performance of R.E. Ginna Nuclear Power Plant for the period March 12, 1995, to August 24, 1996. The board was convened pursuant to NRC Management Directive (MD) 8.6 (See NRC Administrative Notice 93-02). Board members were A. R. Blough, Deputy Director, Division of Reactor Safety, NRC Region I; R. W. Cooper, Director, Division of Reactor Projects, NRC Region I; and J. Mitchell, (Acting) Director, Project Directorate I-1, NRC Office of Nuclear Reactor Regulation. Mr. Blough served as the board chairperson. The board developed this assessment for approval by the Regional Administrator.

The performance category ratings and the assessment functional areas used below are defined and described in NRC MD 8.6.

II. PERFORMANCE ANALYSIS - PLANT OPERATIONS

The Operations area was rated Category 1 in the previous SALP period. Performance was characterized by very good management oversight of plant operations, excellent operator response to plant transients and abnormal conditions, an improved operator requalification training program, and strengthening of configuration control.

During this period, the effectiveness of management oversight in day-to-day operations was good but lapses in a conservative philosophy were evident, particularly in the latter part of the SALP period. Following a reactor trip that resulted from a failed feedwater regulating valve transmitter, management did not aggressively address increased safety injection system accumulator leakage, effectively repair a steam leak on a feedwater isolation valve, or fully investigate the abnormal auxiliary feedwater flow rates that were observed following the plant trip.

In preparation for implementing the Improved Technical Specifications (ITS), procedures were extensively revised, new programs developed, and the staff trained on complying with the requirements. Through self-assessments, management monitored the status of program and procedure changes, monitored training adequacy, and resolved discrepancies between the old and new specifications. Overall, the ITS were properly implemented, but examples of procedure inadequacies and occasions when the staff improperly interpreted the requirements were evident. Examples included the failure to lock eight service water valves as required by the ITS, and the blocking of the auxiliary feedwater pump auto start feature during a reactor startup.

The operators continued to perform well in response to plant transients and abnormal conditions. Responses to a loss of the instrument air system inside containment, main circulating water pump trips, and an atmospheric relief valve failing open were prompt. The operators demonstrated excellent teamwork and thorough training during these events. Operator performance during plant startups and shutdowns was also very good; however, some problems with configuration control were noted. Examples included a loss of main condenser vacuum while shifting the steam generator blowdown alignment, and an automatic start of an auxiliary feedwater pump while realigning the condensate system. Operations line management demonstrated effective command and control during transients, and plant shutdowns and startups. During these evolutions, the use of, knowledge of, and adherence to detailed procedures remained strong, and, with the few exceptions noted above, communications were precise and activities were well coordinated.

During the 1996 refueling outage, operations were safely conducted and demonstrated overall good performance. Management provided strong oversight for steam generator replacement activities and was clearly involved in daily plant activities. Excellent coordination was noted between outage management, the work control center, and the control room staff to assess and reduce shutdown risks.

In contrast, operator performance and work control effectiveness during forced outages were mixed. Several examples were noted where operators were not sufficiently cognizant of the impact of maintenance and testing on plant equipment. These included improper implementation of a temporary procedure change and inappropriate authorization of maintenance which rendered both power operated relief valves inoperable without the operators' knowledge, and the inadvertent start of an auxiliary feedwater pump after the main turbine was latched for a control valve test due to operators not understanding the effect of the test on other plant systems.

Operations was generally aggressive in identifying, analyzing, and resolving human performance related events. However, there were some examples of degraded conditions that were not identified by the operators. These included the slow response of a steam flow instrument during a plant startup, and the higher than normal setting of the emergency diesel generator automatic voltage control rheostats.

In summary, operator response to plant transients, startups and shutdowns continued to be good. Degraded material condition, equipment failures, and some program changes, particularly implementation of Improved Technical Specifications, challenged the operators. Lapses in system and equipment configuration control were evident. Operations, in conjunction with outage management, effectively controlled steam generator replacement activities and managed shutdown risk during the refueling outages. Operator performance and work control effectiveness during forced outages were mixed. Lapses in a conservative philosophy were noted late in the period.

The Operations area is rated **Category 2.**

III. PERFORMANCE ANALYSIS - MAINTENANCE

The maintenance program was rated Category 2 in the last SALP period. The plant was generally well-maintained and a program for plant upgrades and safety enhancements continued. Although maintenance activities were usually well performed, a number of significant problems were caused by faulty equipment installation or reassembly. Installation problems were more evident in outage-related work and were caused by improper work practices and by lapses in technical support.

During this SALP period, the licensee continued its program of systematically renewing many plant systems. Upgrades included new steam generators, a new instrument air compressor, a new diesel-driven fire pump, main condenser retubing, and new auxiliary feedwater system throttling valves. Nonetheless, there were multiple equipment failures that challenged the operators. These included a circulating water pump motor failure, an atmospheric relief valve booster relay failure, main feedwater regulating valve and valve transmitter problems, safety injection system accumulator leakage and relief valve failure, and pressurizer safety valve leakage. In addition, there were a couple of long-standing plant degraded material condition issues, including water inleakage into the residual heat removal pump room and the blowdown tank discharge line erosion, that were not initially aggressively addressed by management. Subsequent actions were appropriate to investigate the cause and mitigate the degraded conditions.

Most maintenance activities were well coordinated and well performed. Generally, there was effective management oversight, and good procedure conformance was evident during the activities. Examples included removal and installation of a service water pump/motor, electrical breaker overhauls, trouble-shooting/repair of a hydrogen recombiner flow blockage, and reconfiguring the circulating water intake heater transformers. However, as during the previous SALP period, significant exceptions occurred. Some cases of poor technical support, weak procedures, and poor work practices were noted, indicating past actions to address these weaknesses were not fully effective. Performance lapses were concentrated in periods of high maintenance activity. Instances of weak maintenance preparations and work controls were apparent in the lengthy corrective maintenance of the charging pump drive units, inefficient trouble-shooting of rod control system problems, and lifting a replacement pressurizer safety relief valve after performing the pre-installation leak test. In addition, weak interfaces between maintenance, operations, and engineering were evident during unplanned maintenance activities. For instance, both power operated relief valve actuators were adjusted without the operators' knowledge that both valves were simultaneously rendered inoperable. Also, a decision was made by maintenance technicians not to install a secondary seal on a residual heat removal pump shaft without the prior involvement of engineering, and an auxiliary feedwater pump check valve had to be reworked because an earlier modification to the valve body and seat ring had not been taken into account during the corrective maintenance following the first leakage problem.

Generally, surveillance testing was performed well. Some weaknesses were noted with the conduct of surveillance testing early in the assessment period, such as personnel errors that led to a safety injection system actuation during the 1995 refueling outage, and failure to record off-normal component response during an auxiliary feedwater pump test. This trend did not continue and, later in the period, several instances of a conservative response to unexpected indications during surveillance testing were noted. The inservice inspection and non-destructive examination programs were also found to be well implemented. The containment integrated leak rate test and the structural integrity test following steam generator replacement were performed in an excellent manner.

Problems were generally promptly identified and brought to management's attention for resolution and tracking through the single point entry (ACTION) problem reporting system. The threshold was appropriate for documenting most events, with management promptly assigning reports for staff follow-up. Isolated exceptions to this practice were identified that indicated that management expectations were not uniformly understood. These exceptions included technicians not aggressively responding to anomalous auxiliary feedwater flow indications observed during testing to evaluate system operability, and failure to consider past modifications prior to performing corrective maintenance on an auxiliary feedwater check valve. This failure resulted in repeated excessive seat leakage. Generating ACTION reports would have provided for engineering support to more thoroughly evaluate the off-normal conditions. The comprehensiveness of follow-up root cause analyses and human performance evaluations were commensurate with the safety significance of events. Particularly good was the investigation regarding the disabling of both power operated relief valves while conducting maintenance. The root cause analysis was a thorough investigation using several root cause methodologies. The areas addressed included interdepartmental communications, job planning, supervisory oversight, and procedure adequacy. While the problem identification, root cause analysis, and corrective action processes generally addressed specific equipment failures and personnel issues, the licensee had not applied the process across multiple problems and events to evaluate and address common themes or root causes.

In summary, maintenance activities were generally well performed. However, some significant cases of poor work practices and weak procedures were noted, indicating past actions to address these weaknesses have not been entirely effective. A weak interface between engineering, operations, and maintenance was also evident, particularly on emergent issues. Surveillance activities were well implemented. The problem identification and root cause processes were generally effective for specific equipment failures or performance issues, but had not yet matured to encompass evaluation across multiple problems or events to identify common themes or causes.

The Maintenance area is rated **Category 2.**

IV. PERFORMANCE ANALYSIS - ENGINEERING

Engineering was rated Category 1 in the previous SALP period. Engineering management provided strong oversight in controlling configuration changes as evidenced by the excellent planning and installation of plant modifications. The engineering organization demonstrated a strong safety perspective in support of plant operations, including resolution of past technical problems. Communications between corporate and site engineering staffs were excellent. Engineering provided outstanding support in planning for the steam generator replacement project (SGRP), conversion to standard technical specifications, and new fuel reload in 1996. Performance lapses, such as incomplete work instructions for expansion bellows installation, were rare.

During this SALP period, the engineering functions were performed very well in support of the 1996 refueling outage activities, especially the SGRP. Thorough planning of the SGRP resulted in the successful installation of the new steam generators without major technical problems. Management of the SGRP was excellent as evidenced by the positive action taken upon identification of the unfavorable trend in procedure compliance by the SGRP contractor. The licensee completed an excellent post-modification test program during the 1996 refueling outage which included the use of good test procedures to effectively monitor the performance of the new steam generators during plant startup. Excellent management oversight was also demonstrated in ensuring the proper engineering support to several major projects implemented during the 1996 refueling outage, namely, new steam generators with reactor coolant system reduced Tavg operation, new 18-month fuel, and new technical specifications. In addition, engineering developed thorough plans for the refueling outage to ensure that adequate primary and backup cooling capability existed for the spent fuel pool.

In most cases, engineering activities generated good work products. Corrective actions in resolving plant problems were usually technically sound, comprehensive, timely, and accompanied by good safety evaluations. For example, the response to an instrument bus inverter failure where the use of sophisticated equipment facilitated identification of the problem was excellent. Also, the installation and testing of a larger service water pump motor to replace a failed motor was well-engineered with conservative assumptions and good safety evaluations. Plant modifications, such as the installation of a higher capacity instrument air compressor, were well-conceived to appropriately address past plant problems. Temporary modifications were well-developed and controlled, such as the use of a thermowell-mounted, resistance temperature detector (RTD) in place of an immersion type RTD in the reactor coolant system cold leg piping. However, instances occurred where engineering had not adequately defined requirements for plant modifications or where corrective actions were not timely or effective. For example, a completed modification to the reactor protection system caused unexpected rod motion during the loss of an offsite power source, and this possible action had not been identified during the modification design, implementation, and testing. In another instance, a substantial change had been made in the closing time of a risk-significant auxiliary building service water system isolation valve without performing a safety evaluation.

During this period, some ongoing engineering programs, such as the erosion/corrosion program, were functioning well. For example, the licensee effectively used the erosion/corrosion program for timely detection and replacement of degraded service water piping serving the safety injection pump thrust bearing coolers. However, instances occurred during this period that indicated a decreasing trend in management oversight and control of some important engineering programs. For example, engineering performance concerning the motor operated valve (MOV) program was weak throughout the period. Early in the period weaknesses in MOV program administrative controls and many open technical issues were observed; at the end of the period a technical inadequacy led to significant questions about the capability of two risk-significant MOVs, such that modifications were undertaken to achieve improved thrust margins to correct the previous design deficiencies. Also, the Service Water System Reliability Optimization Program (SWSROP), which is an engineering program developed to address the requested actions of NRC Generic Letter 89-13, had not been kept current to reflect service water system changes made in the last three years and the results of many completed heat exchanger thermal performance tests required by the SWSROP had not been fully evaluated. In addition, calculations performed based on the results of the component cooling water heat exchanger thermal performance tests required by the SWSROP lacked conservatism by not appropriately accounting for possible macrofouling in the service water side. Lapses in technical work were somewhat more evident in mechanical work than on electrical issues.

In summary, all aspects of the licensee's planning, work coordination, contractor and test control, and management oversight in support of the 1996 refueling outage activities were considered strengths. Thorough planning of the SGRP resulted in the successful installation of the new steam generators without major technical problems followed by an excellent post-modification test program. Plant modifications were well-conceived to appropriately address past plant problems. However, engineering performance regarding some important programs declined. Engineering performance concerning the MOV program was weak throughout the period, as evidenced by the need to correct design deficiencies of two risk-significant MOVs at the end of the period. Also, instances occurred during the period where engineering had not adequately defined requirements for plant modifications or where engineering corrective actions were not timely or effective.

The Engineering area is rated **Category 2.**

V. PERFORMANCE ANALYSIS - PLANT SUPPORT

Plant support performance was rated as Category 2 in the previous SALP period. Radiation protection performance had been good, but exposure reduction efforts had left room for improvement. Radiological effluent controls and environmental monitoring were excellent. Emergency preparedness was good, but performance had suffered from problems with attention to detail. Security performance had been excellent.

During this SALP period, personnel exposure performance was excellent during the Spring 1996 refueling outage and steam generator replacement project due to excellent work planning and control, very effective contamination control and exposure reduction activities, and excellent radiation protection (RP) work coverage. This excellent performance was demonstrated by the fact that, of the twenty nuclear power plant steam generator replacement projects completed over the past fifteen years, the licensee's personnel exposure performance of 52 person-rem per steam generator was the second best in the industry. Management oversight and review of the radiation controls program for the refueling outage were determined to be excellent and program strengths. A combination of internal and external audits and a very active self-assessment program for the outage provided for prompt identification of radiological issues and supported high standards of performance. The radwaste/transportation program continued to demonstrate strong performance through effective radwaste minimization performance and effective incorporation of the new transportation regulations into the shipping program. Some areas of poor performance were identified in the instrument calibration and equipment survey areas.

The licensee implemented the effluent control and environmental monitoring program very well. Effective management actions were directed to isolating and monitoring potential leakage from the spent fuel pool and steam generator blowdown tank. This included the use of a hydrology consultant with expertise in the areas of underground water/tritium movement.

In the emergency preparedness program, the licensee was proactive in developing contingency plans to support the steam generator replacement. Emergency facilities were maintained in an excellent state of operational readiness. The licensee maintained a very good training program, conducting drills and maintaining an excellent rapport with local and state emergency response representatives. Licensee performance during an NRC-evaluated exercise demonstrated a strong training program as well as an effectively managed and implemented program. One area of concern involved the initial call-out to licensee responders. During three emergency call-out drills, not all responders met the one-hour response criterion. Although the reasons for the failed drills varied, the licensee's failure to achieve a reliable solution was a concern.

The safeguards program provided excellent card reader and communication system enhancements and provided effective internal and external assessment program oversight. Security training results, as reviewed in security response drills, were excellent both in drill scenario realism and in conduct of the drills. Security program support to the steam generator replacement was well planned and implemented.

In summary, the plant support functions achieved improved performance during this SALP period. All plant support functions related to steam generator replacement were well-coordinated and of very high quality. Exposure reduction efforts and radiological controls were excellent, with the exceptions of some lapses in equipment surveys and the instrument calibration program. Implementation of the effluent controls, environmental monitoring, and security programs was strong. Although emergency preparedness was generally very good, the licensee was not successful in ensuring a reliable call-out process.

The Plant Support area is rated **Category 1.**

ENCLOSURE 2

12 MONTH INSPECTION PLAN FOR R.E. GINNA

IP - Inspection Procedure
TI - Temporary Instruction
CO - Core Inspection (Minimum NRC Inspection Program (mandatory all plants))
SI - Safety Issue Inspection
RI - Regional Initiative Inspection

INSPECTION	TITLE/PROGRAM AREA	INSPECTION START DATES	TYPE OF INSPECTION/COMMENTS
TI 2515/127	Physical Security Program Access Authorization	10/7/96	SI
IP 71750	Emergency Preparedness Off-year Exercise	10/14/96	Resident Review
IP 37550	Engineering Visit #1	1/27/97	CO, Focus on the effectiveness of the Engineering Department reorganization and maintenance interface
IP 92903	Engineering Followup	3/17/97	Management Directed Initiative, Spent Fuel Pool Leakage Effects on RHR pump room structures, systems and components.
IP 82302	Review EP Exercise Objectives and Scenario	4/14/97	CO
TI 2515/130	ITS Implementation Audit	4/14/97	SI
IP 84750	Radwaste Treatment & Effluents	6/9/97	CO
IP 82301	EP Exercise-Full Participation	6/16/97	CO
IP 86750	Solid Radwaste Management & Transportation	6/16/97	CO
IP 84750	Radwaste Treatment & Effluents Environmental Monitoring	8/4/97	CO

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INSPECTION	TITLE/PROGRAM AREA	INSPECTION START DATES	TYPE OF INSPECTION/COMMENTS
IP 64704	Fire Protection Program	8/24/97	CO
IP 71001	Licensed Operation Requalification Program	8/24/97	CO
IP 37550	Engineering, Visit #2	9/15/97	CO
IP 83750	Occupational Radiation Controls	9/15/97	CO
IP 83750	Occupational Radiation Controls	11/3/97	CO
TI 2515/109	Motor Operator Valve	6/2/97	Followup on MOV issues and closure of GL 89-10