

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-410/88-30

Docket No. 50-410

License No. NPF-69

Licensee: Niagara Mohawk Power Corporation  
301 Plainfield Road  
Syracuse, New York 13212

Facility Name: Nine Mile Point (NMP) Unit 2

Inspection At: Oswego, New York

Inspection Conducted: November 14-18, 1988

Inspectors:

D. L. Caperton, Senior Technical Reviewer

2/2/89  
Date

Approved by:

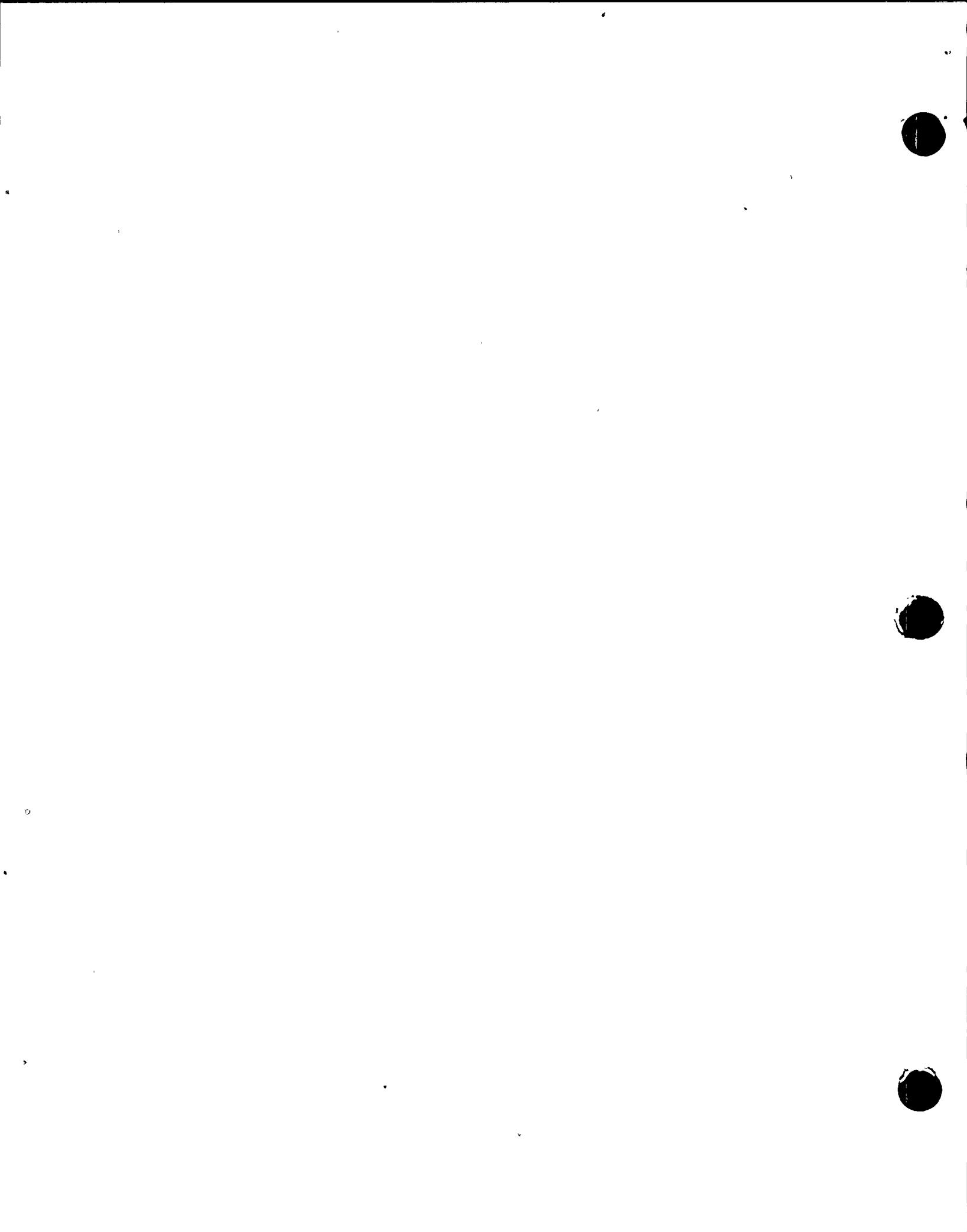
Norman J. Blumberg,  
Chief  
Operational Programs Section  
Operations Branch, Division of Reactor Safety

2/2/89  
Date

Inspection Summary: Routine inspection on November 14-18, 1988  
Report Number 50-410/88-30)

Areas Inspected: Inspection of design change modifications/installations being performed during a reactor outage.

Results: One violation was identified relating to inadequacies in the licensee's design reviews and design analyses for modifications being installed in the plant that could effect safety related instrumentation. The modification installation work inspected was adequate and coverage by contractor QA/QC was adequate to assure quality of the installation.



## DETAILS

### 1. Persons Contacted

#### Niagara Mohawk Power Corporation (NMPC) - Nine Mile Point Unit 2 (NMP-2)

- R. Abbott, Station Superintendent, Unit 2
- W. Adams, Site Contact Modification - 092
- \* S. Agarwal, Lead Engineer, Site Licensing
- \* C. Beckman, Manager, NQAO
- C. Cary, I&C Training Supervisor
- \* M. Falise, Site Superintendent, Maintenance
- \* P. Gould, Site Contact, Modification - 165 (SWEC)
- \* D. Green, PES - Ass't Supervisor, Mechanical (SWEC)
- F. Gensen, Site Contact, Modification - 126
- D. Kassakatis, Electrical Engineer
- T. Landry, Project Engineer
- \* E. Leach, Principal Gen. Spec.
- \* P. Mangano, Site Design Engineer
- C. Millian, Project Engineer
- A. Pinter, Site Licensing Engineer
- \* N. Rademacher, Director, Nuclear Regulatory
- \* W. Reed, QA Manager (CB&I)
- T. Newman, Quality Engineer
- A. Shah, Modification Engineer
- \* J. Sullivan, Modification Engineer
- T. Siegfried, Site Licensing Engineer
- \* K. Ward, Manager Nuclear Design - Unit 2

#### United States Nuclear Regulatory Commission (USNRC)

- \* R. Temps, Resident Inspector

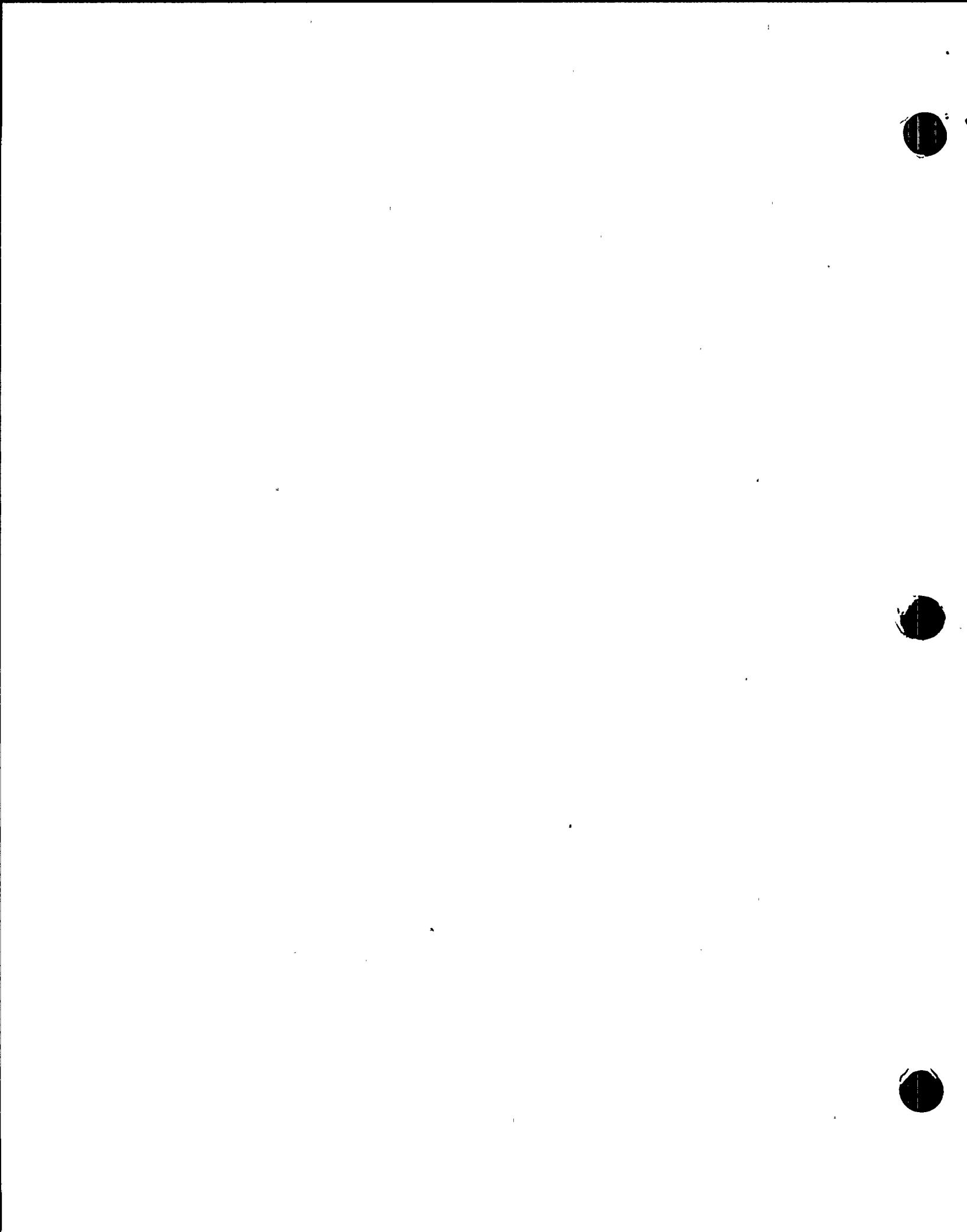
\*Denotes those present at exit interview conducted on November 18, 1988

### 2.0 Design Change/Modification (37828, 37700)

#### 2.1 Objective and Scope of Inspection

The objective of this inspection was to select for inspection one or more modifications being worked during the reactor outage and to inspect the related onsite activities including the installation of the modification and associated engineering for conformance with regulatory commitments and requirements.

The following modifications were selected for inspection. The sample selection was made to focus on modifications that were being worked or scheduled to be worked during the period of the inspection.



<u>Modification Description</u>	<u>Identification No.</u>
CRDS Scram Discharge Volume Vent and Drain Valve Limit Switches	NZY87MX092LE001
Neutron Monitoring*	N2-88-126LF004
Upgrade Rosemount 1153 Transmitters for Sensing Reactor Coolant System Flow.	PNZY87MX165

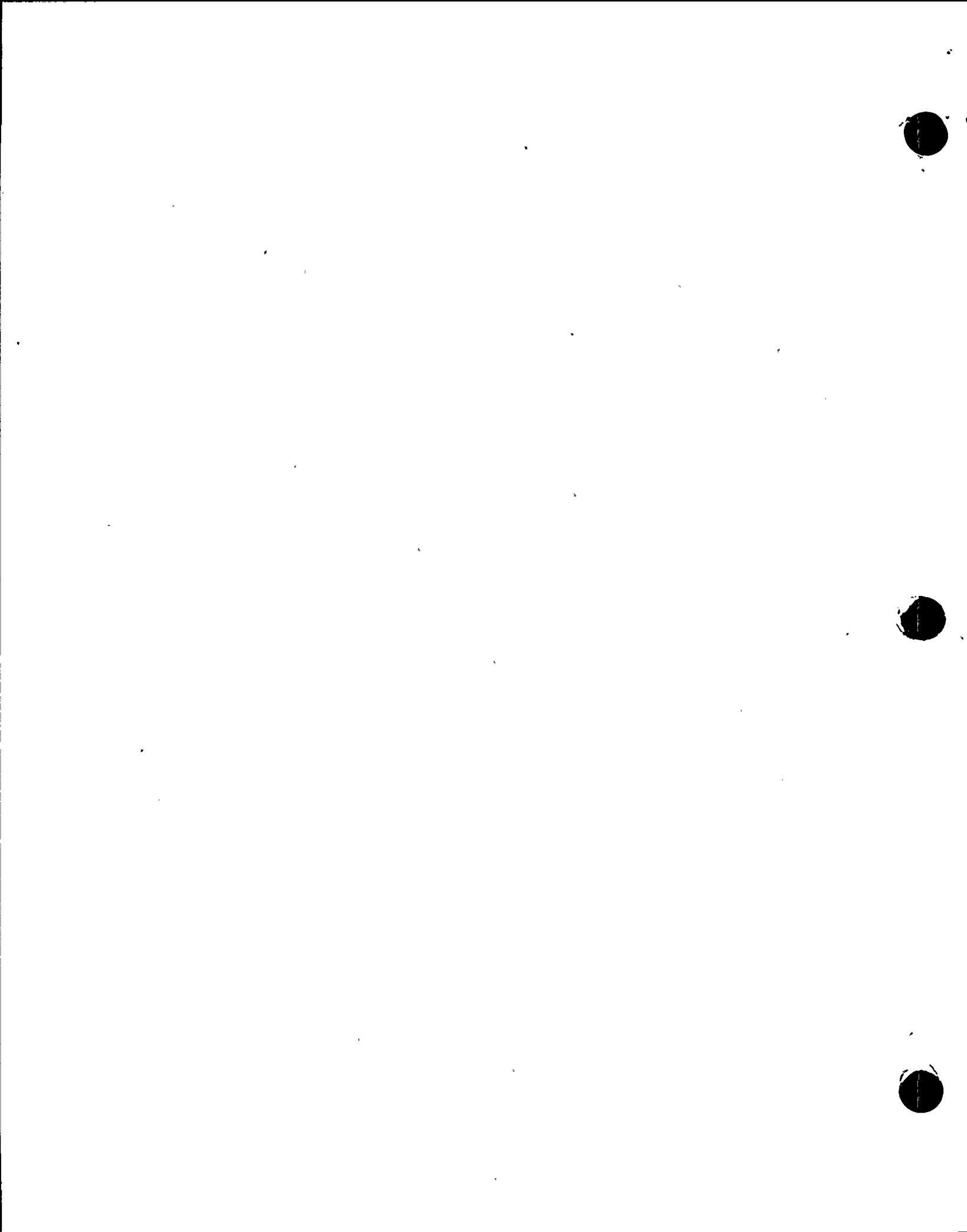
\*Note: Installation work on this modification was subsequently stopped when a procedural problem was identified by the licensee. Based upon this, no inspection was performed.

## 2.2 Details of the Inspection Activities Performed

The inspection included specific observations concerning each of the modifications inspected which included:

- Conducting system/equipment walkdowns in the field to confirm as-built information per installation drawings.
- Verifying that installed conditions conformed to modification specifications and drawings.
- Observing ongoing installation work, inspection and testing.
- Reviewing portions of work already completed.
- Verifying that engineering work was technically sound.
- Verifying that the level and type of verification of quality was adequate for selected work.
- Determining proper classification of work according to standards.
- Verifying that field changes were dispositioned properly.
- Verifying that personnel were being trained as appropriate.
- Verifying that installation and inspection procedures were adequate.
- Verifying that onsite and offsite review committees performed their review responsibilities concerning the modifications.
- Verifying that there was proper level of QA/AC involvement in inspection activities and problems.

Specific inspection findings and pertinent inspector observations concerning each of the selected modifications are discussed below.



### 2.3 Rosemount 1153 Transmitters (PN2Y87MX165)

#### a. Description of Modification

This modification was to upgrade Rosemount 1153 transmitters in the reactor coolant system (RCS) to provide for dampening momentary pressure transients. Also the modification provided for the installation of an adjustable damping feature on the installed Rosemount transmitters and for reidentifying the modified transmitters.

Specific ongoing work being performed at the time of the inspection involved calibration of the already modified Rosemount pressure transmitters for sensing reactor coolant recirculation system (RCS) flow. The RCS flow transmitters being calibrated provide the flow input signals to the APRMs (average power range monitors).

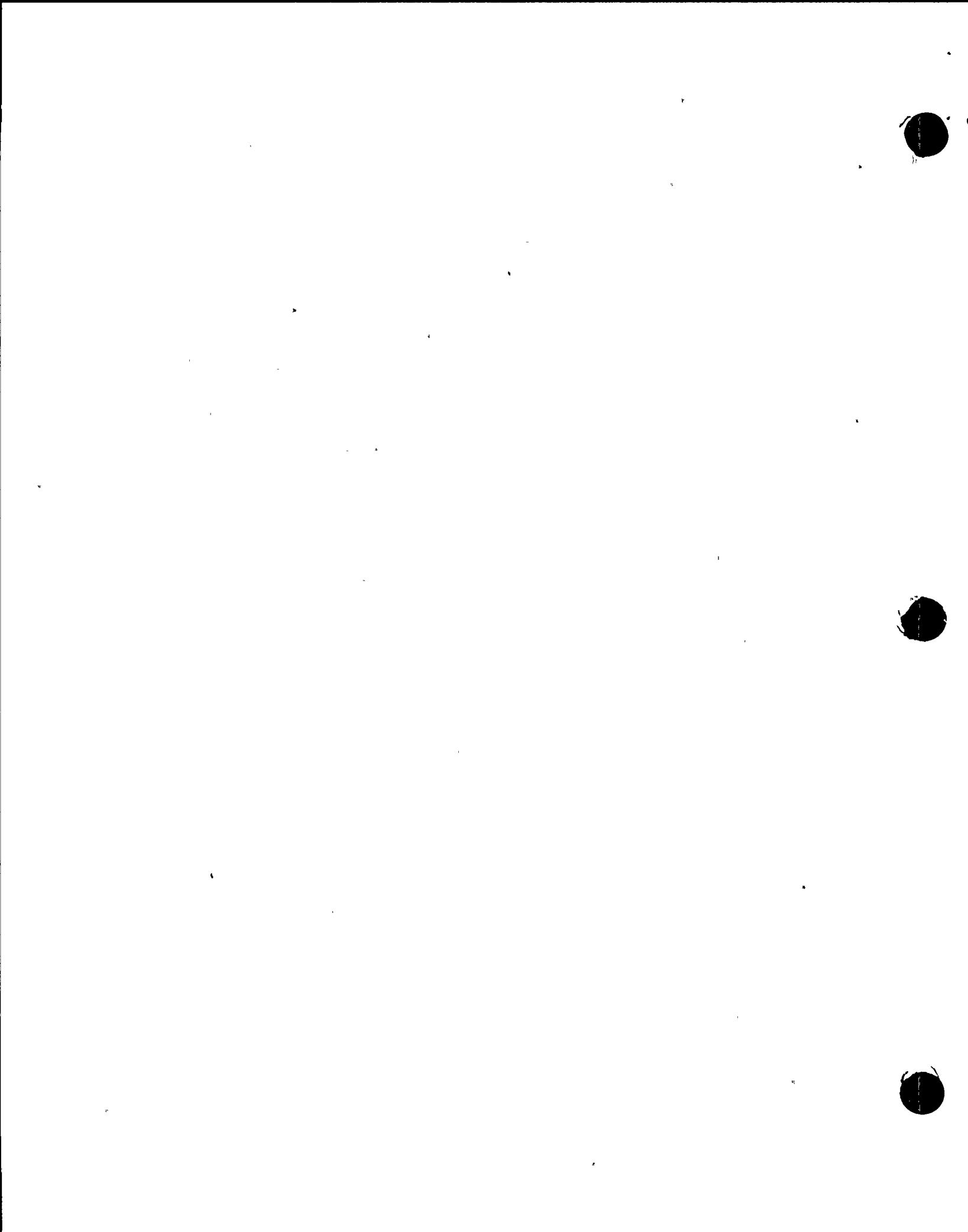
#### b. Findings

Calibration of the modified Rosemount pressure transmitters 2RCS\*FT9A and 2RCS\*FT9B was ongoing and was witnessed in part during the inspection. The work was being accomplished in accordance with detailed step by step procedures. I&C technicians performing the work appeared knowledgeable in their performance. APRM bypasses were well coordinated with the control room operators by the I&C technicians.

The M&TE electronic equipment being used for the I&C work was noted to have up-to-date calibration stickers. The M&TE issue room was verified to have traceability on calibrations for selected equipment used for the calibration work.

The qualifications and training records for the I&C technicians who performed the work were inspected and verified to be in order and up to date.

During review of GE's FDDR No. KG1-6221 which provided for calibration of the modified Rosemount transmitters, the inspector noted that for the Rosemount transmitter response time adjustment work, GE had specified that "The test shall be performed at an ambient temperature of  $80\pm5^{\circ}\text{F}$ ." The FDDR in another location gave the normal temperature for the transmitter locations as  $90^{\circ}\text{F}$ . The inspector visually observed that area temperature monitors in the general location of the transmitters were reading  $90^{\circ}\text{F}$  while calibration related work was in progress. A check of the control room reactor building exhaust air temperature also showed temperatures of approximately  $87^{\circ}\text{F}$  which is higher than that specified by the GE FDDR. The inspector also noted that there was no procedural steps or QC hold points in the procedures being used to cover the  $80\pm5^{\circ}\text{F}$  temperature. The inspector

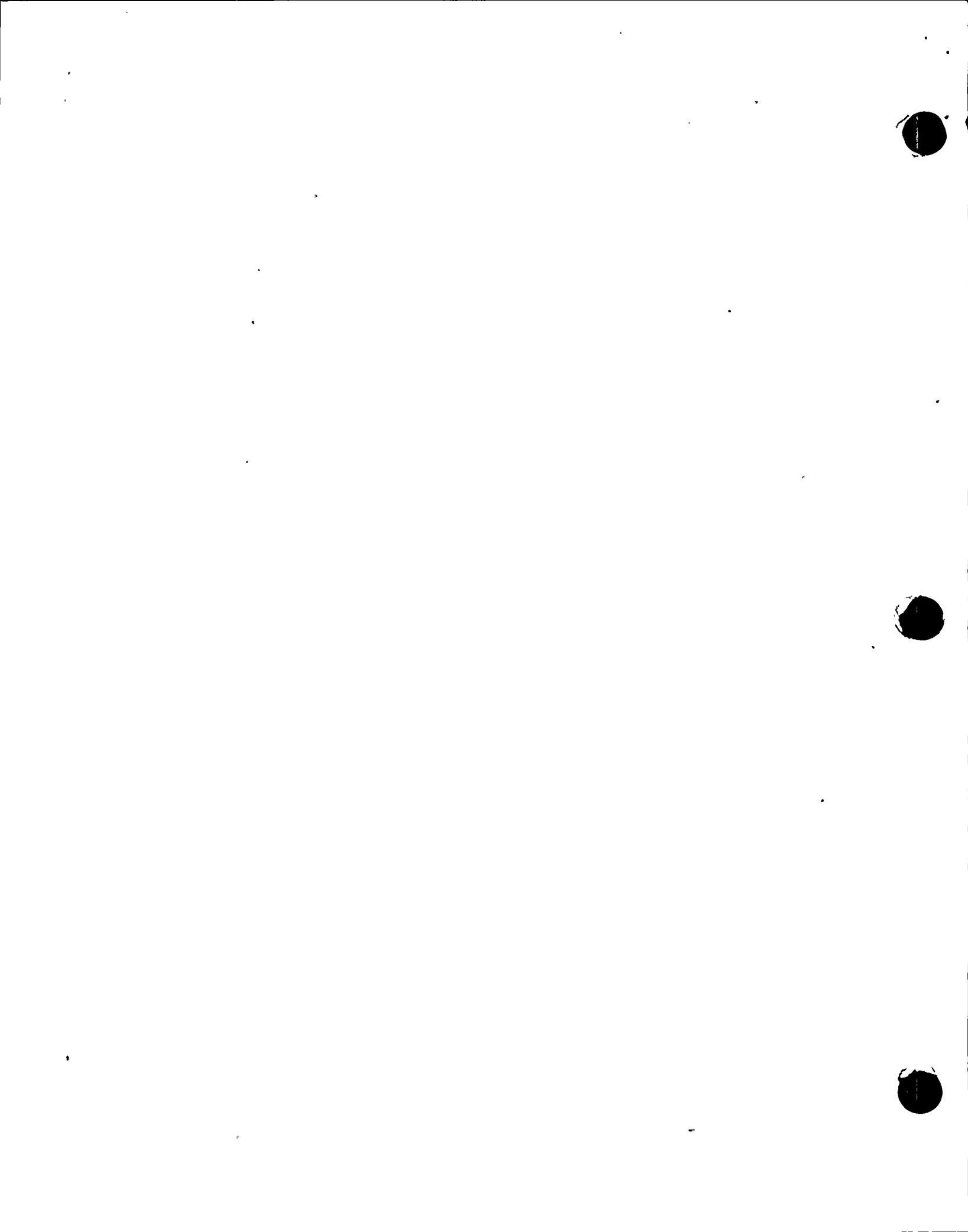


concluded that an inadequate review been performed on the FDDR, and the installing procedures, including an inspection of these documents for QC hold points. Failure of the review process to identify the temperature requirement is one example of an apparent violation of 10 CFR 50 Appendix B, Criterion III, Design Control (50-410/88-30-01). Further examples of this violation are detailed in this paragraph and paragraph 2.4.6. The licensee initiated a problem report, PR 08276, on 11/18/88 to seek resolution for the problem of failing to meet the specified GE FDDR temperature requirement of  $80\pm5^{\circ}\text{F}$ .

The inspector reviewed the modification package for the licensee's 50.59 safety evaluation. The licensee's project design engineers completed procedure NT-100.B-1, Review for Determination of 50.59 Evaluation for Permanent and Temporary Plant Changes and concluded that a detailed safety evaluation was not required. This is a one page check list in the procedure. Since there was no detailed documented technical analysis available in the modification package to provide answers to the inspectors questions or to support the licensee's determination, the inspector discussed the technical basis for not requiring a safety evaluation with the cognizant project design engineers.

The inspector focused his potential safety concern on the consequences of increasing the time delay for the recirculation system loop flow signals to the APRMs and the potential for increasing scram times. The inspector asked the project design engineers what the consequences would be if the newly installed Rosemount transmitters adjustable damping was inadvertently set to full damping. However, the question was not answered satisfactorily until discussions were held with a GE representative and references were made to GE specifications for system performance. These discussions revealed that the time delay with full transmitter damping would be bounded within the required system response time. Based on this information the inspector had no further questions.

The inspector observed that the modification package did not document either by reference or by discussion, a design analysis basis for the design change concerning response time for the flow input to the APRMs being affected. 10 CFR 50, Appendix B, Criterion XVII requires Sufficient records shall be maintained... and ANSI/ASME NQA-1-1983 Supplement 3S-1 stipulates that "Design analyses... shall be sufficiently detailed.. that review can be accomplished without recourse to the originator." Failure to provide adequate design analysis records for the modification is contrary to Criterion XVII and is a second example of an apparent violation (50-410/88-30-01).



c. Conclusion

Based upon the installation work performed and the portion of the Rosemount transmitter system calibration work observed, the installation appeared adequate. The licensee's modification review process including QA for safety related equipment was inadequate in that it failed to identify apparent inconsistencies in the GE FDDR; failed to identify that temperature requirements in the FDDR were not translated to calibration procedures; and failed to identify that no QA hold points existed in calibration procedures for temperature requirements specified in the FDDR. Further, the lack of required documented design analysis in the Rosemount transmitter modification package additionally indicates a weakness in the licensees engineering review for this modification and a lack of attention to technical detail.

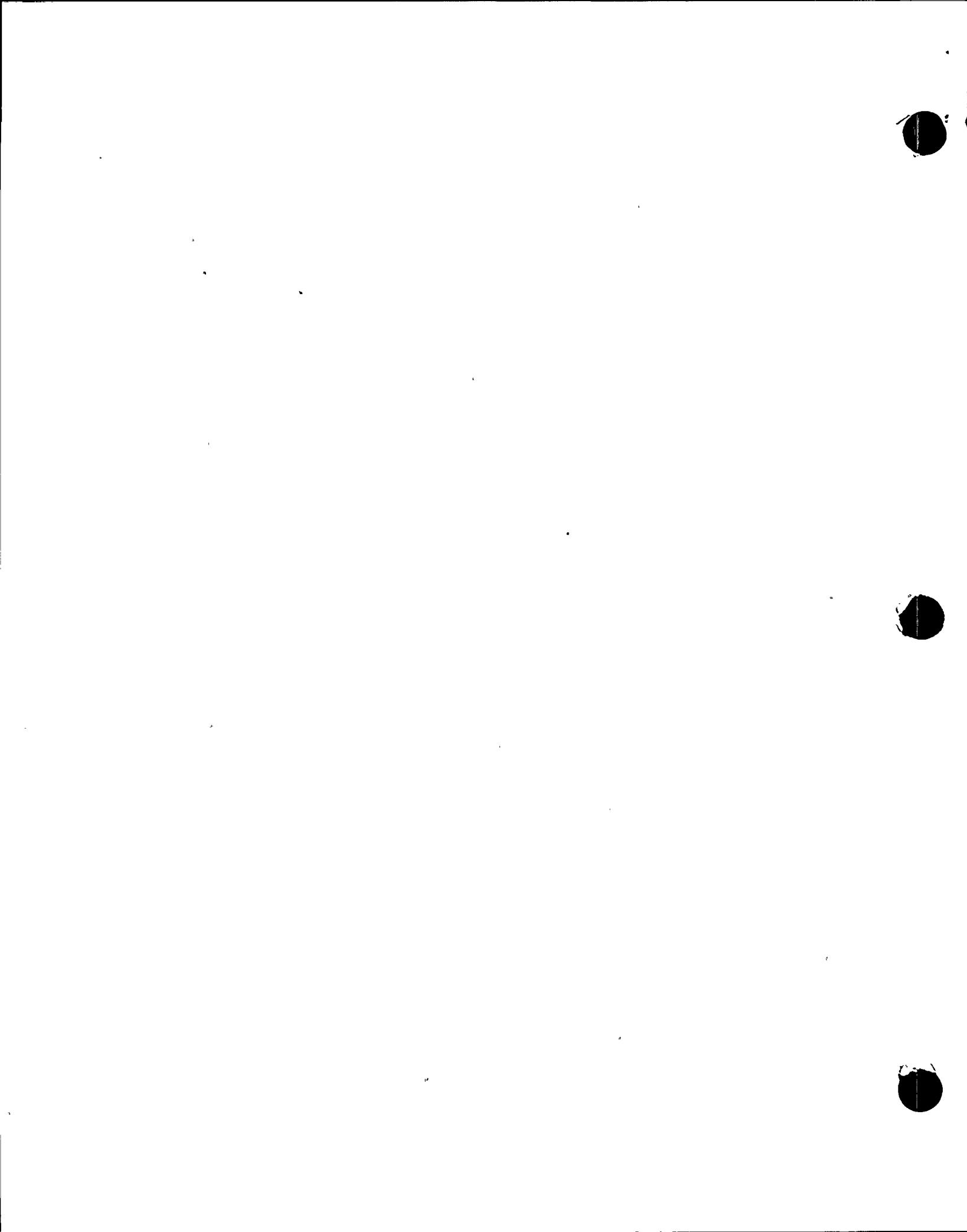
2.4 CRD Scram Discharge Volume Vent and Drain Valve Limit Switches (N2Y87MX092LE001)

a. Description of Modification

This modification involves the wiring of the control rod drive system's closed limit switches contact for each scram discharge volume vent and drain valve. When the valves reach the full closed position following a scram initiation signal to the reactor protection system (RPS), a dedicated computer point for each valve will be triggered by the actuation of isolation relays between division 1 RPS and the non-1E control circuits. The vent and drain valves are safety related and the modification is specified to be installed under QA Category I requirements. This computer indication will provide information needed to ascertain that the vent and drain valves close within 30 seconds after receipt of a scram initiation signal (Reference Technical specification 4.1.3.1.4).

b. Findings

At the time of the inspection the wiring and terminations had been completed from the vent and drain valve's limit switches up to the control room. The wire was observed to be coiled in the control room and had not been pulled to the final control room panel for termination. The inspector selected for inspection terminations at a vent and drain valve and two junction boxes. Wiring at the selected locations was found to be terminated in accordance with the modification package. Workmanship on the installation and wiring appeared professional and neat. Larger size conduit was noted to have been installed in several of the existing conduit runs as required by the design. A new conduit run, approximately 70 feet, was installed in the secondary containment to provide for the run to the control room. The



inspector examined the location and area of the new conduit run for the potential for jet impingement on the conduit and no impingement potential was observed. The inspector identified an incorrect statement in the approved (Ref. SORC Meeting No. 87-58 dated 5/14/87) Safety Evaluation for the modification which stated "This design has no impact on Category II over I or jet impingement since cables are run in existing conduit." This safety evaluation conclusion was incorrect since a new conduit run had been installed. If the new conduit run had been identified correctly in the safety evaluation, it should have caused the evaluation/review process per the procedure NT-100.B to assure that the NT-100.B-8, Jet Impingement Checklist, had been completed and made part of the safety evaluation which was not done.

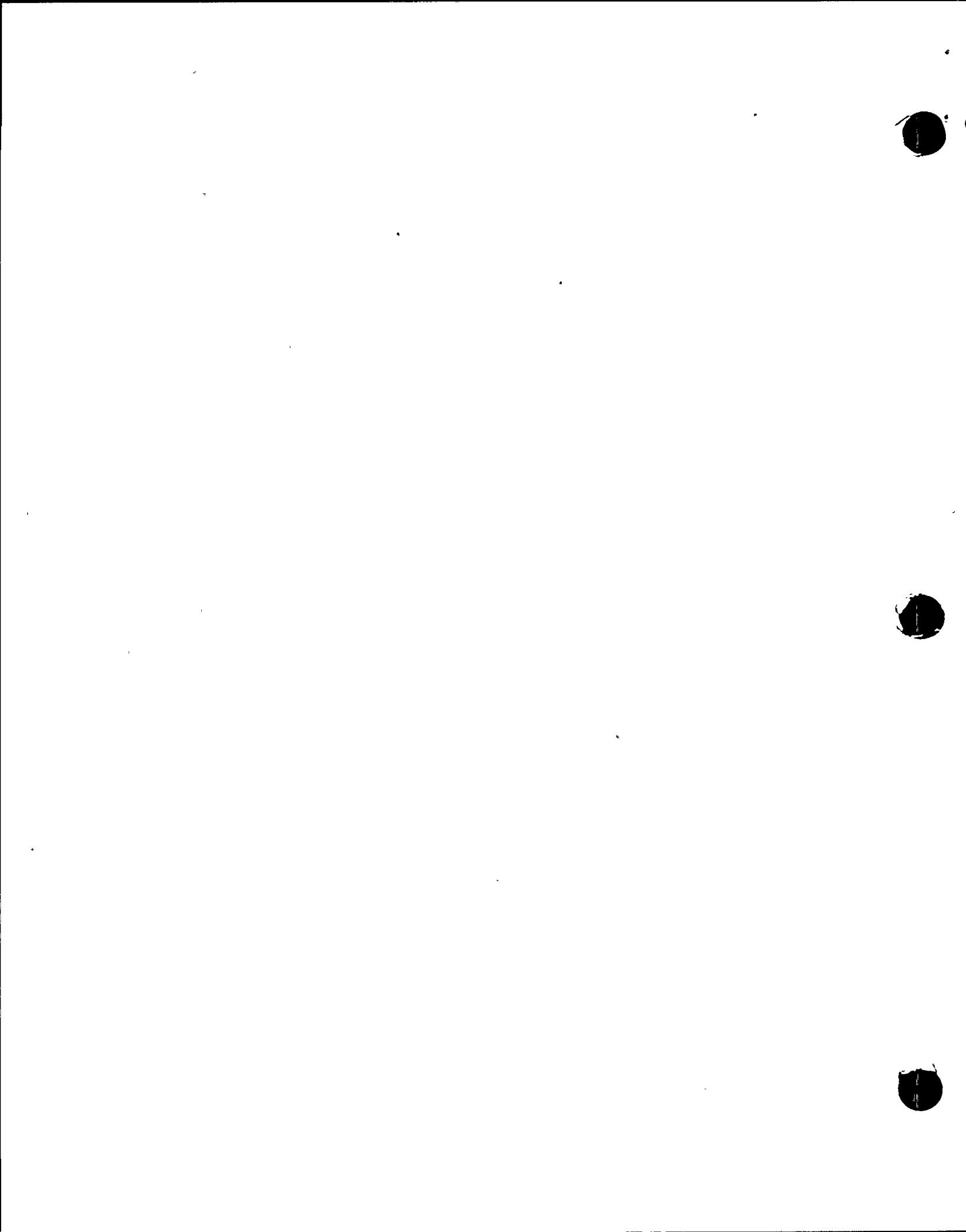
The inspector noted that a revised safety evaluation (SE) had been prepared and approved by engineering but it was not yet SORC approved. Work in the control room had been stopped pending SORC approval of the revised SE. The revised SE approved by engineering, had the same incorrect statement regarding the conduit run which further indicates an inadequate review process. Failure to perform an adequate design review is contrary to 10 CFR 50 Appendix B, Criterion III, Design Control and to ANSI/ASME NQA-1, Supplement 3, Design Control, and is a third example of an apparent violation (50-410/88-30-01).

The inspector witnessed the torquing of the valve limit switch covers that were removed for termination inspection and noted that CB&I, the contractor, electrical QC also witnessed the torquing. No problems were observed during the observation by the inspector of this work.

The CB&I M&TE issue room was checked to verify the calibration of the torque device used. The M&TE controls, calibration and traceability records were satisfactory. CB&I welder, stud welder and QA/QC qualifications were verified. Records were readily retrievable. The installation work package was found to be detailed and on a sampling basis no problems were identified.

#### c. Conclusions

The CRD scram discharge volume vent and drain valve limit switch modification appeared to be installed to the extent completed in accordance with the modification package. The installation workmanship was neat and professional. The contractor's QA/QC coverage for this modification's installation work was found to be adequate. The fact that the safety evaluation 87-060 was approved by both the engineering review process and the SORC review process with an incorrect statement "... cables are run in existing conduits" indicates a lack of attention to detail. That the SE was reviewed and approved a second time by engineering with the same incorrect

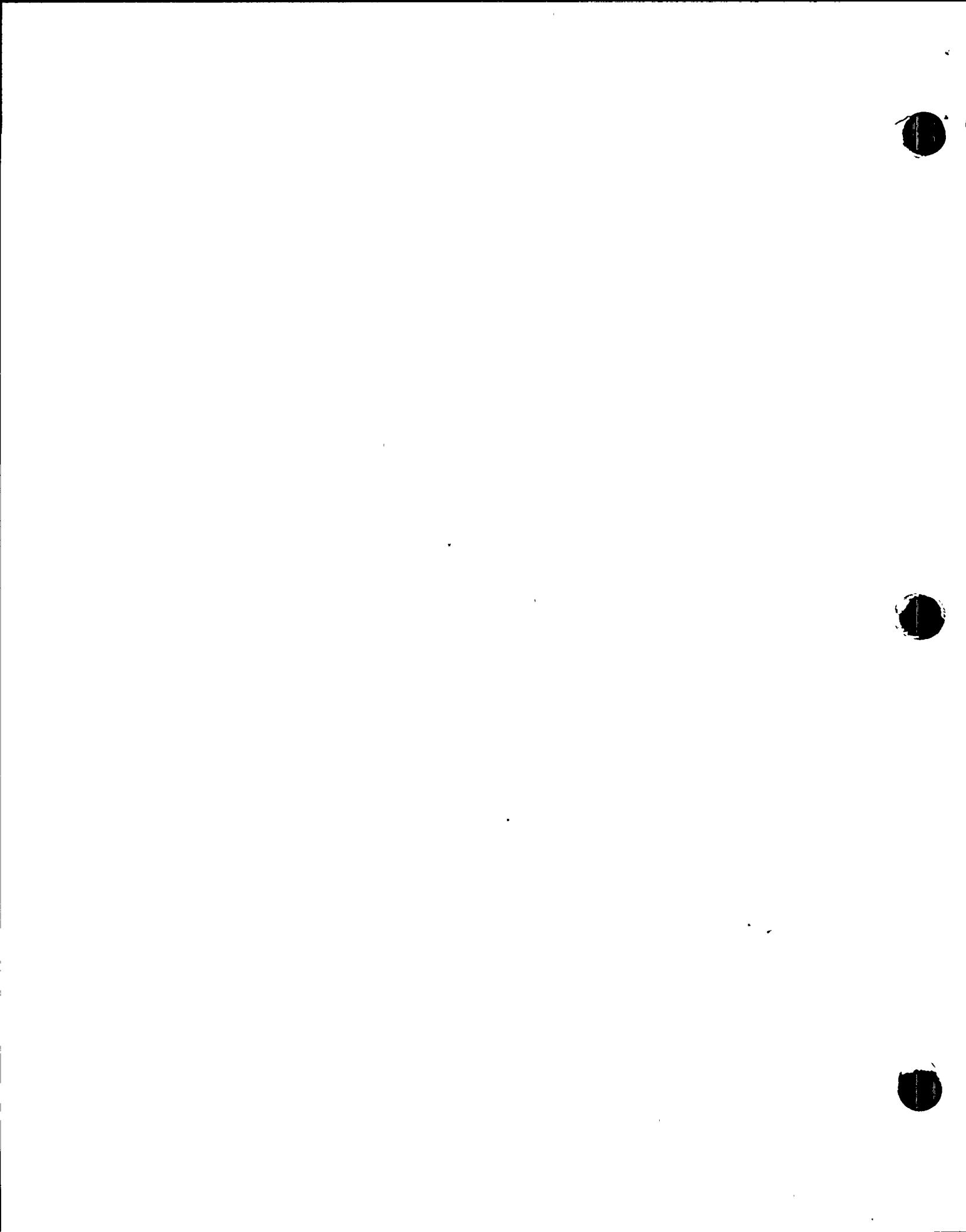


statement further underscores the lack of attention to detail by the engineering review. Inadequacies in the licensee's review of this modification coupled with the inadequacies in the licensee's review of the Rosemount transmitter modification point toward a generic problem in the attention given by the licensee's to review process for plant modifications.

### 3.0 Management Meetings

Licensee management was informed of the scope and purpose of the inspection at an entrance meeting conducted on November 14, 1988. The findings of the inspection were periodically discussed with licensee representative during the course of the inspection. An exit meeting was conducted on November 18, 1988. The findings of the inspection were presented at the exit meeting. See paragraph 1.0 for persons attending the exit meeting.

At no time during this inspection was written material concerning inspection findings provided to the licensee by the inspector. The licensee did not indicate proprietary information was involved within the scope of this inspection.



Attachment A

Reference Documents

Procedures

<u>Procedure Number</u>	<u>Revision</u>	<u>Title</u>
AP-6.0	5	Site Administrative Procedure, Procedure For Modifications
AP-6.1	4	Site Administrative Procedure Procedure For Modification and Addition - Unit 2
NT-100.B	6	Preparation and Control of Safety Evaluations

