United States
Nuclear Regulatory Commission

Incident Investigation Manual

Revision 1

Incident Investigation Staff

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PREFACE

The objective of the Incident Investigation Program (IIP) is to ensure that operational events are investigated in a systematic and technically sound manner to gather information pertaining to the probable causes of the events, including any NRC contributions or lapses, and to provide appropriate feedback regarding the lessons of experience to the NRC, industry, and public. By focusing on probable causes of operating events and identification of associated corrective actions, the results of the IIP process should improve nuclear safety by ensuring a complete technical and regulatory understanding of significant events.

The IIP was established in response to needed improvements in the way existing NRC investigations of significant operational events are conducted. With respect to fact-finding and probable cause determination, the following improvements were incorporated:

- separation of fact-finding and determination of probable cause from licensing, regulation and compliance activities to minimize the conflict of interest caused by previous actions or inactions, and the potential for adversarial atmosphere in an investigation;

- a more structured and coordinated investigation focused on the determination of probable cause(s) of a significant event;

- freezing the plant conditions and personnel, if practicable, from a safety point of view as soon as possible after a significant event;

- investigators with more operating experience, appropriate practical technical expertise, and more training in conducting investigations; and

- timely issuance and implementation of recommendations from an investigation.

Incident Investigation Teams (IITs) ensure that significant operational events are investigated in a manner that is timely, objective, systematic and technically sound; that factual information pertaining to the event is documented; that probable cause(s) are ascertained; and that a complete technical and regulatory understanding of such event is achieved.

The incident investigation manual prescribes procedures and guidelines for the conduct of investigative activities of the Nuclear Regulatory Commission (NRC) IITs.

The purpose of this manual is to provide IITs guidance to ensure that NRC investigations of significant events are timely, thorough, coordinated, and formally administered. The procedures are intended to assist the investigation

rather than limit the initiative and good judgment of the team leader or members; they should use their experience and those techniques that provide the most confidence in assuring the IIT objectives are achieved.

The incident investigation procedures were developed and organized by the Incident Investigation Staff (IIS) of the Office for Analysis and Evaluation of Operational Data. The procedures reflect the experience gained from previous IIT investigations and other pertinent investigations.

The guidelines contained within this manual will foster uniformity, consistency, and thoroughness in IIT investigations while permitting teams the flexibility to accommodate the diverse nature and scope of future investigations.

Table of Contents

TABLE OF CONTENTS

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Page

PREFACE i

1.0 GUIDELINES FOR ACTIVATING AN INCIDENT INVESTIGATION TEAM (IIT) 1-1

1.1 Purpose 1-1
1.2 Background. 1-1
1.3 Introduction. 1-1
1.4 Selection and Scope of Events for IIT Response. 1-2
1.5 IIT Membership. 1-3
1.6 IIT Activation Process. 1-4
1.7 Participation by Industry Organizations 1-5
1.8 Augmented Inspection Team (AIT) Response. 1-6
1.9 Upgrading or Downgrading an IIT 1-10
1.10 Exhibits
1 U.S. NRC Region I Nondestructive Examination Van . . . 1-13
2 Generic Confirmatory Action Letter 1-16
3 Sample Confirmatory Action Letter 1-18
4 Sample Order to Show Cause 1-20
5 Background Information for IIT Briefing 1-23
6 Sample EDO Memorandum to Commission. 1-24

2.0 GUIDELINES FOR CONDUCTING AN INCIDENT INVESTIGATION. 2-1

2.1 Purpose 2-1
2.2 General 2-1
2.3 Scope of the Investigation. 2-1
2.4 Team Leader Responsibilities. 2-2
2.5 Role of the Region. 2-3
2.6 Initial Actions by the Team Leader. 2-4
2.7 Entrance Meeting with the Licensee. 2-5
2.8 Plant Tour of Equipment and Systems 2-7
2.9 Interviewing Personnel. 2-7
2.10 Sequence of Events. 2-7
2.11 Development of the Quarantine Equipment List (QEL). 2-8
2.12 Responding to Press Inquiries 2-8
2.13 IIT Coordination Meetings. 2-9
2.14 Identifying Additional Expertise and Outside Assistance . . 2-9
2.15 Industry Participation in the Investigation 2-9
2.16 Parallel Investigations 2-10
2.17 Status Reports. 2-10
2.18 IIT Recordkeeping Activities. 2-11
2.19 Collection of Information 2-11
2.20 Referral of Investigation Information to NRC Offices. . . . 2-12
2.21 Confidentiality 2-12
2.22 Subpoena Power and Power to Administer Oath and Affirmation 2-12
2.23 IIT Investigation Sequence. 2-13

Page

2.24 Return Site Visit 2-14
2.25 Report Preparation and Presentation 2-14
2.26 Exhibits
1 Bulletin Board Notice 2-15
2 Sample Sequence of Events. 2-16
3 Sample Preliminary Notification Report 2-20
4 Records and Documentation Control. 2-21
5 Sources of Information 2-30
6 Guidelines for Referral of Investigation Information to NRC Offices 2-32
7 Procedures for Granting and Revoking Confidentiality and Determining When the Identity of a Confidential Source May Be Released Outside of the NRC. 2-41
8 Guidelines for Administering an Oath or Obtaining an Affirmation 2-49

3.0 GUIDELINES FOR CONDUCTING INTERVIEWS 3-1

3.1 Purpose 3-1
3.2 Background. 3-1
3.3 Guidance. 3-1
3.4 Exhibits
1 Guidelines for Review and Availability of Transcripts 3-5
2 Handling Transcripts 3-8

4.0 GUIDELINES FOR THE TREATMENT OF QUARANTINED EQUIPMENT. 4-1

4.1 Purpose 4-1
4.2 Background. 4-1
4.3 Quarantined Equipment List (QEL). 4-1
4.4 Quarantined Equipment List Guidelines 4-2
4.5 Guidance for Developing Troubleshooting Action Plans. . . . 4-3
4.6 Guidelines. 4-3
4.7 Exhibits
1 Sample Quarantined Equipment List. 4-6
2 Generic Guidelines for Troubleshooting the Probable Causes for Equipment Anomalies. 4-8
3 Example Action Plans 4-11

5.0 GUIDELINES FOR THE PREPARATION OF THE INCIDENT INVESTIGATION TEAM REPORT. 5-1

5.1 Purpose 5-1
5.2 Background. 5-1
5.3 Writing and Publishing Guidelines 5-1
5.4 Report Writing Guidelines 5-1
5.5 Graphic Guidelines. 5-4
5.6 Publication Forms 5-5
5.7 Distribution of the Advance Copy. 5-5
5.8 Distribution of the Published NUREG 5-6
5.9 Schedule. 5-6

Page

5.10 Exhibits
1 Sample Report Outline. 5-9
2 Valve Symbols. 5-10
3 Sample Report Transmittal Memorandum to the EDO. . . . 5-17

APPENDICES

A. NRC Incident Investigation Program - Manual Chapter 0513

B. IE Procedure for Augmented Inspection Team Response to Operational Events, IE Manual Chapter XXXX

C. Letter from W. J. Dircks, to the Commissioners, Subject: Incident Investigation Program, SECY-85-208, dated June 10, 1985.

Activating An IIT

GUIDELINES FOR ACTIVATING AN INCIDENT INVESTIGATION TEAM (IIT)

IIT Procedure 1

1.1 Purpose:

To provide guidance to NRC management for activating an Incident Investigation Team (IIT) response to a significant operational event at an NRC-licensed facility.

1.2 Background

This procedure provides guidance for activating an IIT and selecting the number and kinds of expertise required for a timely, thorough and systematic investigation. The scope, objectives, authorities, responsibilities, and basic requirements for the investigation of significant operational events at reactor and non-reactor facilities licensed by the NRC are defined in the NRC Manual Chapter 0513, "NRC Incident Investigation Program." The Executive Director for Operations (EDO) approves the investigation of a significant operational event by an IIT based, in part, on recommendations by NRC headquarters and regional offices concerning the safety significance of the event. The EDO also assigns IIT members (including composition) based on recommendations by senior NRC management.

The Incident Investigation Program includes investigatory responses by an IIT and the less formal response by an Augmented Inspection Team (AIT). The procedure for an AIT response, developed and maintained by the Office of Inspection and Enforcement (IE), is part of the Incident Investigation Manual.

1.3 Introduction

Activating an IIT in response to a significant operating event normally involves the coordinated activities of the appropriate region, IE, Office for Analysis and Evaluation of Operational Data (AEOD), and Office of Nuclear Reactor Regulation (NRR). If the affected facility involves safeguards matters or fuel-cycle, byproduct material, uranium recovery, or waste management licensees, the Office of Nuclear Material Safety and Safeguards (NMSS) would also participate. If a safeguards issue is involved at a reactor, both NMSS and NRR would participate. A Regional Administrator or Program Office Director initiates a conference telephone call among the Office Directors of IE, AEOD, NRR and the Regional Administrator. Generally the originator of the call explains what is known about the event and why an IIT should be activated. The decision should include consideration of public health and safety (protection of public/environment, radioactive release or contamination) and should be based on the safety issues, potential generic implications, personnel errors, equipment failures associated with the event, and should take into account an individual's knowledge of the licensee's performance and judgment of the event's implications. This procedure attempts to structure the decision making by providing specific event characteristics on which to base a decision to activate an IIT. These event characteristics are primarily applicable to power reactor facilities. Specific additional guidance concerning the application of the IIP to non-reactor type events, such as personnel overexposure is under development and will be incorporated in a future revision of the IIT procedures.

The conference telephone discussions have typically taken place after the plant has been placed in a safe, secure, and stable condition. In any event, the IIT will be activated as soon as practical after the safety significance of the operational event is determined and will begin its investigation as soon as practicable to ensure that the facts, conditions, circumstances, and probable causes are ascertained. If there is an NRC incident response, the investigation will begin after the incident response is deactivated.

1.4 Selection and Scope of Events for IIT Response

The recommendation to the EDO for activating an IIT should include the identification of the potential safety significance of the event. The threshold for activating an IIT is intended to be high and limited to those operational events which have significant safety implications. Historically, the events investigated by an IIT have, in general, involved multiple failures in plant systems that resulted in system responses that were not part of the design bases, and substantially reduced the safety margins that ensure public health and safety.

Significant operational events that should be considered for an IIT response may include one or more of the following characteristics:

1. A significant radiological release, a major release of special nuclear, source, or byproduct material, or uranium milltailings to unrestricted areas, or personnel overexposure.

   Personnel overexposure can occur as a result of an event involving a loss of control of radioactive materials and could involve facility personnel and/or members of the public. While, as of June 1986, no IITs have been established based on this criterion or characteristic, primary attention is given to potential offsite (i.e., public health) consequences and thus, should public health and safety be significantly impacted or threatened, an IIT response would be appropriate.

2. Operation that exceeded, or was not included in, the design bases of the facility.

   Such events include those in which both trains of a safety-related system were lost or events that were not analyzed in the Updated Safety Analysis Report: e.g., the total loss of feedwater at Davis-Besse (1985), the precursor anticipated transients without scram (ATWS) at Salem (1983), the failure on demand of the safety injection system at San Onofre (1981), and the fire at Browns Ferry (1975).

3. An event that reveals a major deficiency in design, construction or operation having potential generic safety implications.

   Representative events having this characteristic are the loss of integrated control system at Rancho Seco (1985), the failure of the reactor cavity seal at Haddam Neck (1984), the inadvertent criticality during refueling with the reactor vessel head removed at Vermont Yankee (1973) and Millstone (1976), and the water hammer event at San Onofre (1985).

4. An event that exceeds a safety limit of the licensee's Technical Specifications.

Safety limits are defined for each reactor in the technical specifications, e.g., for a PWR, reactor coolant system pressure greater than 2735 psig, or the combination of thermal power, pressurizer pressure, and the highest operating loop coolant temperature (T average) exceeding the appropriate limit for n and n-1 loop operation. An example for a BWR is the Oyster Creek loss of coolant event (1979) which exceeded the safety limit for minimum inventory requirements.

5. A significant loss of fuel integrity, of the primary coolant pressure boundary, or of the primary containment building boundary of a nuclear reactor.

   Events with this characteristic include the steam generator tube rupture at Ginna (1982), the loss of coolant outside the containment structure at Hatch (1982), and significant pump seal leaks at Robinson (1981) and Arkansas (1980).

6. Loss of a safety function or multiple failures in systems used to mitigate an actual event.

   Events with this characteristic include the failure of the auxiliary feedwater system at Davis-Besse (1985), the partial failure to scram at Browns Ferry (1980), the precursor ATWS event at Salem (1983), and the failure of the safety injection system on demand at San Onofre (1981).

7. An event that led to a site area emergency.

   This type of event would involve activation of the NRC Operations Center and would normally involve multi-agency responses. The UF_6 cylinder rupture at the Sequoyah Fuels Facility in 1986 is an example of an event that falls in this category because the licensee's radiological contingency plan classified the event at least as a site area emergency.

8. An event that is sufficiently complex, unique, or not well enough understood to warrant an independent investigation, or an event which warrants an investigation, such as an event involving safeguards concerns, to best serve the needs and interest of the Commission.

1.5 IIT Membership

In addition to identifying the potential safety significance of the event, the recommendation to the EDO for activating an IIT investigation should address the types of expertise needed for the team. The IIT membership should be based on the following guidelines:

1. Select the IIT leader and team members from rosters of candidates maintained by AEOD. Candidates should be certified through formal training in incident investigation.

2. Select an IIT leader who is an NRC manager from the Senior Executive Service (SES).

3. Select IIT personnel based on their expertise, their potential contributing to the event investigation, and their freedom from significant involvement in the licensing and inspection of the facility involved or other activities associated with issues that had a direct impact on the course or consequences of the event.

4. Determine the number of team members and their areas of technical expertise based on the type of facility and characteristics of the event. For a reactor event, the team should include experts in reactor systems, human factors, operations (licensed operator), and mechanical or electrical systems (I&C or systems). Additional members could include specialists in physics, radiological assessment, health physics, safeguards, emergency planning, or other specialized areas.

5. Obtain technical contract support to support the IIT as needed. Contractor assistance should be limited to services that are not available within the NRC, e.g., independent laboratory analyses, computational support and testing. Within the NRC, there are also capabilities and expertise that can contribute to the IIT activities, e.g., the NDE vans (See Exhibit 1 for description of NDE van capabilities), control room simulators, photography, and computer analyses. The Incident Investigation Staff in AEOD will provide the resources and administrative support necessary to procure the services requested by the team leader. The Assistant General Counsel for Enforcement will provide legal assistance as necessary.

1.6 IIT Activation Process

1. Upon their notification of a significant operational event, the Directors of NRR or NMSS, IE, AEOD and the Regional Administrator should assess the safety significance of the event to determine whether an IIT or an AIT is required. They assess the level of investigatory response based on the criteria in the NRC Manual Chapter 0513 and this procedure for activating IITs, and on the criteria in IE Procedure XX for activating AITs.

2. Regional Administrators, in coordination with NRR or NMSS, and IE are to determine those operational events warranting investigation by an AIT; and as soon as it becomes clear that at least an AIT is warranted, preferably before an AIT is actually established, consult with the Director of NRR or NMSS, IE and AEOD to consider whether an IIT response is appropriate. If an IIT is agreed upon, the initiating office makes that recommendation to the EDO. Differences among NRR, NMSS, IE, AEOD and a Regional Office concerning whether an AIT or IIT is the proper response are submitted to the EDO for resolution.

3. For events which the EDO agrees that an IIT is warranted, the EDO selects the IIT leader and team members. The Director, AEOD will take the lead in coordinating with IE, NRR or NMSS, and the appropriate Regional Administrator (i.e., in the Region where the event occurred) regarding the expertise and the availability of individuals for approval by the EDO.

4. The EDO assigns a due date for the IIT report about 45 days after the IIT has been activated. The EDO should consider assigning the due date to coincide with a Monday so that all available administrative support will be directed to preparing the final report during the preceding weekend.

5. After the IIT leader and members have been selected, AEOD provides the administrative support necessary to dispatch the IIT in a timely manner. This support includes travel authorizations, tickets and advances during off-duty hours, logistics, and other site-specific information, including site access, and other site arrangements (guidance is provided in the Administrative Procedures).

6. The Regional Administrator issues a Confirmatory Action Letter (CAL) to the affected licensee confirming the licensee's commitment that, within the constraints of ensuring plant safety, relevant failed equipment is quarantined and subject to agreed-upon controls; that information related to the event is preserved; and that the plant is maintained in a safe shutdown condition until concurrence is received from the NRC to restart. Completion of an IIT investigation and issuance of the report is not necessarily required for plant restart. Exhibit 2 shows a generic CAL and Exhibit 3 shows a sample CAL that was issued for an AIT response.

   The CAL confirms a licensee's statement of intent and action. In the unlikely event that the licensee and Regional Office cannot agree on the actions that NRC believes are necessary, the Director of NRR or IE may issue an Order ensuring that information related to the event is preserved. Exhibit 4 shows a sample Order. Even where the licensee agrees to the terms of the CAL, those commitments may be confirmed by Order at a later time if NRC management deems it appropriate.

7. The Regional Administrator should ensure that a briefing package is available to the IIT when it arrives onsite. This package should provide sufficient background information for IIT members to quickly grasp unique aspects of the plant design and relevant data related to the event. For power reactors, this type of information should be readily available from the resident inspector's office, where most of the data would normally be compiled as part of the resident inspector's onsite followup to significant events (IE Manual Chapter 93702). Exhibit 5 lists information that could be provided in the briefing package. The Regional Administrator should coordinate with the IIT team leader on the briefing package information necessary to support the IIT.

8. The Director, AEOD prepares for the EDO's signature a memorandum informing the Commission of the activation of an IIT. Exhibit 6 shows such a sample memorandum. The Director, AEOD will also contact the Director, Office of Public Affairs (PA) and will assist in the preparation of the NRC press release.

1.7 Participation by Industry Organizations

When an IIT is activated, industry representatives will be informed and their participation will be requested. Their participation brings both an independent perspective to the investigation and expert knowledge of plant hardware and practices in numerous areas. In addition, industry participation helps licensees to have immediate access to facts regarding the safety implications of the incident, and as a result to aid in the feedback of information and, in the self-initiation of potential preventative and/or corrective actions. Such participation should also help expedite the event investigation and the identification of the generic applicability of significant issues. Industry

participation is consistent with and fully supportive of the Incident Investigation Program objectives.

After the EDO determines that an IIT response is warranted, the Director, AEOD will inform the various industry groups* (INPO or NSAC, and the Owners' Group for the affected plant) regarding the IIT and invite their participation with the IIT in the investigation. The Director, AEOD may indicate the desired technical expertise that would be desirable for the industry representative to have in order to ensure a range of disciplines on the IIT. The industry contact has the responsibility to select the industry individual in accordance with the same criteria that the NRC representatives are selected, i.e., (1) specific technical expertise, (2) no previous significant involvement with the affected plant or utility's activities or with other significant issues associated directly related to the cause, course or consequences of the event, and (3) full-time participant for the duration of the IIT activities.

The industry representatives and the NRC members qualifications will be reviewed by the EDO or upon his direction, the Director, AEOD to ensure that all team members are suitably qualified and meet the selection criteria. The EDO approves the IIT members on a case-by-case basis, i.e., each is reviewed and approved individually. Note: The team may become involved with security, proprietary or other sensitive information and thus, non-NRC team members must be suitably cleared or have signed a statement of confidentiality (under development).

After the EDO approves the composition of the IIT, all members will be advised of the location and time for the first IIT organizational meeting. The IIT leader will assign and organize the various investigative activities to the team members. All representatives should be relieved of other duties until the investigation is completed and the investigation report is issued, or they are released from the IIT. The EDO may relieve from the IIT any personnel who do not remain with the investigation until the completion of the report, or for other reasons he deems appropriate.

1.8 Augmented Inspection Team (AIT) Response

Events of lesser safety significance whose facts, conditions, circumstances and probable causes would contribute to the regulatory and technical understanding of a generic safety concern or another important lesson will be assessed by an AIT. The objectives of the AIT concept are to: (1) augment regional personnel with additional personnel from headquarters or other regions for onsite fact-finding investigations of certain events; (2) communicate the facts surrounding the events investigated to regional and headquarters management; (3) identify and communicate any generic safety concerns related to the events investigated to regional and headquarters management; and (4) document the findings and conclusions of the onsite investigation. AIT responses are addressed in an IE Manual Chapter which is included in the Incident Investigation Manual for information.

* The Incident Investigation Staff will maintain the list of industry contacts to be notified.

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The major differences between an AIT and an IIT are that an IIT investigates the most safety-significant operational events relative to reduced safety margins. In addition, the IIT leader and members do not and have not had significant involvement with licensing and inspection activities at the affected facility. An IIT investigation will normally assess the regulatory process prior to the event to determine whether the regulatory process contributed directly to the cause or course of the event. Table 1 further illustrates the differences between IIT and AIT investigatory responses.

Table 1 - Comparison of IITs and AITs

	IIT	AIT
Team Objectives	Investigates events of potential safety significance at a facility or an activity licensed by the NRC to collect, analyze and document factual information and evidence sufficient to determine probable causes, conditions and circumstances pertaining to the event.	Same
Team Activation	The EDO activates an IIT based on recommendations from a Regional Administrator or the Directors of NRR, IE, NMSS or AEOD.	A Regional Administrator activates an AIT in consultation with NRR or NMSS, and IE.
	Events that represent a significant degradation in the safety margin available to protect the public health and safety.	Events with a lesser safety-significant threshold than an IIT would initiate an AIT. AITs are more formal and visible than routine inspections.
Team Leader	An SES member selected by the EDO from the IIT roster of certified investigators.	Usually a non-SES person selected by a Regional Administrator.
Team Members	A minimum of 4 to 5 members with expertise in several relevant disciplines and having participated in no prior licensing/inspection activities related to the licensee; members are selected from the IIT roster of certified staff and are relieved of normal duties.	Regional staff augmented by headquarters and other regional staff, and are relieved of normal duties. The team has no minimum size and can include the project manager and resident inspectors for affected facility.

Tabel 1 - Comparison of IITs and AITs (Continued)

Investigation	IIT	AIT
Scope	Focuses primarily on determining the causes and sequence of events as opposed to violations of NRC rules and requirements for enforcement purposes.	An inspection activity, the results of which are handled through normal organizational channels and procedures, excludes recommendations for enforcement actions,and does not examine the regulatory process.
Process	Formal (transcribed interviews and CAL or Order) and independent.	Less formal (transcribed interviews only if deemed necessary) and not independent.
Documentation	NUREG report issued simultaneously to EDO and Commission within about 45 days.	Special inspection report of AIT issued to Regional Administrator within 30 days.
Followup Actions	Initiated by EDO to the Office Directors and Regional Administrators.	Initiated by Region or Program Offices through routine organizational channels and procedures.
Administrative/Logistics		
Team response time after an event.	Generally within 24 hours.	Generally within 24 hours.
Travel funds and administrative support	Provided by AEOD.	Provided by Program Offices and Regions.
Procedures for implementation	AEOD procedures.	IE procedures.

Tabel 1 - Comparison of IITs and AITs (Continued)

Admin./Logistics (cont.)	IIT	AIT
Regional Administrator issues Confirmatory Action Letter to quarantine equipment or NRC Order issued.	Always	Sometimes
Licensee personnel interviews transcribed.	Always	Not likely. (Transcripts will be taken if deemed necessary by regional administrators.)
Duration of site visit	About 2 weeks	About 1 week
Press release	Yes	Regions may notify local press
Team deployment highlighted in EDO daily staff notes.	Yes	Yes
Preliminary Notifications with periodic updates issued.	Yes	Yes

1.9 Upgrading or Downgrading an IIT

Adequate information is not always initially available or accurate enough to determine whether the safety significance of an event warrants an AIT or an IIT. Thus, an AIT could be upgraded to an IIT or vice versa, based on conditions at the site. In general, the safety significance of the event will be the criterion guiding the investigatory response.

The conversion of an AIT to an IIT or vice versa can confuse the licensee and cause additional disruption to ongoing activities. Accordingly, the IIT leader must minimize the adverse impact of such a change by ensuring that frequent and meaningful communication occurs among the AIT, IIT, and the licensee during the critical transition period.

To upgrade an AIT to an IIT the following guidelines are used:

1. As part of defining the scope of an AIT investigation, the Regional Administrator would include a provision for the AIT leader to continually evaluate the safety significance of the event after arriving onsite. Based on the AIT leader's assessment, the Regional Administrator would determine whether the event warrants consideration as an IIT response.

2. Should the Regional Administrator determine that the event warrants consideration as an IIT response, the process for activating an IIT would be followed as described previously in this procedure, e.g., a conference call would be held between the Region, NRR, IE and AEOD (and possibly the AIT leader).

3. AIT members would be replaced in accordance with the guidance described previously for IIT membership. The AIT leader would usually be replaced by an IIT leader selected by the EDO. All or some AIT members may be retained for the IIT based primarily on the independence of the individual with respect to their prior activities related to the affected licensee and the issues involved in the event.

4. The AIT would remain onsite and assist the IIT until the IIT leader believed that a successful transition had been achieved.

To downgrade an IIT to an AIT using the following guidelines are used:

1. In consultation with the IIT leader, the EDO decides that the event lacks the safety significance to warrant continuance as an IIT.

2. The EDO assigns responsibility to the Regional Administrator to direct the IIT-to-AIT transition, including the release of the IIT leader and some or all of the members.

3. The IIT leader would usually be replaced by a leader selected by the Regional Administrator. While all or some of the IIT members may be replaced, the IIT members would be expected to form the nucleus of the AIT.

4. The AIT would then follow IE procedure XX which guides the response of the AIT.

5. The Director, AEOD would prepare a memorandum for the EDO's signature informing the Commission that the IIT has been de-activated based on the lesser safety-significance of the event. The Director, PA would also be informed at this time.

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Exhibit 1

Capabilities of the NRC - Region I
Nondestructive Examination Van

Listed below are the inspection capabilities of the NDE Mobile Van which Region I has for performing direct independent examinations at licensee's facilities.

1. Van

A 25-foot Dodge Van, equipped with a V-8 engine automatic transmission, two (2) holding tanks for gasoline, 85 gallon capacity, a 6.5 KW gasoline driven generator for heating, cooling and electrical van equipment. The van is equipped with a supplemental heating system that operates from a 12V system using propane gas when it is not practical to operate the generator or external power is not available.

2. Radiography

Van is equipped with complete dark room facilities and isotope storage area. Facilities to perform and interpret radiographic examination to licensees inspection procedures or applicable codes, specifications and standards.

3. Ultrasonic

The Van has two (2) Ultrasonic units, Sonic Mark I. These instruments are portable battery operated capable of performing manual examination of most products at a nuclear facility (with accessories).

4. Thickness Gauge

Portable battery-operated instrument, digital readout for measuring metal thicknesses with the range of .050" to 10".

5. Liquid Penetrant

Equipment to perform visible solvent removable and florescent penetrant testing.

6. Magnetic Particle

Equipment to perform (AC) yoke and (DC) prod magnetic particle examination.

7. Hardness

Portable battery-operated instrument for measuring hardness of material which can then be converted to Brinell or Rockwell standards and approximate tensile strength.

8. Cable Tracer

Portable, battery-operated instrument for locating and tracing electrical cables.

a. Tracing the paths of underground cable;
b. Tracing the paths of wires;
c. Locating gas and water pipes;
d. Locating faults, shorts, opens and grounds;
e. Determine depth of cables;
f. Identify cables in groups.

9. Digital Heat Probe

Portable, battery-operated instrument for reading temperatures during welding, post weld heat treat, etc.

10. Digital Multimeter

Portable, battery-operated instrument for measuring volts, ohms, and amps of electronic circuits.

11. AMP Probe Kit

Instrument used for checking line voltage and amperace, i.e., welding and magnetic particle currents.

12. Shore Durometer

Used to check hardness of rubber products.

13. Stero-zoom 7 Microscope & Accessories

Direct applicable to observe defects in sample analysis.

14. Windsor Probe (Swiss Hammer)

Used to determine the compressive strength of concrete.

15. Infrared Thermometer

Used for remote observation of materials temperature.

16. Surface Comparators

Used to determine average surface finish of metals.

17. Megger - OHMS Generator

Hand-cranked unit for measuring ohms resistance of items such as heater bundles.

18. Ferrite Indicator (Severn Gauge)

A device used for indicating the ferrite content of austenitic stainless steel weld metals.

19. Nortec-Eddy Current Machine

Portable, battery-operated unit used for measuring paint thickness, can also be used to inspect material defects.

20. R. Meter

Portable, battery-operated instrument for locating rebar embedded in concrete.

21. RPM Photo Tachometer

Portable, battery-operated instrument used remotely, to determine motor RPM's, such as pump shaft speed.

22. Vibration Meter

Portable, battery-operated instrument for measuring acceleration, velocity, and displacement of motors.

23. Fiberscope

Instrument used to examine remote and hard to get to areas, such as inside pipe surface.

24. Surface Indicator

Portable, battery-operated instrument used to measure surface finishes of machined materials.

25. Alloy Analyzer

Portable, battery-operated instrument designed for rapid non-destructive onsite verification of type and element composition of many different engineering alloy's.

26. Dimensional Aids

a. Vernier Calipers b. Forma-gauge c. Micrometers d. Weld gauges e. Slope angle indicators f. Various coating thickness measuring devices

27. Digital Hand Torque Wrench

Digital readout hand torque wrench for static torque measurements with accuracy and readability. A large LED digital display along with digital peak memory to make static torque measurements with accuracy with in ±0.25%.

Exhibit 2

Generic Confirmatory Action Letter

Docket No. _____

[Licensee Name]
[Address]

Dear _____:

On [date], [brief description of event]. Because of the potential significance of this incident to public health and safety, the NRC's Executive Director for Operations has formed an Incident Investigation Team (IIT) to investigate the circumstances surrounding the incident. [Include as appropriate a brief description of the event's significance].

This letter confirms the conversation on [date] between _____ and _____ of my staff related to this incident. With regard to the matters, discussed we understand that you have agreed to cooperate with the IIT and you have taken or will promptly take the following actions necessary to support this investigation:

1) The facility will remain in cold shutdown [or other appropriate mode description] until the Regional Administrator is satisfied that appropriate corrective action has been taken and the plant can safely return to operation.

2) The licensee will ensure that the equipment involved in the incident is not disturbed prior to release by the IIT. In this regard, work in progress or planned on equipment that failed or malfunctioned during the event, and had an impact on the sequence of events will be held in abeyance so that evidence of the equipment's functioning during the incident will not be disturbed. Personnel access to areas and equipment subject to this quarantine will be minimized, consistent with plant safety.

   The licensee is responsible for quarantined equipment and can take action involving this equipment it deems necessary to: (1) achieve or maintain safe plant conditions, (2) prevent further equipment degradation, or (3) test or inspect as required by the plant's Technical Specifications. To the maximum degree possible, these actions should be coordinated with the IIT team leader in advance or notification made as soon as practical. The IIT team leader may authorize a release, in whole or in part, of those areas or equipment subject to the quarantine upon a determination that the IIT has received sufficient information concerning the areas or equipment requested to be released, or to permit necessary troubleshooting of the equipment, required testing or maintenance to be performed.

3) All records will be preserved intact that may be related to the event and any surrounding circumstances that could assist in understanding the event. Such records shall be retained for at least two years following the event whether or not required to be retained by regulation or license condition.

4) The licensee will make available to the IIT for questioning such individuals employed by the licensee or its consultants and contractors with knowledge of the event or its causes as the IIT deems necessary for its investigation.

5) The licensee will ensure that of any investigation to be conducted by the licensee or a third party will not interfere with the IIT investigation. The licensee will advise the IIT of any investigation to be conducted by the licensee or a third party. Reports of such investigation will be promptly provided to the IIT.

Issuance of this confirmatory action letter does not preclude the issuance of an order finalizing your commitments. The above commitments may be relaxed for good cause. If your understanding differs from that set forth above, please call me immediately.

Sincerely,

[Name]
Regional Administrator

cc: IIT Leader
NRC Office Directors
Regional Administrators

Exhibit 3

Sample Confirmatory Action Letter

Docket No. 50-373
Docket No. 50-374

Commonwealth Edison Company
Attn: Mr. Cordell Reed, Vice President
P.O. Box 767
Chicago, IL 60690

Gentlemen:

This letter confirms the telephone conversation between Charles E. Norelius and Ed Greenman of this office and Denny Galle and Denny Farrar of the reactor protection system (RPS) at LaSalle Unit 2 on June 1, 1986. At that time with the reactor operating at about 83% power and with a feedwater surveillance test in progress, one of the reactor feedwater pumps increased speed and locked up, causing reactor water level to increase. Upon reaching the high water level set point both pumps than automatically tripped, causing reactor water level to decrease. There are indications that reactor water level may have decreased to nominal plus six inches (which is below the scram set point of 12.5 inches) but the reactor did not scram. When the anomaly was discovered several hours after the event the operating staff initiated a controlled shutdown in lieu of manually scramming the reactor and declared an alert. The alert was terminated when hot shutdown was reached at about 9:30 a.m., June 2. With regard to this event and to our Augmented Investigation Team (AIT) which is being implemented to evaluate the root cause and signficance of the event, we understand that you will:

1. Determine the cause of the feedwater pump transient.

2. Conduct a thorough review to determine if water level decreased to or below the scram set point.

3. If water level decreased below the scram level, determine if a scram signal was received by the reactor protection system (RPS).

4. If such a signal was received, determine why the reactor did not scram.

5. If such a signal was not received, or if water level did not decrease below the scram level, determine if any instrumentation indicated a low water level.

6. Maintain all affected equipment related to the event, including the RPS, in such a manner that it can easily be kept or placed in the "as found" condition. Therefore, minimize any actions which would destroy or cause to be lost (other than necessary to protect the health and safety of the public) any evidence which would be needed to investigate or reconstruct the event.

CONFIRMATORY ACTION LETTER

Commonwealth Edison Company 2

7. Advise the AIT team leader, Mr. Geoffrey Wright, of this office prior to conducting any troubleshooting activities. Such notification will be soon enough to allow time for the team leader to assign an inspector to observe the activities.

8. Make available to the AIT all relevant written material related to the installation, testing, and/or modifications to the reactor level switches and the RPS.

9. Review operator and shift personnel actions following the event and determine if these actions were in accordance with your procedures and policies. Specifically, determine:

   a. What actions the on-duty operations staff took following the event.

   b. When and by whom the event was first identified.

   c. If the event was identified during shift turnover reviews or by some other method.

   d. Why event classification and notification took about 12 hours.

10. Determine if this problem is unique to Unit 2 or if similar problems could occur on Unit 1.

11. Submit a formal report of your findings and conclusions to the Region III office within 30 days.

We also understand that startup of Unit 2 will not occur without concurrence of the Regional Administrator or his designee. Such concurrence will also be obtained for Unit 1 should it be determined that Unit 1 is affected by this event.

Please let us know immediately if your understanding differs from that set out above.

Sincerely,

James G. Keppler
Regional Administrator

cc w/enclosure:
D. L. Farrar, Director of Nuclear Licensing
G. J. Diederich, Plant Manager
DCS/RSB (RIDS)
Licensing Fee Management Branch
Resident Inspector, RIII
Phyllis Dunton, Attorney General's Office,
Environmental Control Division

Exhibit 4

Sample Order to Show Cause

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	Docket No._____
[LICENSEE'S NAME]*	)	
	)	License No._____
[Facility Name]	)	

ORDER TO SHOW CAUSE (IMMEDIATELY EFFECTIVE)

I.

[Licensee's name] (the Licensee) holds License No._____, which authorizes the Licensee to operate the [name of facility] (Facility) in [location]

II.

[Brief description of the event in a paragraph or two]

III.

The NRC Executive Director for Operations has formed an Incident Investigation Team (IIT) to investigate the circumstances surrounding the incident decribed in Section II of this Order. An IIT was formed because [describe in one or two sentences the significance of the event].

The investigation is required to obtain necessary information to assure sufficient understanding of the cause of the event so that a determination may be made as to what corrective actions will be sufficient to provide reasonable assurance that operation of the facility will not create an undue risk to the public health and safety. The licensee's full cooperation is required during the investigation to permit a complete and timely investigation. [Indicate whether CAL was issued and reason why this Order is being issued in view of previous CAL; e.g., violation of terms of CAL or desire to formalize CAL commitments by Order.]

Accordingly, I have determined that the public health and safety requires that the facility license be suspended until the IIT investigation is complete, the event evaluated, and appropriate corrective action taken and, therefore, that this order be immediately effective.

---

*Bracketed and underlined areas must be completed.

IV.

In view of the foregoing, pursuant to sections 103[or appropriate section for materials license], 161(b), (c), (i), and (o), 182 and 186 of the Atomic Energy Act of 1954, or amended, and the Commission's regulations in 10 CFR 2.202 and Part 50 [or other appropriate regulations], IT IS HEREBY ORDERED, EFFECTIVE IMMEDIATELY THAT:

A) The licensee shall maintain the facility in cold shutdown [or other appropriate mode description] until the undersigned Director [or appropriate Regional Administrator] determines that there is a sufficient understanding of the causes and consequences of the incident and sufficient corrective action has been taken such that resumption of operations poses no undue risk to public health and safety;

B) The licensee will ensure that the equipment involved in the incident is not disturbed prior to release by the IIT. In this regard the licensee shall hold in abeyance any work in progress or planned on equipment that failed or malfunctioned during the event, and had an impact on the sequence of events so that evidence of the equipment's functioning during the incident will not be disturbed. This licensee shall minimize, consistent with plant safety, personnel access to areas and equipment subject to this quarantine. The licensee is responsible for quarantined equipment and can take action involving this equipment it deems necessary to: (1) achieve or maintain safe plant conditions, (2) prevent further equipment degradation, or (3) test or inspect as required by the plant's Technical Specifications. To the maximum degree possible, these actions should be coordinated with the IIT team leader in advance or notification made as soon as practical. The IIT team leader may authorize a release, in whole or in part, of those areas or equipment subject to the quarantine upon a determination that the IIT has received sufficient information concerning the areas or equipment requested to be released, or to permit necessary troubleshooting of the equipment, required testing or maintenance;

C) The licensee shall preserve intact all records that may be related to the event and any surrounding circumstances which could assist in understanding the event. Such records shall be retained for at least two years following the event whether or not required by regulation or license condition to be retained;

D) The licensee shall make available to the IIT for questioning such individuals employed by the licensee or its consultants and contractors with knowledge of the event, its causes, or consequencies as the IIT deems necessary for its investigation;

E) The licensee shall ensure that any investigation to be conducted by the licensee or a third party will not interfere with the IIT investigation. The licensee shall advise the IIT of any investigation to be conducted by the licensee or a third party. Reports of such investigation shall be promptly provided to the IIT.

V.

The licensee may show cause, within 30 days after issuance of this Order, why it should not have been required to comply with the provisions specified in Section III by filing a written answer under oath or affirmation setting forth the matters of fact and law on which the Licensee relies. The Licensee may answer this Order, as provided in 10 CFR 2.202(d), by consenting to the provisions specified in Section III above. Upon the Licensee's consent to the provisions set forth in Section III of this Order or upon failure of the Licensee to file an answer within the specified time, the provisions set forth in Section III shall be final without further order.

VI.

The Licensee, or any other person whose interest is adversely affected by this Order, may request a hearing within 30 days of the date of this Order. Any answer to this Order or any request for a hearing shall be submitted to the Director, Office of Investigation and Enforcement, U. S. Nuclear Regulatory Commission, Washington, DC 20555 with a copy to the Executive Legal Director at the same address and to the Regional Administrator, [Address]. If a person other than the Licensee requests a hearing, that person shall set forth with particularity the manner in which the petitioner's interest is adversely affected by this Order and should address the criteria set forth in 10 CFR 2.714(d). If a hearing is requested by the Licensee or any person who has an interest adversely affected by this Order, the Commission will issue an order designating the time and place of any such hearing. Any answer or request for a hearing shall not stay the immediate effectiveness of Section III, of this Order.

In the event a hearing is held, the issue to be considered at such hearing shall be whether, this Order should be sustained.

FOR THE NUCLEAR REGULATORY
COMMISSION

James M. Taylor, Director
Office of Inspection and Enforcement

Dated at Bethesda, Maryland,
this_____ day of _____ 198__.

Exhibit 5

Background Information for IIT Briefing (Compiled by Region)

1. Preliminary Sequence of Events
2. Confirmatory Action Letter and/or Order
3. Licensee Post-Trip Review
4. Control Room Operator Logs
5. Computer Alarm Printout/Strip Chart Recordings
6. Applicable Licensee Procedures
7. Applicable Licensee Technical Specification Requirements
8. Preliminary Notification
9. Licensee Press Release
10. NRC Press Release
11. Licensee Organization Chart
12. Diagram of Facility Layout
13. Applicable Piping and Instrumentation Drawings
14. Applicable Vendor Drawings and Manuals
15. SALP Reports
16. Applicable Inspection Reports
17. Applicable Licensee Event Reports
18. Applicable Maintenance Logs
19. Applicable Electrical Logic Diagrams
20. Preliminary Operator Written Statements

Exhibit 6

Sample EDO Memorandum to Commission

MEMORANDUM FOR: Chairman Palladino
Commissioner Roberts
Commissioner Asselstine
Commissioner Bernthal
Commissioner Zech

FROM: William J. Dircks
Executive Director for Operations

SUBJECT: INVESTIGATION OF NOVEMBER 21, 1985 EVENT AT SAN ONOFRE UNIT 1 WILL BE CONDUCTED BY AN INCIDENT INVESTIGATION TEAM (IIT)

At about 5:00am on November 21, 1985, San Onofre Unit 1 experienced a loss of an auxiliary transformer. Subsequently, a partial loss of electrical power occurred and the control room lighting was lost. The reactor was manually scrammed which resulted in a short-term loss of all AC power. A sizeable, unisolable leak was then identified in the feedwater system which is used to maintain steam generator levels, and other failures were experienced in the plant equipment. The plant is now in cold shutdown. There were no releases and adequate core cooling was maintained at all times.

Because of the nature and complexity of this event, I have requested AEOD to take the necessary action to send a five member IIT of technical experts to the site to: (a) fact find as to what happened; (b) identify the probable cause as to why it happened; and (c) make appropriate findings and conclusions which would form the basis for any necessary follow-on actions.

The team will report directly to me and is comprised of: Thomas T. Martin, Director of the Division of Engineering and Technical Programs, Region I; Mr. Wayne Lanning, Chief, Incident Investigation Staff, AEOD; Mr. Steven Showe, Chief, PWR Training Branch, IE - Chattanooga; Mr. William Kennedy, Safety Operational Engineer, Division of Human Factors, NRR; and Mr. Matthew Chiramal, Chief, Engineering Section, AEOD. The team was selected on the bases of their knowledge and experience in the fields of reactor systems, reactor operations, human factors, and power distribution systems. Team members have no direct involvement with San Onofre Unit 1. The team is currently enroute to the site.

The licensee has agreed to preserve the equipment in an "as-found" state until the licensee and the NRC Team have had an opportunity to evaluate the event. The licensee's actions have been confirmed by the Regional Administrator in a Confirmatory Action Letter which was issued on __/__/__ The licensee has also agreed to maintain Unit 1 in a shutdown condition until concurrence is received from the NRC to return to power.

The IIT report will constitute the single NRC fact-finding investigation report. It is expected that the team report will be issued within 45 days from now.

William J. Dircks
Executive Director for Operations

cc: SECY
OPE
OGC
ACRS
PA
Regional Administrators

Conduct of Investigation

GUIDELINES FOR CONDUCTING AN INCIDENT INVESTIGATION

IIT Procedure 2

2.1 Purpose:

To provide guidelines for conducting an Incident Investigation Team (IIT) investigation.

2.2 General

The objectives of the IIT are to: (1) conduct a timely, thorough, systematic, and independent investigation of safety-significant events that occur at facilities licensed by NRC; (2) collect, analyze, and document the factual information and evidence sufficient to determine the probable causes, conditions, and circumstances pertaining to those events; and (3) determine whether the regulatory process prior to the event contributed to the cause or course of the event.

To meet these objectives, the investigation includes four major activities: the collection of data and information; the analysis and integration of the facts; the determination of findings and conclusions; and the preparation and presentation of the team's report.

These guidelines are intended to assist the investigation rather than limit the initiative and good judgment of the team leader or members; they should use their experience and those techniques that provide the most confidence in assuring that IIT objectives are achieved.

2.3 Scope of the Investigation

The scope of an IIT investigation should include conditions preceding the event, event chronology, systems response, human factors considerations, equipment performance, precursors to the event, emergency response (NRC, licensee, and Federal and State agencies), safety significance, radiological considerations, and whether the regulatory process and activities preceding the event contributed to it.

The scope of the investigation does not include:

1. Assessing violations of NRC rules and requirements; and

2. Reviewing the design and licensing bases for the facility, except as necessary to assess the cause for the event under investigation.

Follow-up actions associated with the IIT process do not necessarily include all licensee actions associated with the event, nor do they cover NRC staff activities associated with normal event follow-up such as authorization for restart, plant inspections, corrective actions, or possible enforcement items. These items are expected to be defined and implemented through the normal organizational structures and procedures.

2.4 Team Leader Responsibilities

The team leader manages the investigation and delegates responsibilities to team members and to the Incident Investigation Staff. Specific responsibilities include:

1. Directing and managing the IIT in its investigation and assuring that the objective and schedules are met for the investigation, as defined in NRC Manual Chapter 0513.

2. Identifying, adding and removing equipment from the quarantined list within the constraints of ensuring plant safety and determining causes for equipment anomalies.

3. Serving as principal spokesperson for the IIT and the point of contact for interaction with the licensee, NRC offices, ACRS, news media, and other organizations on matters involving the investigation.

4. Preparing frequent status reports documenting IIT activities, plans, significant findings, and safety concerns that may require prompt NRC action, e.g., issuance of Information Notices, Bulletins, or Orders.

5. Organizing IIT work, including the establishment of schedules, plans, work tasks, daily team meetings, etc.

6. Assigning tasks to team members in accordance with their knowledge, experience, and capabilities.

7. Not permitting team members to dilute their investigative commitments with any other work assignments: their sole work activity should be incident investigation until the report is published.

8. Administering resources provided and obtaining resources needed to properly carry out all necessary investigative tasks (e.g., obtaining additional team members, consultants, contractor assistance).

9. Ensuring plant safety and that investigative activities do not unnecessarily interfere with plant activities.

10. Initiating requests for information, witnesses, technical specialists, laboratory tests, and administrative support.

11. Controlling proprietary, safeguards and other sensitive information to "need to know" and cleared personnel.

12. Handling all communications with NRC headquarters and regional officials.

13. Informing the EDO of all significant findings, developments, and investigative progress. Requesting that the EDO grant an appropriate extension of time if established deadlines cannot be met.

14. Consulting frequently with IIT members to ensure a team approach to the investigation in matters such as revising the report outline, assigning member responsibilities, discussing the list of items that should be

closed out before leaving the site, identifying investigatory milestones, and seeking consensus on the contents and relevant information to include in status and final reports.

15. Ensuring, in cooperation with the team members and the technical writer/editor, preparation of the final report within the due date established by the EDO.

16. In the event that the IIT response is changed to an AIT response or vice versa, the team leader ensures that frequent and successful communications occur among the AIT, IIT, and the licensee during the upgrading or downgrading to ensure an orderly transition. (See Procedure 1, "Activating an IIT.")

2.5 Role of the Region

The responsibilities of the Region during an IIT investigation are to: (1) provide assistance in briefing and providing background information to the IIT when it arrives onsite, (2) provide onsite support for the IIT, and (3) identify and provide staff to monitor licensee troubleshooting activities to assess equipment performance. In general, a regional representative will be designated by the Regional Administrator who will be responsible for ensuring a smooth and orderly interface with the IIT. The following is a list of regional activities accomplished prior to and during an IIT investigation to ensure a coordinated effort between the IIT and the Region.

1. Prepare a briefing package prior to the IIT's arrival. See "Guidelines for Activating an IIT" (IIT Procedure 1).

2. Consider the need for a Regional Public Affairs Officer onsite.

3. Establish a single point of contact in the Region.

4. Coordinate the Confirmatory Action Letter commitments for the Region with the licensee.

5. Negotiate with the licensee for sufficient office space for the IIT.
   a. Conference Room
   b. Two rooms for interviewing
   c. Adequacy of telephones (include at least one conference call telephone)

6. Obtain secretarial support for IIT administrative workload. The secretary should safeguard transcripts and monitor interviewees during the review of transcripts. See "Guidelines for Conducting Interviews" (IIT Procedure 3).

7. Make arrangements for obtaining escorted or unescorted site access for IIT members, as determined by the team leader.

8. Schedule a tour of the plant.

9. Have a regional representative attend all meetings between the IIT and the licensee.

10. Provide regional staff, as necessary, to monitor the licensee's troubleshooting activities of quarantined equipment. See "Guidelines for the Treatment of Quarantined Equipment" (IIT Procedure 4).

2.6 Initial Actions by the Team Leader

1. Prior to arriving onsite, the team leader should brief the team on the event, on the scope of the investigation, and on how the team will function.

2. During this briefing, the team leader should assign each team member a specific area of responsibility, e.g., compiling the sequence of events, examining equipment performance, determining the human factors issues.

3. Upon arriving at the site, the team leader should give priority attention to: (a) initiating a meeting with the licensee to learn what is known about the event and to reach an understanding with the licensee about the IIT's activities; (b) scheduling interviews with personnel having a direct knowledge of the event; (c) developing a detailed sequence of events; (d) compiling a quarantined equipment list and troubleshooting action plans; and (e) responding to press inquiries.

4. The team leader should ensure that arrangements have been made for those items requiring licensee assistance. These could include:

   a. Scheduling an entrance meeting with licensee management as soon as practicable to discuss the event and the IIT investigation. Arranging for a meeting location in advance to allow sufficient time for stenographers to prepare to transcribe the meeting.

   b. Scheduling a tour of the plant to begin immediately after the entrance meeting to inspect the affected systems and equipment and to gain familiarity with the plant.

   c. Determining if the licensee wishes to provide photographic services during the investigation.

   d. Establishing a preliminary schedule for interviewing personnel having personal knowledge of the event (e.g., licensee staff and NRC residents). (A list of potential interviewees should be provided to the IIT by the licensee pursuant to the Confirmatory Action Letter.) Interviewing should begin after the entrance meeting and plant tour. The IIT should schedule the most senior personnel first and give special consideration to resolving conflicts between the interview schedule and employee work schedule.

   e. Establishing a preliminary list of all failed equipment and any equipment suspected of performing abnormally during the event. This list constitutes the initial quarantined equipment list (QEL) to be discussed during the entrance meeting.

5. Incident Investigation Staff (IIS) will accompany and provide technical and administrative support to the IIT. The team leader should obtain additional administrative support from the Region, e.g., background documents, secretarial support, regional liaison. Such support could include:

a. Providing a briefing package for each member of the team; See "Guidelines for Activating an IIT" (Procedure 1)

b. Obtaining a meeting room to conduct IIT organizational meetings and daily business;

c. Identifying and distributing telephone numbers and site locations to establish communications for the IIT;

d. Confirming that the room(s) for conducting personnel interviews are available as previously requested by the Incident Investigation Staff (IIS); and

e. Obtaining unescorted access to the protected area for IIT personnel is preferred. However, if time does not permit the completion of training for unescorted access, the team leader should arrange to obtain escorted access.

2.7 Entrance Meeting with the Licensee

The objectives of the entrance meeting are to: (1) establish rapport with and enlist the cooperation of the licensee, (2) discuss the purpose and scope of the IIT investigation, (3) obtain the licensee's understanding of what occurred and why it occurred, and (4) request assistance from the licensee in obtaining information and resources. During the entrance meeting:

1. The team leader will be the lead spokesman for the NRC and will be responsible for directing the me.t.ng and ensuring that all the major objectives of the meeting are covered.

2. The stenographers must receive accurate information regarding the names of those speaking, their job titles, and their employers. For additional information, see the procedure entitled, "Guidelines for Conducting Interviews."

3. One team member should circulate an attendance sheet among those present at the meeting.

4. The team leader should make an opening statement similar to the following:

   The purposes of the incident investigation team are to establish what happened, to identify the probable causes, and to document our findings and conclusions and issue a report within about 45 days. We will also be issuing status reports to our headquarters to keep them informed on the progress of our investigation. The investigation is not a re-analysis of the plant design, nor is it a compliance inspection, although our report can be used to form the basis for enforcement actions. We request that any information available as a result of your or other investigations be shared with us.

   There are several things we would like to accomplish at this meeting. First, we want to get up to speed on your understanding of what occurred and your hypothesis of why it occurred. Second, we would like to establish our interfaces for the investigation where we can seek technical information or ask for assistance such as escorts or looking at any particular pieces of technical documentation or equipment involved in the event.

Finally, we would like to review with you our investigation process which includes interviews, the troubleshooting of quarantined equipment, the handling of press inquiries, and the exchanging of information between your staff and the team. That is our agenda for this meeting.

5. Licensee personnel should be allowed to describe what happened with few interruptions. The team should then identify additional personnel for interviews and followup topics to evaluate.

6. The team leader should request that the licensee post a notice on all plant bulletin boards and major points of ingress and egress describing the purpose of the IIT investigation and soliciting information regarding the event (Exhibit 1).

7. The team leader should review with the licensee the preliminary list of failed equipment and equipment suspected of performing abnormally during the event. This list constitutes the initial quarantined equipment list (QEL). The list should be maintained by the licensee and be as current and complete as possible and should generally include only equipment significantly involved in the event that failed to perform its intended function. See "Guidelines for the Treatment of Quarantined Equipment," IIT Procedure 4.

8. The team leader should indicate that the licensee can take any action involving the QEL desired necessary to: achieve or maintain safe plant conditions, prevent further equipment degradation, or conduct testing or inspection activities required by the plant's Technical Specifications. To the degree possible, these actions should be coordinated with the team leader in advance or notification made as soon as practical afterward.

9. The team leader should confirm with the licensee that equipment on the QEL will be clearly identified and secured, and that no work will be initiated until an action plan for each component is developed and approved by the team.

10. The team leader should request that the licensee provide a preliminary sequence of events and update it as additional information and data become available.

11. The IIT should review with the licensee all aspects of the IIT investigation process, including interviews, the troubleshooting of quarantined equipment, the handling of press inquiries, and the exchange of information between the IIT and the licensee.

12. The IIT should request two copies of all documents (e.g, the computer sequence of events or data logging, relevant procedures, operating instructions, detailed plant design information), and arrange to have all documents sent to a designated receiving office.

13. The IIT should provide the licensee with a copy of the following documents:

    a. Generic Guidelines for Troubleshooting the Probable Causes for Equipment Anomalies (see IIT Procedure 4, Exhibit 2).

b. Example Action Plans used for troubleshooting quarantined equipment (see IIT Procedure 4, Exhibit 3).

c. Guidelines for Review and Availability of Transcripts (see IIT Procedure 3, Exhibit 1).

14. The team leader should request that the licensee establish a liaison for communications with the IIT.

2.8 Plant Tour of Equipment and Systems

1. The inspection of plant equipment and systems involved in the event and other relevant plant features (e.g., control room) should be scheduled after the entrance meeting and prior to personnel interviews.

2. During the plant tour, preliminary observations, issues and considerations should be written down as a basis for questions to ask of licensee personnel during interviews.

3. Although the IIT will be provided with the necessary equipment to have photographic capability, if the licensee wishes to provide this service, it should be given the opportunity to do so during the investigation. Photographs of equipment should contain something of known size (a ruler, hand, or person) to show the relative size of the object photographed.

4. The photographer should maintain a log that indicates the subject of each photograph. Each photograph should be assigned a number and include a brief description of the subject. The resident inspector may be available to assist in identifying information for the photographer.

2.9 Interviewing Personnel

1. For guidance on interviewing, refer to IIT Procedure 3.

2. Following the plant tour, the IIT should begin the interviews with the most senior individual with direct personal knowledge of the event.

3. Individuals initially interviewed onsite often include: control room operators, the shift technical advisor (STA), plant/equipment operators, security personnel, site management, corporate personnel, health physicists, technicians, casual observers/witnesses, NRC resident inspectors, and local officials and residents if appropriate.

4. Later in the investigation, when attention is turned to the evaluation of pre-existing conditions or about how the regulatory process may have contributed to the event, additional interviews of licensee or NRC staff may be necessary. While the number of interviews should be minimized (to individuals with direct knowledge), cognizant management personnel should be interviewed to understand the context and priority of actions which were or were not apparently taken.

2.10 Sequence of Events

1. The IIT should compile a detailed sequence of events based on the one provided by the licensee, on information obtained during interviews, and

on material specified below and review it with the licensee. The IIT's sequence of events should be issued in a Preliminary Notification (PN) within 3 to 5 days after arriving on site. The sequence of events is one of the IIT's most important findings. It not only provides a step-by-step description of the event, but it can help to focus the investigation, identify where more information is required, and generally provides an overall understanding of the event. Exhibit 2 contains a sample sequence of events.

2. The sequence of events should consider, resolve, and integrate relevant information and data. Such information could include:

   a. The licensee's sequence of events;

   b. The output from the plant's data logging systems;

   c. Operators' plant logbooks and control room instrumentation records (i.e., strip charts); and

   d. Personnel observations from interviews.

3. Areas of uncertainty and contradictory information should be pursued and resolved by methods such as additional interviews, submittal of written questions to the licensee, or additional analyses of available information.

4. The sources of information identifying an event for the sequence of events should be documented for future reference.

2.11 Development of the Quarantine Equipment List (QEL)

1. For specific guidance on the QEL and action plans, refer to IIT Procedure 4.

2. As noted previously, agreements should be reached during the entrance meeting on the preliminary QEL and the fact should be clarified that no work will begin prior to IIT approval of action plans.

3. The status of equipment on the QEL should be updated and revised based upon the sequence of events, personnel interviews, data reviews, etc.

4. The regional or resident's office should be requested to help monitor this equipment and the implementation of the equipment action plans.

2.12 Responding to Press Inquiries

1. A news conference may be desirable. If so, it should be scheduled as soon as possible after the arrival of the team leader. The Regional Public Affairs Officer will be available onsite to arrange the news conference and be the point of contact for the news media. The Regional Public Affairs Officer, IIT leader, and the licensee should coordinate press conferences and responses to press inquiries.

2. The IIT leader will be the lead spokesperson for IIT activities and should limit discussions during and subsequent to the news conference to the scope and purpose of the investigation, to the IIT process, and to the team's sequence of events. Information provided to the press about the event should be identified as preliminary and subject to confirmation.

3. If determined necessary, in consultation with OPA, a headquarter or a regional representative will be available to participate in the news conference.

2.13 IIT Coordination Meetings

Periodic progress meetings are an important coordinating technique for the IIT leader and a way of keeping each team member up-to-date of the progress of the team's activities. The team should meet at the end of each day to review results obtained by all team members and to plan the team's activities for the following day.

2.14 Identifying Additional Expertise and Outside Assistance

1. The team leader should assess the need for additional expertise, particularly during the initial phase of the investigation.

2. Obtaining additional NRC or contractor personnel should be considered if certain aspects of the event are unique (e.g., security, water hammer, radiological, physics) and beyond the expertise of existing team members, or if the complexity of the event is sufficient to warrant additional staff.

3. NRC personnel are available to conduct nondestructive examinations (NDE) activities on a wide variety of equipment and components. Mobile NDT vans can be sent to the site if appropriate. NRC personnel are also available to conduct radiation surveys and analyses. See Exhibit 1 to Procedure 1 for description of NDE capabilities.

4. The team leader should discuss requests for additional assistance with the Director of the Office for Analysis and Evaluation of Operational Data (AEOD) or the Chief of the Incident Investigation Staff (IIS), either of whom will make the necessary arrangements with the Executive Director for Operations (EDO).

2.15 Industry Participation in the Investigation

Industry representatives may participate as full-time members of the IIT. In these cases, they will have responsibilities and privileges equal to other team members.

Note: It is essential that security, proprietary and other sensitive information be available to only suitably cleared individuals with a need to know. For non-NRC-team members, the team leader should assure that a statement of confidentiality (under development) has been signed.

2.16 Parallel Investigations

Normally, the IIT will provide NRC's primary investigation of an event. Consequently, it is expected that other investigations, by the licensee or by industry will be conducted in ways that do not interfere with the IIT. Should the team's activities be impeded, delayed or limited because of parallel investigations, the team leader should try to resolve the problem with the licensee and/or appropriate organization. If attempts fail or the situation is not resolved to the satisfaction of the team leader, the team leader should bring the situation immediately to the attention of the Director of AEOD, who will coordinate the agency response to the situation with the EDO, Office of General Counsel (OGC), Regional Administrator, and other NRC offices.

In rare instances where a parallel investigation is being conducted by another NRC office, such as the Office of Investigation (OI) or the Office of Inspector and Auditor (OIA), coordination between the two investigative bodies, and between AEOD and the respective NRC office should be established to avoid hindering the efforts of either investigation.

If the Institute of Nuclear Power Operations (INPO) is developing a Significant Event Report (SER) on the event, they will attempt to assure that the SER is not inconsistent with the facts of the event as understood by the IIT. This will be accomplished by INPO providing a draft of the SER to the licensee prior to issuance. The licensee will coordinate review of the SER with the IIT, and will assure any inconsistencies are made known to INPO so they can be resolved prior to issuance of the SER by INPO.

2.17 Status Reports

1. The IIT should issue a Preliminary Notification (PN) Report at the end of the first day of the investigation. The PN will be prepared by the IIT on-site and transmitted to the appropriate Region for distribution. The PN should provide a brief description of the event, current plant status, current licensee and IIT activities, and the names and phone numbers of IIT contacts. In general, the IIT leader and assistant team leader* will serve as IIT contacts during the investigation. A sample PN is included in Exhibit 3. The PN number is PNO-IIT-(year)-(number of this IIT this year)(letter identifying series of PNs).

2. The IIT should issue subsequent PNs periodically (every 2 to 4 days while on-site) to update IIT activities for the regional and headquarter offices.

3. When the sequence of events is well understood, the IIT leader should suggest a conference call with the EDO, the Office of Nuclear Reactor Regulation (NRR), the Office of Inspection and Enforcement (IE), AEOD, and the Region to inform them of the team's information and to respond to their questions. If in the course of the investigation significant new information is identified, the IIT leader should promptly inform the EDO by telephone.

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* The IIT will normally have an assistant team leader from the Incident Investigation Staff in AEOD.

TRIAL U...

2.18 IIT Recordkeeping Activities

1. During an IIT event investigation, all interviews and some meetings will be recorded by stenographers who will prepare typed transcripts. The interviews and meetings are transcribed to assist the team in gathering information to minimize note taking and to reduce inconsistencies and inaccuracies.

   a. All investigative interviews should follow IIT Procedure 3, "Guidelines for Conducting Interviews."

   b. In general, a record will not be made of discussions between the team and licensee personnel about routine administrative matters.

   c. All transcripts of interviews should be handled in accordance with the guidelines for review and availability of transcripts (see IIT Procedure 3, Exhibit 1), and the procedures for the handling of transcripts (see IIT Procedure 3, Exhibit 2).

2. The IIS management assistant or other NRC staff assigned to the IIT investigation, will be responsible for document control.

   a. The team members should ensure that all documents are provided to the Administrative Assistant for proper control and disposition.

   b. All documents received and reviewed during an IIT investigation will be handled in accordance with the IIS administrative procedure entitled "Records and Documentation Control" (Exhibit 4).

   c. Documents containing sensitive information (e.g., proprietary, safeguards) will be appropriately identified by licensee, properly marked on the outside cover, and stored in a safe or locking file cabinet maintained by the resident inspector's office.

   d. At the conclusion of the onsite investigation, the boxes of documents should be shipped express mail to the Chief of the IIS at NRC headquarters at the following address:

      Chief, Incident Investigation Staff
      Nuclear Regulatory Commission
      4340 East West Highway, Room 263
      Bethesda, MD 20814

      After the IIT departs the site, correspondence and requested documents should be express mailed to the above address.

2.19 Collection of Information

All information obtained by team members will be brought to the attention of the IIT leader. Representatives may orally discuss verified factual event-related information to nuclear industry organizations with the approval of the team leader. This information should be transmitted only for purposes of prevention, remedial action, or other similar reasons to ensure public health

and safety. The representatives will keep the IIT leader apprised of all information pertinent to the event. Common sense and good judgment must predominate in this matter. Contacts with news media will be made in accordance with established IIT procedures as described in Section 2.12. (See Procedure 2.)

The team will collect relevant information and documentation upon which to base findings and conclusions. The types of information that are generally available and should be considered for use by the team are listed in Exhibit 5.

2.20 Referral of Investigation Information to NRC Offices

During an IIT investigation, the team may learn directly of allegations, potential wrongdoing or information that should be referred to other organizations for followup and disposition. The team leader has the responsibility to identify situations warranting referral and to make the appropriate notifications when referral is appropriate. Guidelines regarding referral of information to the Office of Investigations (OI), the Office of Inspector and Auditor (OIA), and the Office of Nuclear Material Safety and Safeguards (NMSS) is contained in Exhibit 6.

2.21 Confidentiality

The NRC's inspection and investigatory programs rely primarily on individuals voluntarily providing accurate information. Some individuals, however, may provide needed information only if they believe their identities will be protected from public disclosure, i.e., only if they are given confidentiality. In cases where the IIT leader believes that needed information will only be obtained by providing assurance that the NRC will not identify the individual (i.e., source of the information) the team leader should contact the Director of AEOD, who will coordinate the situation with the EDO, OGC, and others in order to decide whether confidentiality can be granted by the team leader. Procedures regarding the granting and revoking of confidentiality (taken from NRC Manual Chapter 0517, "Management of Allegations") are contained in Exhibit 7.

2.22 Subpoena Power and Power to Administer Oath and Affirmation

Subpoena power is available to the NRC to assist it in gathering information which is related to the agency's public health and safety mission. Most investigations conducted by the NRC are accomplished without the need for a compulsory process because most interviews and information are given voluntarily. Consequently, whenever information is considered to be vital to the investigation, and the individual or entity refuses to either be interviewed or provide documentary information, the team leader should immediately bring the situation to the attention of the Director of AEOD, who will coordinate the agency response to the situation with the EDO, OGC, Regional Administrator and the Director of IE.

In general, oaths are administered to ensure that individuals interviewed properly recognize the gravity of the situation. The point at which an oath is administered depends upon the circumstances surrounding the interview. During an IIT investigation, should the situation occur where the administering of an oath is seriously being considered, the team leader should contact the Director of AEOD, who will coordinate the situation and, if appropriate, obtain

a delegation of authority to administer oath and affirmation to the team leader. Guidelines for administering oath and obtaining affirmation (taken from the OI Investigation Manual) are contained in Exhibit 8.

2.23 IIT Investigation Sequence

1. The initial onsite visit, normally lasting one to two weeks, is completed when the team has completed the following activities:

   a. A plant tour and inspection of equipment,

   b. All onsite interviews,

   c. A detailed sequence of events,

   d. The quarantined equipment list and corresponding troubleshooting action plans. (If neither has been approved by the team leader, the IIT must establish an agreed upon schedule for the licensee to transmit them to the IIT in Bethesda.), and

   e. Arrangements with regional personnel for the monitoring component troubleshooting activities.

2. The analysis and integration phase begins as information is collected and continues in an iterative fashion throughout the investigation. Normally the team will convene in Bethesda to analyze the relevant factual information and pursue the probable causes for the operating event. Well-chosen, analytical methods when correctly applied, can guide the fact-finding process and ensure a thorough, forthright, and hard-hitting investigatory analysis of the facts. Some of the analytical methods that were taught during the IIT training course and which have been proven valuable and effective in accident investigations include:

   a. Engineering judgment

   b. Causal factors analysis

   c. Change analysis

   d. Management Oversight and Risk Tree (MORT) analysis

   The results of these analyses should be integrated and compared to identify any discrepancies or conflicts. The resolution of contradictory information (e.g., from interviews, observations, data) is a critical activity necessary to ensure the success of the investigation and to provide an accurate and credible report. Analytical techniques, such as cross-checking information, should help to uncover inconsistencies and discrepancies so that they can be resolved.

   The team should use all practical means to resolve discrepancies, e.g., re-interview personnel, review and validate information, separate facts from hypotheses. If the discrepancy cannot be resolved, and is important to the outcome of the investigation, the report should so indicate and detail the attempts made to resolve it.

2.24 Return Site Visit

Typically about 4 weeks after the event, the team should schedule a return site visit (as needed) to review any significant findings from the licensee's investigation, particularly from the troubleshooting activities conducted on quarantined equipment.

2.25 Report Preparation and Presentation

Each team member will participate in a complete review of the team's investigative report for technical accuracy and adequacy of the scope of the nvestigation in his/her particular area of technical expertise. The IIT leader will obtain each team member's concurrence on the report signifying that the team member has reviewed the report and that any differences of professional opinion have either been resolved or documented in an appendix to the report. Courtesy copies of the IIT final report will be provided to the participating team members.

An outline of the report should be developed before the conclusion of the onsite investigation and assignments made of specific sections to team members. This phase of the investigation is addressed by an IIT procedure on report preparation (IIT Procedure 5), which includes a detailed schedule. The team leader will be expected to orally brief the EDO about the report within about 40 days, with the advance copy of the report sent to the EDO and the Commission within about 45 days. Following issuance of the advance copy, the team will brief the Commission in an open meeting and subsequently the Advisory Committee on Reactor Safeguards (ACRS) on IIT findings and conclusions. The team's report is also issued in final form as a NUREG document.

Exhibit 1

Bulletin Board Notice

(Current Date)
POST ON ALL BULLETIN BOARDS

TO: SITE PERSONNEL

SUBJECT: (Date of Event), (Event Description)

The subject incident is being investigated by an independent team of NPC personnel. The purpose of the team is to establish what happened, to identify the probable cause(s), and to provide appropriate feedback to the industry regarding the lessons learned from the incident.

Anyone having information or observations that relate to this event, and wishing to communicate this information to the investigating team may contact (Team Leader) or (Assistant Team Leader) at (phone number) or (phone number).

Team Leader

Exhibit 2
Sample Sequence of Events

INCIDENT INVESTIGATION TEAM
PRELIMINARY SEQUENCE OF EVENTS

INITIAL PLANT CONDITIONS

- Unit operating at steam state power of 76% [710 MW(e)].
- Reactor Coolant System (RCS) average temperature is 582°F.
- RCS pressure is 2150 psig.
- This plant does not have Main Steam Isolation Valves (MSIVs).
- The plant had started up on December 24, 1985 following an outage of 2 days.
- Integrated Control System (ICS) in full automatic.
- The Bailey computer was out of service (one of the plant's two main computer systems in the Control Room). Consequently, the Bailey post-trip review, Bailey alarms printout, and Bailey input to the Interim Data Acquisition and Display System (IDADS) are not available. IDADS inputs from sources other than the Bailey computer are available.

TIME	DESCRIPTION OF EVENT	DATA SOURCE
Transient Initiation		
04:13:47	"Loss of ICS or Fan Power" Annunciator Alarm.	IDADS Printout
	Loss of ICS is caused by the simultaneous deenergizing of all redundant ICS DC power supplies. ICS demand signals go to midscale. (The ICS works on +/- 10 volt scale, with zero volts being 50% demand). The startup and Main Feedwater (MFW) valves close to 50° because of this decrease in demand signal. The loss of ICS power, however, causes the MFW pump speed to decrease to the minimum speed of 2500 RPM. With the plant initially at 76% power, this reduction in MFW flow increases RCS pressure.	
	The loss of ICS DC power also sends demand signals to one of two sets of Auxiliary Feedwater (AFW) flow control valves, the Atmospheric Dump Valves (ADVs) and the Turbine Bypass Valves (TBVs) to open to 50% demand.	

(Note: The plant has two parallel sets of AFW valves. One set is controlled by the ICS and one set is controlled by the Safety Features Actuation System).

Operator/System Response to the Loss of ICS Power

04:13:?	Control room operators notice MFW flow decreasing rapidly. Also, they notice RCS pressure increasing. Operators open the pressurizer spray valve in an attempt to stop the RCS pressure increase. Due to rapid overheating of the RCS by the reduction in MFW flow (it appears that MFW flow actually decreased to zero), the actuation of pressurizer spray is not sufficient to reverse the RCS pressure increase.	Operator Statement
04:14:01	The reduction in MFW pump speed causes a low MFW pump discharge pressure of less than 850 psig which automatically starts the motor driven AFW pump.	IDADS Printout
04:14:03	Reactor trip on high RCS pressure. The turbine trip is also initiated by the reactor trip. A Control Room operator closes the pressurizer spray valve.	IDADS Printout
04:14:04	Peak RCS pressure of 2298 psig. Several Main Steam Safety Valves are believed to have lifted and reseated early in the event.	IDADS Printout
04:14:06	AFW dual drive (i.e., steam & electric) pump autostarts on low MFW pump discharge pressure (850 psig). This AFW pump is steam-driven throughout this transient.	IDADS Printout
04:14:06	Peak RCS hot leg temperature of 606.5°F.	IDADS Printout

Operator/Systems Response to the Plant Trip and Overcooling

04:14:?	Immediately upon reactor trip, many fire alarms, the Technical Support Center (TSC) spray actuation alarm, the seismic trouble alarm, and Spent Fuel Pool (SFP) temperature high alarms are received. The significance of this is still being assessed.	Operator Statement

	The operators perform the actions of the Emergency Procedure section E.01 (Reactor Trip Immediate Actions). This includes reducing RCS letdown flow. Operators then proceed with Emergency Procedures section E.02 (Vital System Status Verification).	
04:14:11	AFW flow begins to both Once-Through Steam Generators (OTSGs) through the ICS-controlled AFW Flow Control Valve.	IDADS Printout
04:14:25	Operators note pressurizer level decreasing, and fully open the "A" injection valve for more makeup flow to RCS.	Operator Statement IDADS Printout
04:14:30	The loss of ICS power also results in loss of manual (i.e., hand) control of ICS controlled valves from the Control Room. Therefore, non-licensed operators are sent to close the TBVs, ADVs, and AFW flow control valves. (Note: The ADVs and TBVs could have been shut from the Remote Shutdown Panel. However, the operator failed to remember this fact).	Operator Statement
	The operators recognize the beginning of an overcooling transient due to the open startup and main MFW valves the half open TBVs and ADVs, the open AFW flow control valves, along with MFW speed remaining at around 2500 RPM.	
04:14:48	Makeup tank (MUT) level decreasing rapidly. Operators open the Borated Water Storage Tank (BWST) suction valve on the "A" side to provide an additional source of makeup water.	Operator Statement
04:15:04	Operators start the "B" HPI pump to increase makeup flow to the RCS from the BWST.	IDADS Printout
04:16:02	Operators trip both MFW pumps.	IDADS Printout/ Operator Statement
	MFW flow indication on the Control Room strip charts indicates about 3.5 million pounds per hour. However, this MFW flow indication passes through modules powered by ICS and, therefore, the loss of ICS power causes this indicator fail to midscale. The actual MFW flow rate indicated by the IDADS printout decreased to zero upon reactor trip and does not begin increasing again before the reactor operators trip the MFW pumps. The actual MFW flow rate	

remained at zero due to the increased pressure in both OTSGs and the low speed demand to both MFW pumps.

Exhibit 3
Sample Preliminary Notification Report

DATE: 11/26/85

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE--PNO-IIT-85-28

This preliminary notification constitutes EARLY notice of events of POSSIBLE safety or public interest significance. The information presented is preliminary, requires further evaluation and is basically all that is known by the IIT on this date.

FACILITY: Southern California Edison Company
Unit 1

Docket No. 50-206

Emergency Classification
_X_ Notification of Unusual Event
___ Alert
___ Site Area Emergency
___ General Emergency
___ Not Applicable

SUBJECT: Status Report from NRC Incident Investigation Team

The Incident Investigation Team (IIT) remains onsite gathering data, conducting interviews, inspecting equipment, meeting with the licensee, concurring in licensee action plans and analyzing facts. A preliminary sequence of events has been developed by the IIT and is attached. A set of preliminary hypotheses explaining the significant events has been developed by the IIT and are being investigated.

All interviews should be completed on November 27, 1985. All licensee action plans for further troubleshooting and uncovering remaining event related information should be finalized on November 28, 1985. Assuming the combination of information possessed by the IIT and the licensee action plans to uncover additional facts appear adequate to project closure of significant open issues, the IIT intends to depart the site by December 1, 1985, and to reassemble in Bethesda, Maryland.

A final status report will be issued prior to the IIT's departure from the site.

CONTACT: T. Martin 714-492-2641
W. Lanning 714-492-2641

Exhibit 4
Records and Documentation Control

Purpose: To establish Incident Investigation Staff (IIS) guidelines for collecting and maintaining records, documents, data and other information.

Procedure - General

One objective of the Incident Investigation Team (IIT) is to collect, analyze and document sufficient factual information and evidence to determine the probable causes, conditions, and circumstances pertaining to the event. In order for the IIT to achieve this objective, it must preserve and control the information collected during the investigation. The IIT should take measures to assure that all evidence will be handled in a systematic manner to minimize the probability of lost information, and so that information collected during the progress of the investigation is readily available and retrievable. Ordinarily, the IIS members assigned to the IIT will be responsible for maintaining and controlling the information collected.

Procedures - Specific

1 Documents containing sensitive information, (e.g., proprietary, safeguards) will be appropriately identified by the licensee and clearly marked on the outside cover.

2. All documents containing sensitive information, including transcripts, will be stored in a safe or locking file cabinet maintained by the resident inspector's office.

3. Access to sensitive information will be limited to IIT personnel who have the appropriate security clearance and on a "need-to-know" basis only.

4. At the conclusion of the onsite investigation, the documents containing sensitive information will be sent to headquarters where they will be stored in a safe maintained by the IIS.

5. After the issuance of the IIT investigation report, any documents containing safeguards information will either be turned over to the Office of Nuclear Material Safety and Safeguards for proper disposition or destroyed.

6. Arrangements should be made with the licensee to have all documents pertaining to the investigation delivered to a designated office. In general, the resident inspector's office will generally be designated as the central receiving office for all documents during the IIT investigation, unless other arrangements have been made.

7. As a minimum, the licensee should be requested to provide two copies of each document submitted to the IIT. Additional copies will be requested, as needed, by the IIT.

8. All incoming documents will be numbered in the order in which they are received. The number should be placed on the upper right-hand corner of the document. One copy of the document will be made available to the IIT. Additional copies will be made, as requested by the IIT. The record copy will be placed in a chronological file maintained by the IIS Management Assistant.

9. The team leader should establish a method to route incoming documents to the appropriate team members. The team leader can review all incoming documents first and then decide on the proper routing disposition, or each team member can periodically review a printout of the document file to determine if they need to review any of the incoming documents. Whatever method the team leader chooses, it is important that information is disseminated quickly and to the proper team members for review.

10. When the incoming documents are numbered, the document name will be entered into a document file maintained by the IIS Management Assistant. Data entered into the file must be sufficiently accurate to uniquely identify the document. (When possible, the reference format style in the NRC Style Manual, NUREG-0650 and in NUREG-0650, Supplement 1 should be used.) The document file will be updated periodically and the IIT will be provided with a printout. Enclosure 1 shows a sample document file.

    The listing of documents, or "bibliography" is used primarily by the IIT to retrieve documents from the IIT document file. After the investigation, the bibliography is used by the Public Document Room in making the collected information available to the public.

11. Identification and labeling of all photographs are essential. Enclosure 2 shows a sample log sheet that should be filled out by the photographer when each picture is taken. If time or other circumstances do not permit the log sheet to be filled out when the pictures are taken, the photographer can use a mini-cassette recorder to record the relevant information about each picture taken. The IIS Management Assistant or a designee will then transcribe the tape and fill out the log sheet.

12. The photographs should be delivered to the IIS Management Assistant or designee, who will stamp each photograph on the reverse side with the date it was taken and where it was taken for filing in a chronological file.

13. All transcripts of interviews should be handled in accordance with IIT Procedure 3, Exhibit 2, entitled "Handling Transcripts".

14. At the conclusion of the onsite investigation, the boxes of documents should be shipped express mail to the Chief, IIS, at the following address:

    Chief, Incident Investigation Staff
    Nuclear Regulatory Commission
    4340 East West Highway, Room 263
    Bethesda, MD 20814

After the IIT leaves the site, correspondence and requested documents should be express mailed to the above address.

15. Document control at NRC headquarters will be handled in a similar manner.

16. After the IIT report has been issued, the IIS will make the following arrangements for archival requirements of all records and documents:

    a. Three copies of all original documents will be made.

    b. A copy of each of the documents will be transmitted to the Public Document Room (PDR), the appropriate local PDR, and to the Document Control Desk for inclusion on the Document Control System.

    c. The originals will remain with the IIS and placed on file for future reference.

Enclosure 1

Sample Bibliography

Title

1. Action Lists:
12/28/85 - 1300 hrs.
01/02/86 - 1200 hrs.
01/03/86 - 1400 hrs.
01/04/86 - 1400 hrs.
01/05/86 - 1200 hrs.
01/06/86 - 1100 hrs.
01/07/86 - 1200 hrs.
01/08/86 - 1430 hrs.
01/10/86 - 1600 hrs.
01/14/86 - 1400 hrs.
01/16/86 - 1200 hrs.
01/28/86 - 1600 hrs.
02/04/86 - 1600 hrs.

2. Control Room/Shift Supervisor Logs
12/25/85 - Shift 1, 2, & 3
12/26/85 - Shift 1, 2, & 3

3. Personnel Statements
S. Wood - SS
C. Williams - SCRO
G. Simmons - STA (SCRO)
B. Nash - CRO
R. Wolfe - CRO
D. Nelson - PPH
A. Jennings - AO
M. Peterson - EA
D. Jenks - EA
D. Lucht - WH
G. Kovach - EA
B. Chun - I&C Tech.
W. Morisawa - SS

4. October 2, 1985 Trip Analysis - From Licensee's Trip Report - Overcooling Event

5. Chemical Radiation Log: 12/2[illegible]/85 - 0045 to 0515 hrs.

6. Licensee's Preliminary Sequence of Events
Current as of 12/26/85 - 1100 hrs.
Chronological Sequence of Events - Current as of 12/29/85 - 1700 hrs.
Revision 1 - Current as of 12/31/85 - 1600 hrs.
Revision 2 - Current as of 01/04/86 - 1600 hrs.
Revision 3 - Current as of 01/05/86 - 0900 hrs.

7. Description of Integrated Control System Power Distribution

8. Plant Organization Chart

9. IEB 79-27 and Associated Information

10. Licensee Response to IEB 79-27
    2/22/80

11. Licensee Response to IEB 79-27

12. Trend Recorders from Control Room/Graphs from IDADS Points

13. IDADS Alarm Print Out
    Start Time - 11:22:40, 12/25/85 to
    End Time - 12:24:53, 12/26/85

14. Emergency Operating Procedures
    1, 2 & 5
    Rules 2 & 6

15. P&ID Drawings
    M520 - Reactor Coolant System, Sheets 1, 2 & 3
    M521 - Makeup and Purification System, Sheets 1, 2 & 3
    M526 - High Pressure Injection and Makeup Pumps
    M532 - Steam Generator System
    M533 - High Pressure Feedwater Heater System, Sheets 1-5
    M534 - Low Pressure Feedwater Heater System, Sheets 1-5

16. Procedures Applicable to the Event
    A.71, B.4, C.37

17. Systems Training Manual
    Chapters 0, 22, 32

18. AO/EA Logs

19. Shutdown Outside Control Room
    C.13a
    C.13b

20. Annunciator Procedure Manual
    Panel #2PSB

21. Work Request
    12/26/85 - #109621
    3/13/80 - #45622

22. AP.28 - Initial Post Trip Post Reivew & Revisions
    12/26

23. News Release
    Greg Cook - Region V - 12/31/85

24. Rancho Seco PNs
    AIT-85-92
    IIT-86-C1
    IIT-86-01A

25. SMUD Office Memos
    N. Brock to Operations

26. Troubleshooting Action Plan
    ICS Equipment Investigation
    ICS Equipment Investigation - Rev. 1
    SMUD Office Memo - Transient Analysis Organization
    Troubleshooting, and Equipment Repair Following 12/26/85 Transient
    System Response, Auxiliary Feedwater FWS-063, FWS-064
    System Response, Auxiliary Feedwater FV-20527, FV-20528
    Memo to Action Item Lead Individuals from J. K. Wood - Guidelines to Follow When Troubleshooting or Performing Investigative Actions into Root Causes Surrounding the 6/9/85 Reactor Trip

27. Control Room Operator Relief Checklists

28. IDADS Computer Point Identifications

29. INPO SER #3

30. IE Information Notice No. 86-? - Loss of Power to Integrated Control System at Pressurized Water Reactor Designed by Babcock and Wilcox

31. Incident/Complaint Report
    12/26/85 - 0414 hrs. - Unusual Event/Medical Emergency/Contaminated Firewatch

32. Findings, Corrective Actions and Generic Implications Report - Toledo Edison

33. AFW Flow Calculations During Post Trip Recovery of 12/26/85

34. OTSF and Main Steam Analyses
    01/02/86

35. SMUD Memo
    Colombo to Whitney - Transient Cooldown Calculation - 12/31/85

36. AFW Initiation Signal Report
    Prepared 12/28/85 - Approved 12/29/85

37. B&W Initial Evaluation of 12/26/85 Transient

38. Reactor Shutdown Evaluation
    12/31/85

39. TRJ-10 Strip Chart
    12/21/85 - 1418
    12/29/85 - 0122

40. IIT Sequence of Events
    Rev. 1 - 1/4/85
    Rev. 2 - 1/5/86
    Rev. 3 - 1/8/86

41. IIT Sequence of Events with Licensee Comments
    As of 0700 hrs. - 1/5/86

42. Issues Arising From the Rancho Seco Incident Investigation
    1/6/86

43. Statement of Witness
    Dennis F. Venteicher

44. SMUD Human Factors Issues List
    Control Room Workspace - Draft

45. ICS Drawings - Babcock & Wilcox
    N.21.01 - 17 through 19
    22 through 31
    32 - Sheets 1, 2
    33 through 35
    38 through 43
    45 - 5
    48
    51
    53 through 54
    56 through 61
    63 through 76
    77 through 85 Sheets 1, 2
    86 through 87 Sheet 1
    90 through 92 Sheet 1
    94 through 111 Sheet 1
    113 through 121 Sheet 1
    122 sheets 1 - 5
    127
    137 through 138

46. NNI Drawings
    N.15.07 - 111 through 112

    N.15.07 - 3 - sheet 1
    - 6 - sheet 1
    -31 - sheet 1
    -31 - sheets 4-39
    -31 - sheets 41-51
    -31 - sheets 54-69
    -31 - sheets 63 Sheet 1, 2 - 82
    -31 - sheets 70 - 99-2

N.15.07 -31 - 100 - 101
-31 - 132 - 170
181 - 212

N.15.08 - 3 - 51

47. SMUD Transient Evaluation -
Rapid Cooldown Incident 3/20/78
Volume 1 & 2

48. B&W Letter F. R. Burke to G. Coward
Initial Evaluation of Fuel and Primary System Components for December 26, 1985, Rancho Seco Transient

49. MSRC Meeting Notes
04/7/78
05/2/78
06/15/78
06/19/78

50. Figure Showing Handwheel Operation for Auxiliary Feedwater Control Valves

51. Maintenance Instructions for Troubleshooting AFW Manual Valves Nos. FWS063/FWS064

52. Memo Dated 06/29/84 for Gary Holahan and John Stolz, NRR from Faust Rosa and Charles E. Rossi, IE - Loss of NNI Power Following the Generator Hydrogen Explosion and Fire on March 19, 1984

53. Memo Dated 08/03/80 for Harold R. Denton, NRR from Roger J. Mattson, NRR - Review of Final Report of the B&W Reactor Transient Response Task Force (NUREG-0667)

54. Memo Dated 03/06/81 for S. Hanauer, DHFS, D. Ross, DSI, R. Vollmer, DE and T. Murley, DST from Darrell G. Eisenhut, DL - NUREG-0667 Implementation Plan

55. Memo Dated 06/03/81 for Harold R. Denton, NRR from Darrell G. Eisenhut, DL - NUREG-0667, "Transient Response of Babcock & Wilcox Designed Reactors" Implementation Plan

56. Rulemaking Issue (Notation Vote) SECY-83-288 Dated 07/15/83 for the Commissioners from William J. Dircks, EDO - Proposed Pressurized Thermal Shock (PTS) Rule

57. Memo Dated 01/08/86 for Harold R. Denton, NRR, from Frank J. Miraglia, PWR Licensing B - Review of Design Basis for B&W Facilities

58. Memo Dated 2/1/83 for Commissioner Ahearne from William J. Dircks, EDO - AEOD Report on Arkansas Unit 1 Overfill Event

Enclosure 2

Photograph Log Sheet

Investigation Title _____ Page ___ of ___

Photographer _____

Facility/Location _____

Camera Type _____

Lighting Type _____

Film Type _____

Date of Event _____

Time of Event _____

Film Roll No. _____

Picture No.	Scene/Subject	Date of Photo	Time of Photo	Direction Camera Pointing

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Exhibit 5
Sources of Information

The following are types of documents and sources of information that typically have been found useful by IITs.

1. Operating Data

   a. Strip/Trend Recorder Charts

   b. Operating Logs (Operators, STA, Load Dispatchers)

   c. Technical Support Center Computer Output

   d. Process Computer Output (Alarms, Equipment Status, Core Maps, On-Demand Calculations, Sequence-of-Events)

   e. Security Computer (Times of Personnel Entry/Exit)

   f. Radiological Surveys (onsite and offsite)

   g. Laboratory Test Results (Chemical, Metallurgical, Medical)

2. Records

   a. Maintenance

   b. Surveillance

   c. Training History

   d. Design Reviews/Engineering Changes and Modifications

   e. As-Built Drawings

   f. Vendor Information and Manuals

   g. Operating/Emergency Procedures

   h. Emergency Response Plan

   i. Plant Safety Oversight Meeting Minutes

   j. Technical Specifications

   k. Quality Assurance Records

   l. Transcripts of NRC Operations Center Notifications

   m. Post-Trip Reports

   n. Inspection Reports

3. Photographs

4. Correspondence

   a. NRC to the Licensee and Elsewhere

   b. Licensee to the NRC and Elsewhere

   c. Vendor/Consultant

   d. INPO (SERs and SOERs)

5. Reenactments and Demonstrations

6. Results of Troubleshooting Activities.

7. Preliminary Operator Written Statements

Exhibit 6

Guidelines for Referral of
Investigation Information to NRC Offices

Purpose:

To provide guidelines to the Incident Investigation Team (IIT) leader regarding referral of items to the Office of Investigations (OI), the Office of Inspector and Auditor (OIA) and to the Office of Nuclear Material Safety and Safeguards (NMSS).

Background:

During the IIT process, the team may learn directly of allegations, potential wrongdoing or information that should be referred to other organizations for followup and disposition. The team must be cognizant of the type or nature of information or evidence that warrant referral to other organizations, and alert to identify, collect, and preserve this information during the IIT's activities. The team leader has the responsibility to identify situations warranting referral and to make the appropriate notifications when referral is appropriate.

Referrals to OI

The Office of Investigations (OI) conducts inquiries and investigations of allegations of wrongdoing by non-NRC organizations and individuals, e.g., NRC licensees, applicants, and their contractors and vendors. In general, this will involve matters that indicate there was a deliberate act of breach of an NRC requirement. The following examples (taken from the OI Investigation Manual) should guide the team in identifying matters that are appropriate for referral to OI:

1. Prior knowledge of NRC requirements by responsible personnel (expertise in the nuclear industry, position, and responsibility of the individuals within the organization, etc.) and a deliberate or conscious decision not to act accordingly;

2. Documents showing prior knowledge of wrongdoing and failure to report;

3. Being placed on notice of noncompliance from an authorized source and failure to take corrective action;

4. A record of some past similar experience indicating that the licensee knew the act was wrongdoing, yet proceeded regardless;

5. Documentary or testimonial evidence eliminating the possibilities of the violation resulting from accident, worker carelessness, ignorance, or confusion, etc.;

6. Attempts at deception by a licensee or contractor, such as

-- watering down facts given to NRC,

-- failure to record/document reports of noncompliance,

-- efforts to contain, divert, or stop information from reaching NRC,

-- efforts to segregate, isolate, transfer, fire, intimidate, or otherwise retaliate or discriminate against allegers surfacing or attempting to surface information of interest to the NRC, or for providing information of interest to the NRC, or for providing safety-related information to employers, and

-- manipulation of documentation to confuse or hinder investigation/inspection efforts by NRC;

7. Documentation or testimony directly demonstrating that licensee management knew an act was wrong and against NRC requirements, but proceeded regardless;

8. Any evidence of acts committed in the name of "expediency," with later claims that the commission was a result of confusion on the part of the licensee; and

9. Falsification of documents.

10. Violations of federal, state or local criminal statutes.

If evidence of a situation, such as covered above, should be uncovered or implied by available information, the team leader should forward a memorandum to Investigation Referral Board with a copy to OI (Addressee Only envelope), requesting that OI investigate the developed information. The form attached to Enclosure 1, "Procedure for Requesting OI Investigations," should be completed and attached to the forwarding memorandum. Copies of the referral should be distributed consistent with Enclosure 1. This referral should be made as soon as possible after the judgment is made that referral to OI is appropriate. The team leader should notify the OI Field Office Director and the EDO of significant issues expeditiously. In all cases this referral should be forwarded to the Investigation Referral Board before or at the time of release of the final team report.

Referrals to OIA

The Office Inspector and Auditor (OIA) conducts audits and investigations regarding questions related to the effectiveness and integrity of NRC organizations, programs and contractors, and matters that involve the conduct of NRC employees. Some examples of the issues that are investigated by OIA include:

1. Possible irregularities or alleged misconduct of NRC employes, e.g.,

-- improper release of documents to unauthorized individuals or organizations

-- submittal of false or misleading reports

-- known violations of NRC requirements which were not documented or followed up on

-- evidence of obvious bias, favoritism, or partiality

-- misuse of government resources.

2. Equal employment opportunity and civil rights complaints by NRC employees.

3. Unreported property loss or damage due to actions by NRC employees.

4. Potential conflicts of interests on the part of NRC employees.

If evidence of a situation, such as covered above, should be uncovered or implied by available information, the team leader should prepare a referral memorandum as required by NRC Manual Chapter 0702, Notification and Investigation of Misconduct. Under the Manual Chapter, the position of the EDO is analogous to the position of an Office Director and the EDO is responsible for reporting to OIA such situations as the IIT team may identify. If evidence of a situation, such as covered above, should b uncovered or implied by available information, the team leader should report such a situation in a memorandum to the EDO. When the exigencies of the circumstances dictate the IIT team leader or any team member may make ·uch reports directly to OIA.

Referral to NMSS

The Office of Nuclear Material Safety and Safeguards (NMSS) has the responsibility for matters involving safeguards against potential threats of theft and radiological sabotage and response to safeguards incidents. For the purposes of the IIT, all safeguards- and security-related matters should be forwarded to the Director, NMSS (with copies to the EDO, Directors of IE, NRR and/or the appropriate Regional Administrator) for followup action and disposition. (Addressee Only envelopes should be used.)

IIT investigations which disclose potential evidence of sabotage, theft of nuclear material, or terrorism activities should be immediately brought to the attention of the licensee so they may promptly notify the FBI. (Copies to the Director, NMSS and as noted above.) If the IIT develops information that involves security, safeguards contingency, or safeguards plans that warrants followup, the team leader should prepare a memorandum to the appropriate Office Director for EDO signature describing the issue for followup.

In all cases, situations where NMSS action and disposition may be appropriate should be documented before or at the time of release of the final team report.

Note: All documents containing safeguards information must be appropriately identified on the document as indicated below:

> SAFEGUARDS INFORMATION: This document contains safeguards information and is exempted from public disclosure by 2.790(d) and 10 CFR 73.21.

Development of Information for Referral

During its investigation, the IIT collects data and information from a variety of sources (e.g., interviews, plant records, docketed materials) that could provide the bases for referrals to other organizations. The existing procedure (IIS Administrative Procedure 6) for collecting and maintaining records, documents, data, and other information should ensure that this information is preserved and available.

When a matter is identified for referral to either OI, OIA or NMSS, the IIT should develop the necessary supporting documentation to enable these organizations to ascertain whether a followup investigation is warranted. The IIT should pursue the investigation to the point such that some evidence is available, that obvious leads have been identified, and that sufficient facts are available so that the appropriate organization can make an informed decision regarding the need for a timely followup. The level of effort expected by the IIT to judge the need for and document a referral is dependent on the nature and substance of the matter. In general, the development of this information should not adversely impact the IIT schedule or objectives.

Schedule for Referrals

As noted previously, the IIT leader will normally forward matters for referral to other NRC offices by memorandum as soon as the evidence is available but not later than the time at which the final report is issued. Matters which, by their consequences, possess an actual hazard to public health and safety, property, or the environment, or is an actual threat to the common defense and security should be immediately communicated to the EDO (and to the NRC Information Assessment Team (IAT) through the Operations Center). The team leader should highlight all potential referral matters to the EDO during briefings of the IIT status and activities.

Public Release of Information

There may be a need to protect certain information involved with a referral from premature public release. Consequently, if a referral has or will be made, the team leader should: (1) discuss with the cognizant Office Director how the situation will be treated in the team's report, (2) assure that the Office Director receives an advance copy of the team's report, and (3) work with the Office Director and Office of General Counsel (OGC) to decide if there is a need to withhold supporting documents, e.g., interview transcripts, licensee documents, etc. from public disclosure at the time the team's report is publicly released.

Enclosure 1

TRIAL USE ONLY

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

July 5, 1985

MEMORANDUM FOR: Harold Denton, Director, NRR
John Davis, Director, NMSS
James Taylor, Director, IE
Thomas Murley, Regional Administrator, Region I
Nelson Grace, Regional Administrator, Region II
James Keppler, Regional Administrator, Region III
Robert Martin, Regional Administrator, Region IV
John Martin, Regional Administrator, Region V

FROM: William J. Dircks
Executive Director for Operations

SUBJECT: PROCEDURE FOR REQUESTING OI INVESTIGATIONS

The purpose of this memorandum is to establish EDO policy for requesting investigations from OI.

The primary purpose of an OI investigation is to provide information to assist the staff in making licensing and enforcement decisions. The staff has a significant interest in assuring that it obtains information from investigations necessary for decisions on a schedule that is compatible with the staff's regulatory needs. The Office of Investigations (OI) at the same time is responsible for the quality of investigations and, therefore, must staff and schedule investigations in a manner such that significant matters are thoroughly investigated on a timely basis.

In order for OI to understand the staff's investigatory requirements and to permit OI to exercise its judgments in an informed manner, OI must have sufficient information to enable it to reach informed decisions as to whether to initiate an investigation and, if so, to determine its schedule. The attached form has been developed to assist OI in securing the necessary information to make its priority and scheduling decisions and to keep the various offices fully informed of requests for investigations. All applicable information must be provided on the form which should be reproduced and used when making requests. Copies should be sent to those indicated on the last page of the form. The requests should continue to be made by Regional Administrators to the OI field office and by Office Directors through the EDO to the Director of OI.

Upon receipt of the completed form, OI will evaluate the request and conduct consultations as necessary with the requesting office. OI intends to notify the requester within 30 days as to whether the matter has been accepted for investigation and, if so, the priority of the investigation and estimated schedule. OI will notify the requester if there is a substantial change in the estimated schedule. If a request is not accepted, OI will provide the

requester with the basis for its decision. Copies of OI correspondence on scheduling and priorities will be sent to those indicated on the request form.

Requests for investigations should continue to be made for allegations or staff concern of potential wrongdoing. Potential wrongdoing includes matters where regulatory violations appear to have occurred with some intent or purpose to violate requirements in contrast to violations involving error or oversight. The term should be construed broadly to capture cases where there may be an intent to affirmatively violate requirements as well as an intent not to comply with requirements where demonstrated by careless disregard or reckless indifference for regulatory requirements.

Program offices in carrying out their oversight responsibilities must be aware within their program areas of matters being referred for investigations, the reasons for the referral, and the requested priorities. When offices initiate referrals, the appropriate regional or program office should be aware of the referral. Coordination and oversight are necessary since, due to resource constraints, all requested investigations may not be able to be conducted or at least not completed by schedules initially sought by the requester. The program offices are responsible to the EDO for assuring within their area of responsibilities that necessary investigations are conducted. Recognizing there may be differences between the staff and OI on priorities and scheduling, regional administrators should notify the Director of the responsible program office of concerns in that area. The Director of the responsible program office, if not satisfied that an investigation priority or schedule established by the OI Director meets regulatory needs, must promptly notify the EDO.

Questions concerning the above guidance should be referred to the Chief Counsel, Regional Operations and Enforcement. In addition informal communications are encouraged between the staff and OI to further assist in achieving the goals of an effective investigation program providing information to serve the staff's needs. In six months, OI and the staff will reevaluate the effectiveness of the attached form.

William J. Dircks
Executive Director for Operations

Attachment: As stated

cc: G. Cunningham, ELD
B. Hayes, OI

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Request No. _____

(Region-year-No.)

TO:

FROM:

REQUEST FOR INVESTIGATION

_____ _____
Licensee/Vendor/Applicant Docket No.

_____
Facility or Site Location

_____ _____
Regional Administrator/Office Director Date

A. Request

What is the matter that is being requested for investigation (be as specific as possible regarding the underlying incident).

B. Purpose of Investigation

1. What wrongdoing is suspected; explain the basis for this view (be as specific as possible).

2. What are the potential regulatory requirements that may have been violated?

3. If no violation is suspected, what is the specific regulatory concern?

4. If allegations are involved, is there a view that the allegation occurred? likely occurred _____, not sure _____ If likely, explain the basis for that view.

C. Requester's Priority

1. Is the priority of the investigation high, normal, or low? _____

2. What is the estimated date when the results of the investigation are needed? _____

3. What is the basis for the date and the impact of not meeting this date? (For example, is there an immediate safety issue that must be addressed or are the results necessary to resolve any ongoing regulatory issue and if so, what actions are dependent on the outcome of the investigation?)

D. Contact

1. Staff members:

2. Allegers identification with address and telephone number if not confidential. (Indicate if any confidential sources are involved and who may be contacted for the identifying details.)

F. Other Relevant Information

Signature

cc: OI (B. Hayes) */
EDO (W.J. Dircks)
NRR/NMSS as appropriate (Denton/Davis) */, **/
IE (Taylor) */, ***/
OELD (Cunningham)
Regional Administrator **/, ***/

---

*/ If generated by region.
**/ If generated by IE.
***/ If generated by NRR/NMSS

Exhibit 7
Procedures for Granting and Revoking Confidentiality and Determining When the Identity of a Confidential Source May Be Released Outside of the NRC

Part I: General

On November 25, 1985, the Commission issued its Statement of Policy on Confidentiality (Policy Statement) to provide a clear, agency-wide policy on confidentiality. 50 Fed. Reg. 48506 (November 25, 1986). There, the Commission recognized that its inspection and investigatory programs rely in part on individuals voluntarily coming forward with information. Some individuals will come forward only if they believe their identities will be protected from public disclosure, i.e., only if they are given confidentiality. Safeguarding the identities of confidential sources is, therefore, a significant factor in assuring the voluntary flow of such information. The Policy Statement applies to all Commission offices and directs those offices to make their best efforts to protect the identity of a confidential source. The following procedures are to be followed in implementing the Commission's Policy Statement.

Part II: Granting Confidentiality

1. Confidentiality is not to be granted as a routine matter. Rather, confidentiality should be granted only when necessary to acquire information related to the Commission's responsibilities or where warranted by special circumstances. It should ordinarily not be granted when the individual is willing to provide the information without being given confidentiality. Consequently, if an alleger is providing information willingly, confidentiality should not be granted and the individual should not be advised of its availability.

2. If an explicit request for confidentiality is made, the request should not be automatically granted. Rather, information should be sought from the alleger to make a determination as to whether the grant of confidentiality is warranted in the particular circumstances at hand. The following information should be solicited from the alleger to assist in making this determination.

   a. Has the alleger provided the information to anyone else, i.e., is the information already widely known with the alleger as the source?

   b. Is the NRC already knowledgeable of the information, thereby obviating the need for a particular confidential source, i.e., why subject the NRC to the terms of a Confidentiality Agreement unless necessary?

   c. Does the alleger have a past record which would weigh either in favor of or against granting confidentiality in this instance, i.e., has the alleger abused grants of confidentiality in the past?

d. Is the information which the alleger offers to provide within the jurisdiction of the NRC, i.e., should be be referred to another agency?

e. Why does the alleger desire confidential source status, i.e., what would be the consequences to him if his identity were revealed?

Depending on the information gathered by the authorized NRC employee, a determination should be made as to whether granting confidential source status would be in the best interest of the agency.

3. When an alleger does not expressly request confidential source status, an authorized NRC employee may raise the issue of confidentiality in certain circumstances. Such circumstances can vary widely. Authorized NRC employees have discretion to raise the issue of confidentiality when in their judgment, it is appropriate. Considerations in making this judgment would include:

a. When it becomes apparent that an individual is not providing information because of a fear that his/her identity will be disclosed.

b. When it is apparent from the surrounding circumstances that the witness wishes his/her identity to remain confidential, e.g., is the in erview being conducted in a secretive manner or is the alleger refusing to identify himself?

Once the issue of confidentiality is raised with the alleger and he/she indicates a desire for confidential source status, the same considerations that apply to an explicit request for confidentiality would apply here. See Paragraph 2 above.

4. When granting confidentiality, the following points should be discussed with the alleger.

a. The sensitivity of the information being provided by the source should be explored with a view to determining whether the information itself could reveal the source's identity.

b. The source should be informed that, due to the tight controls imposed on the release of his identity within the NRC, he should not expect others within the NRC to be aware of his confidential source status and it would be his responsibility to bring it to the attention of NRC personnel if he desires similar treatment for the information provided them..

c. If inquiries are made of the NRC regarding his status as a confidential source, the agency will neither confirm nor deny his status.

d. The basic points of the standard Confidentiality Agreement should be revised if it is not possible to provide the individual with a copy to read.

5. An NRC employee wishing to grant confidentiality must either be expressly delegated to do so or must seek authorization from the appropriate Office or Regional official. Authorization can be prearranged as circumstances warrant. This might include a planned meeting with an alleger. Office Directors and Regional Administrators are authorized to designate which NRC employees may grant confidential source status and/or further delegate the authority to do so. Authority to grant confidential source status is to be documented in writing either through a standing delegation or an ad hoc authorization. In special circumstances, an oral authorization is permissible if confirmed in writing. The standard Confidentiality Agreement (Enclosure 1) is to be executed. The circumstances surrounding a grant of confidentiality must be documented in a memorandum to the Office Allegation Coordinator (OAC).

6. In those circumstances where it is impossible to sign a Confidentiality Agreement at the time the information is obtained, e.g., when the information is obtained over the telephone, or in a location not conducive to passing papers, confidentiality may be given orally pending signing of the Confidentiality Agreement within a reasonable amount of time, generally two weeks. If documentation is not completed in that time frame, the Regional Administrator or Office Director will determine if confidentiality continues. See Part III. If confidentiality is granted orally, this must be immediately documented by the person granting it and noted in the memorandum to the OAC.

7. Office Directors and Regional Administrators must be informed of each grant of confidentiality. These senior officials must also approve any variance to the standard Confidentiality Agreement and each denial of confidentiality.

8. The OAC of each Office and Region will maintain an accurate status regarding grants of confidentiality made by the particular Office or Region to include copies of signed Confidentiality Agreements. This file will be a Privacy Act System of Records and all normal security procedures for the protection of sensitive unclassified information will be applicable. A confidential source will be revealed within the NRC on a need-to-know basis only. Any employee with access to the confidential information must take all necessary steps to ensure that the information (identity, etc.) is not further disseminated. (See Basic Requirement C54). With regard to protecting a source, an account should be taken of disclosing information which may reveal the source. Normally, the removal of the source name and identifiers will be adequate, but circumstances might exist where particular information itself may reveal the source.

   A determination regarding need-to-know is to be made by a senior Office or Region staff member at the Branch chief level or above or the OAC. The individual making the need-to-know determination shall provide the OAC with a record of persons to whom the access has been granted. The OAC is also responsible for maintaining secure files when files contain information which would reveal the identity of a confidential source and marking such files "Contains information which would reveal the identity of a confidential source." Each employee who has access to information which would reveal a confidential source, i.e., has been found to have a

need-to-know, shall take all necessary steps to prevent disclosure of the information to unauthorized personnel. For example, when written information which would reveal a source is not being used, or is not within personal control of the NRC employee, it should be kept in locked storage.

9. If at any time for any reason confidentiality is breached or jeopardized, the appropriate Regional Administrator or Office Director should be informed. The confidential source should be advised.

Part III. Revocation of Confidentiality

1. A decision to revoke confidentiality can only be made by the Commission, the EDO, or the Director of OI or OIA. In each case, only the office originally granting confidentiality can revoke that grant except that the Commission may revoke a grant made by any office. Confidentiality will be revoked only in the most extreme cases. Cases for consideration include where a confidentiality agreement is not signed within a reasonable time following an oral grant of confidentiality, or where a confidential source personally takes some action so inconsistent with the grant of confidentiality that the action overrides the purpose of the confidentiality, e.g., disclosing publicly information which has revealed his status as a confidential source or intentionally providing false information to the NRC.

   Before revoking confidentiality, the NRC will attempt to notify the confidential source and provide him/her with an opportunity to explain why confidentiality should not be revoked. All written communications with a confidential source which require/request a reply are to be sent CERTIFIED MAIL-RETURN RECEIPT REQUESTED.

Part IV: Official Disclosures

1. Disclosure to the Licensee or Other Affected Organization:

   If the information provided by a confidential source involves a potentially significant and immediate impact on the public health and safety, the affected organization should be promptly informed to assure proper and timely action. In some cases, release of the information will compromise the identity of the confidential source. In such cases, release should normally not be made unless the release is necessary to prevent an imminent threat to the public health and safety. In such cases, the EDO shall be consulted and efforts will be made to contact the confidential source and explain the need for disclosure. Consistent with the Commission's Policy Statement, however, disclosing information which would reveal the identity of a confidential source will be made only following best efforts by the agency to protect or limit the possibility of disclosure.

2. Other Disclosures:

NRC employees may be requested by Congress, State or Federal agencies to provide information which may reveal the identity of a confidential source. Each such request will be handled on a case-by-case basis. Points to consider, however, are discussed below:

a. Congress

Disclosure to Congress may be required in response to a written Congressional request. The Commission will disclose the identity of a confidential source to Congress only if the request is in writing and it will make its best efforts to have any such disclosure limited to the extent possible. This might include assuring that the request is by Congress in its official, and not personal, capacity; the hand delivery of requested information directly to the affected Congress person; and attempting to satisfy the request for information by not revealing the identity of the confidential source.

b. Federal and State Agencies

If another agency demonstrates that it requires the identity of a confidential source or information which would reveal a source's identity in furtherance of its statutory responsibilities and that agency agrees to provide the same protections to the source's identity that the NRC promised when it granted confidentiality, the action office OAC will make a reasonable effort to contact the source to determine if he/she objects to the release. If the source is reached and does not object, Office Directors or Regional Administrators are authorized to provide the information or the identity to the other agency.

If the source cannot be reached or objects to the release of his/her identity, the source's identity may not be released without Commission approval. The affected agency may then request that the Commission itself release the identity. Ordinarily, the source's identity will not be provided to another agency over the source's objection. In extraordinary circumstances where furtherance of the public interest requires a release, the Commission may release the identity of a confidential source to another agency over the objections of the source. In those cases, however, the other agency must agree to provide the same protections to the source's identity that were promised by the NRC.

Enclosure 1

Confidentiality Agreement

I have information that I wish to provide in confidence to the U.S. Nuclear Regulatory Commission (NRC). I request an express pledge of confidentiality as a condition of providing this information to the NRC.

It is my understanding that, consistent with its legal obligations, the NRC, by agreeing to this confidentiality, will adhere to the following conditions.

(1) During the course of an inquiry or investigation, the NRC will make its best effort to avoid actions which would clearly be expected to result in disclosure of my identity to persons subsequently coming in contact with the NRC.

(2) Except as necessary to assure public health and safety and except as necessary to inform Congress or State or Federal agencies in furtherance of their responsibilities under law or public trust, the NRC will not identify me by name or personal identifier in any conversation, communication or NRC-initiated document released outside the NRC. The NRC will use its best effort to minimize any disclosures made outside of the NRC.

(3) The NRC will disclose my identity inside the NRC only on a need-to-know basis to the extent required for the conduct of NRC-related activities. Consequently, I acknowledge that if I have further

contacts with NRC personnel, I cannot expect that those people will be cognizant of this Confidentiality Agreement and it will be my responsibility to bring that point to their attention if I desire similar treatment for the information provided to them.

(4) Even though the NRC will make its best effort to protect my identity, my identification could be compelled by orders or subpoenas issued by courts of law, hearing boards, Administrative Law Judges, or similar legal entities. In such cases, the basis for granting this promise of confidentiality and any other relevant facts will be communicated by the NRC to the authority ordering the disclosure in an effort to maintain my confidentiality.

I also understand that the NRC will consider me to have waived my right to confidentiality if I take, or have taken, any action so inconsistent with the grant of confidentiality that the action overrides the purpose behind the confidentiality, such as (1) disclosing publicly information which reveals my status as a confidential source or (2) intentionally providing false information to the NRC. The NRC will attempt to notify me of its intent to revoke confidentiality and provide me an opportunity to explain why such action should not be taken.

Other Conditions: (if any)

I have read and fully understand the contents of this agreement. I agree with its provisions.

Date	Name: Address:

Agreed to on behalf of the U.S. Nuclear Regulatory Commission.

Date	Signature: Name: Title

Exhibit 8
Guidelines for Administering an Oath or Obtaining an Affirmation

When the investigator determines that the affiant is willing to swear or affirm to the veracity of the information, sworn testimony should be obtained by having the affiant raise his/her right hand. The investigator should also raise his/her right hand and say:

"Do you swear" (or "affirm") "that the"

(1) "statement given by you,"
(2) "information provided by you," or
(3) "information you are about to give,"

"is the truth, the whole truth, and nothing but the truth, so help you God?"

An affirmative response validates the oath. Note that the words "so help you God" are omitted in the case of an affirmation.

The choice of the proper phrase within the oath/affirmation is determined by the following circumstances:

a. Phrase (1) is used when the affiant provides a written statement.

b. Phrase (2) is used when the affiant refuses to provide a written statement, but does agree to swear/affirm to the veracity of oral testimony.

c. Phrase (3) is used when the oath/affirmation is administered at the outset of the interview.

When the affiant provides a written statement, the oath or affirmation is administered after the affiant has read the statement and made necessary corrections, but before the statement is signed. The language in the first parenthetical statement of the Format as shown on the following page is used. If the interviewee is only willing to provide a signed statement, the language in the second parenthetical statement is used. If the interviewee refuses to sign the jurat at the end of the statement, the investigator will sign as a witness.

(Sample format on the following page)

FORMAT

I have read the foregoing statement consisting of _____ handwritten/typed pages. I have made and initialed any necessary corrections and have signed my name in ink in the margin of each page. I (swear) (declare) that the foregoing statement is true and correct.

Signed on _____ at _____.
(date) (time)

_____
Signature and Name (typed or printed)

Subscribed and sworn to before me this _____ day of _____, 19 __, at

_____.

_____
Investigator Signature and Name (typed or printed)

_____
Witness Signature and Name (typed or printed)

Title: _____

Conducting Interviews

GUIDELINES FOR CONDUCTING INTERVIEWS

IIT Procedure 3

3.1 Purpose:

To provide guidance to ensure interviews are conducted in a uniform, systematic and complete manner.

3.2 Background

The information derived from a personnel interview is often directly proportional to the skill of the interviewer. Planning on the part of the interviewer is necessary to conduct the interview systematically. Predetermined questions concerning suspect areas should be asked of all interviewees.

While intended to assist the investigator, these guidelines should not limit the team's initiative and judgment. Team members should use their experience or the techniques that provide the most confidence in assuring the team achieves its objectives.

The interviews are transcribed by a stenographer to ensure that an accurate record of the interview is obtained, and for the convenience of the incident investigation team (IIT). When the team writes its report, an accurate, factual record is available to determine the findings and to make conclusions regarding the event. The necessity for note taking is minimized during the interview, which also eliminates contradictory and erroneous information that can result from note taking. Team members can give their undivided attention to understanding the observations and actions of the interviewee during the event.

In general, discussions between the IIT and licensee personnel about routine administrative matters will not be transcribed.

3.3 Guidance

1. Prior to conducting personnel interviews, the IIT should have been briefed and given an escorted plant tour to obtain an understanding of what had occurred and to obtain a general working knowledge of the plant design and layout.

2. Personnel interviews should be conducted as soon as possible after the entrance meeting and plant tour to minimize information lost over time from the memories of those involved. High priority should be given to interviewing personnel on duty at the time of the event to learn about the actions they took and the observations they made.

3. Interviews should be scheduled, if possible, with personnel in decreasing order of authority within the staff, beginning with the shift superintendent and proceeding to those less senior. An interview schedule should be prepared for each day. Generally, about 2 hours should be scheduled for each interview at the plant during an event.

4. Selection of IIT members that will actively participate as interviewers during the interview should be minimized, and based on team member assignments and technical expertise. A minimum of two IIT members should be present at all interviews.

5. A lead IIT spokesperson should be appointed for each interview who is responsible for introducing the interviewee to IIT members, allaying qualms, answering questions about the interview process, providing some background on the objective and scope of the IIT investigation, and controlling the interview. The objective should be to establish an element of rapport.

6. The lead spokesperson should ensure that the stenographers have received the appropriate information regarding personnel names and their employer.

   Note: Arrangements for stenographers will be made by the Management Assistant, Incident Investigation Staff (IIS) from the Office for the Analysis and Evaluation of Operational Data (AEOD). If they are not available when the team arrives at the site, contact the Chief, IIS or the Director, AEOD.

7. The lead spokesperson should make an opening statement similar to the following:

   The purpose of the incident investigation team is to establish what happened, to identify the probable causes, and to provide appropriate feedback to the industry regarding the lessons learned from the incident. The reason for conducting interviews is to obtain information regarding the actions and observations of personnel who were directly involved with the event. If you desire, you may select and invite any individual to be present during the interview as your representative.

   These interviews are transcribed in order to aid the team in developing a factual record and as a convenience to minimize the amount of note taking. At the conclusion of the interview, it will be transcribed and made available to you for review. You will have the opportunity to make corrections regarding where you feel that something was transcribed incorrectly or make clarifications to your statements which were what you said, but not what you meant. The corrections and clarifications will be included as part of the transcript. At the conclusion of the investigation and the issuance of the team's report, the transcript will be made publicly available in the NRC's public document room. At that time, if requested, a copy of your transcript will be provided to you. If for any reason you want to go off the record or take a break, let us know. Do you have any questions regarding the investigation or interview process?

8. The formal interview should begin by having the interviewers identify themselves and place on record the date and time the interview commenced. The interviewer should establish the identity of the interviewee. The interviewee should state his/her employer, job title, and provide a brief employment history. Third parties should attend interviews only at the request of the interviewee. If a third party is present during the interview, the interviewer should establish on the record at the beginning of the interview that the presence of the third party was requested by the

interviewee as his/her representative, and indicate the person's name, job title, and association with the interviewee.

9. Interviewees will normally be permitted at their request to have personal counsel or another individual accompany them during the interview. Otherwise, third parties, such as licensee management, company counsel, and union stewards, will not normally be permitted to attend the interviews. The interviewee may consult with counsel during the interview. Counsel's participation in the interview will be generally limited to advising his client and asking brief clarifying questions to ensure that his client has understood the questions asked by the IIT. If the counsel or other individual also represents or is to accompany another person being interviewed, the IIT will normally permit the attendance of that person if the IIT is satisfied that attendance will not appreciably compromise its investigation.

   The IIT normally will not permit tape recording of the interview by the interviewee since the interview will be transcribed and the interviewee will be provided a copy of the transcript, if requested.

   If the policy regarding the rights of interviewees is unclear and additional legal advice is necessary or desired, the team leader should contact the Assistant General Counsel for Enforcement in OGC.

10. The interviewer should allow the interviewee to tell what happened in his or her own way, starting from a time well before the event, but at a point well defined in the interviewee's mind (e.g., start of shift, lunch break).

11. During the initial narration, the interviewee should be allowed to tell what happened with <u>little or no interruptions</u> by the interviewer. <u>The interviewer's ability to be a good listener and to keep the interviewee talking is essential.</u>

12. Note taking during the interview by NRC personnel should be minimal and unobtrusive, and should cease if it is distracting the interviewee.

13. Followup questions should be kept simple; avoid jargon or terminology that could be foreign to the interviewee. Be objective. Avoid questions answerable with a simple "yes" or "no." Questions such as "is it fair to say..." or "would you agree that..." are useful ways to communicate that the interviewer understands what the interviewee said. "Can you tell me anything more?" is a good question to ask frequently for subsequent explorations.

14. Explanatory sketches, diagrams, or photographs are valuable supplements to the interviewee's statement. <u>They should not be construed, however, as substitutes for the narrative statement.</u> When a document is presented and discussed during the interview, the document should be referenced and entered into the transcript as an exhibit, assigned a number, and provided to the stenographer to be included as part of the transcript.

15. At the conclusion of the formal interview, the interviewer should ask the interviewee on the record if there is any other information the interviewee wishes to share with the IIT that has not been specifically covered during the interview.

16. The lead spokesperson should provide the phone number and location where he/she can be reached should the interviewee recall additional information to share with the IIT.

17. A copy of the general guidelines, "Review and Availability of Transcripts," is to be provided to all interviewees at the end of each interview (Exhibit 1).

18. The transcripts are controlled and handled according to Exhibit 2, Handling Transcripts. A copy of this exhibit must be given to the NRC custodian for the transcripts.

Exhibit 1
Guidelines for
Review and Availability of Transcripts

The Incident Investigation Team (IIT) has had interviews and meetings transcribed to assist the team in its investigation. Interviews should be transcribed overnight and, in general, be available for review the following day. Individuals wishing to review their transcripts should bring proper identification with them. Transcripts of interviews and meetings are available for review under the following guidelines:

(1) During the team's investigation, a copy of the transcript of personal interviews will be made available for review only to individuals who were interviewed. In the case of joint interviews, each person who was interviewed may examine that transcript. Individuals may read only their transcript, and may consult with personal counsel while reviewing the transcript. No copies of the transcript are to be made.

(2) Individuals may make corrections to their answers. Corrections should be made on errata sheets which will be attached to the transcript (see the form attached) rather than on the transcript itself. If anyone wishes to speak further with the IIT, the team will be available for further interviews. These interviews will also be transcribed.

(3) After the conclusion of the investigation, each individual interviewed, upon request, will be given a copy of the transcript of his interview for his personal retention and use.

(4) After those interviewed receive a copy of their transcripts, the transcripts will be transmitted to NRC's Public Document Rooms where it will be available to the public.

(5) Transcripts of meetings between the IIT and the licensee will be available to NRC personnel (including the Region) and licensee personnel for review. The licensee may make corrections which will be included with the transcript. Corrections should be made on the errata sheets that will be provided rather than on the transcript itself.

(6) Copies of the meeting transcripts will be provided to the licensee for its retention after the IIT has concluded its investigation. The transcripts will be made available to the public unless the licensee has made a request to protect proprietary information in the transcripts in accordance with NRC regulations.

DIRECTIONS FOR MAKING CORRECTIONS

If you have any corrections that you wish to make on your transcript, please do so on the following page in the following fashion:

> Indicate the page of the correction, the line number, then the change to be made and the reason for making the change. Date and sign all correction pages that correspond with your transcript.

If you have no corrections or clarifications, please state this on the following page and date and sign the correction page.

ADDENDUM TO INTERVIEW OF _____
(Print Identity of Interviewee)

Page	Line	Correction and Reason for Correction

Page ____ Date _____ Signature _____

TRIAL USE ONLY

Exhibit 2

HANDLING TRANSCRIPTS

Purpose: To establish guidelines for the Incident Investigation Team (IIT) regarding the proper administrative handling of transcripts.

Procedure - General

Immediately upon the establishment of an IIT, the IIS shall contact the Project Officer from the Atomic Safety and Licensing Board Panel (ASLBP) to procure stenographer service. Two stenographers are to be requested in order to provide overnight turnaround from the reporting service for transcripts and in the event that the team leader desires to use parallel team interviews. The location and schedule for the first interviews should be provided to the contractor. (See Administrative Procedure 3.)

Procedures - Specific

1. The IIS will notify the Region (resident inspector) to make arrangements with the licensee to supply two rooms for conducting the interviews.

2. Interviews conducted each day should be transcribed overnight and five* copies of the transcribed interviews will be made. The contractor will send the original transcript and two copies to the Chief of the IIS for reference and the other three copies will be available to the IIT at the site the next day. One of these copies will be made available for review to those individuals interviewed. Errata sheets resulting from this review will be copied and copies attached to each transcript. The original errata sheets will be sent to the IIS to be attached to the transcripts sent to headquarters.

3. An individual should be requested from the regional office (or alternatively, the secretary in the resident's office) to maintain control of the transcripts (referred to as the custodian). This control consists of (a) assuring that unauthorized individuals do not gain access to the transcripts, (b) contacting each interviewee to schedule an appointment to review the transcript, (c) checking transcripts in and out to participants in the interviews and assuring that they are reviewed individually and that copying does not take place, (d) making sure that the transcripts remain in the room where they are being reviewed, (e) maintaining control of errata sheets and assuring they are properly completed and attached to the transcript and distributed, and (f) when authorized, transmitting the transcripts to the interviewee at the completion of the investigation in response to his/her request.

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* The number of copies may vary depending on the NRC contract.

4. A list of completed interviews should be compiled for the IIT by the custodian for the transcripts. Each transcript should be identified by a number, name of interviewee, job title, date and time of interview.

5. After the IIT report has been presented to the Commission, all transcripts will be transferred to the IIS for proper disposition.

   a. All copies are to have errata sheets attached to them.

   b. A copy of each transcript is to be transmitted to the Public Document Room (PDR), the local PDR, and to the Document Control Room.

   c. One copy is to be sent to the Project Officer in ASLBP for the purpose of determining reporting service costs. This copy will be returned to the IIS and, along with the original transcripts, will be placed in the IIS file for future reference.

6. Specific Guidance for the Custodian:

   a. Ensure that transcripts of individual interviews are checked out only by the individual who was interviewed (as identified on the first page of the transcript). In the case of joint interviews, each person who was jointly interviewed may examine that transcript.

   b. Be aware that transcripts of meetings between the licensee and NRC personnel may be checked out by either NRC or license personnel.

   c. Keep a sign-out sheet for the transcripts. Log in the time checked out and the time returned for each transcript, the title of the transcript (for example, "Smith Interview," "6-15-85 Meeting"), and the person who checked the transcript out.

   d. Ask for identification of persons checking out the transcript, particularly for persons wishing to see the individual interviews.

   e. Ensure that the individual has been provided a copy of the general guidelines "Review and Availability of Transcripts," which includes instructions for making corrections of transcripts (Exhibit 1). Also provide an errata sheet and additional sheets as requested.

   f. If there are no corrections provided by the individual, the errata sheet should state this.

   g. Collect any missing errata sheets and make sure they are signed and dated.

   h. Do not permit photocopying or retention of the transcript until its release is authorized by the IIT.

   i. Copy and attach all errata sheets to the transcript copy that was made available for review to the individual. If an interviewee chooses not to review his transcript, so note on the errata sheet.

Treatment of Quarantined Equipment

GUIDELINES FOR THE TREATMENT OF QUARANTINED EQUIPMENT

IIT Procedure 4

4.1 Purpose:

To provide guidance for equipment to be quarantined and related troubleshooting action plans during an Incident Investigation Team (IIT) investigation.

Attention

At all times, the licensee is responsible for quarantined equipment and can take action involving this equipment it deems necessary to:

- o achieve or maintain safe plant conditions,
- o prevent further equipment degradation, or
- o test or inspect as required by the plant's Technical Specifications

To the maximum degree possible, these actions should be coordinated with the team leader in advance or notification made as soon as practical.

4.2 Background

The objective of an IIT investigation is to collect, analyze and document factual information and from it determine the probable causes, conditions and circumstances pertaining to the event. To learn how equipment failed or performed in an anomalous manner during an event, the IIT must minimize the potential that the equipment could be manipulated such that important information concerning its performance during the event could be lost. Thus, the Regional Administrator quarantines the equipment in its "as-found" condition, usually through a Confirmatory Action Letter (CAL). Then the licensee develops a detailed troubleshooting action plan for systematic inspecting and troubleshooting the equipment in order to identify the probable causes for its failure or observed performance. After the probable cause(s) of failure of a particular component or piece of equipment is determined, the equipment is released from quarantine.

The CAL confirms the licensee's intention/plans, among other things, that any equipment that may have malfunctioned during the event be preserved, except as required for safety, in its present condition. Thus, the licensee is to hold in abeyance all work in progress or that is planned for the equipment. The IIT leader is authorized to define and revise the quarantined equipment list (QEL), and to approve testing or troubleshooting of the equipment.

4.3 Quarantined Equipment List (QEL)

The QEL should be limited to that equipment that was significantly involved in the event. For example, only that equipment that failed or malfunctioned during the event and had an impact on the sequence of events should be

included. (Exhibit 1 contains a sample QEL.) Equipment can be added or deleted from the list as the investigation progresses. Equipment remains on the list until the team leader determines that the probable causes of failure have been identified or that its performance was not a significant contributor to the event. Quarantining equipment can result in a significant disruption to the licensee's activities, so the team should minimize the impact to the maximum degree possible.

The IIT and licensee representatives should reach a common understanding about the scope of the QEL, why each piece of equipment on the initial list is there, and what the boundaries of the quarantine are. Boundaries should include relevant components and/or systems that may have caused or contributed to the failure or observed performance of the equipment. For example, instrumentation and control, power supplies, and cabling necessary to the operation of the equipment need to be defined as to whether they are in or out of the quarantined boundary. Again, discretion and judgment must be exercised to minimize impact on the licensee's activities.

As noted previously, the licensee on its own authority can take action as appropriate, (1) to achieve or maintain the facility in a safe, secure condition, (2) to prevent further equipment degradation or damage, or (3) for testing or inspection activities required by the plant's Technical Specifications. If there is a conflict about an item on the QEL that the IIT believes is vital to its investigation, the team leader and the licensee should agree on a procedure to minimize the amount of key information that could be lost. If the conflict cannot be resolved to the satisfaction of the team leader, he should inform the EDO of the problem and obtain guidance for its resolution. For example, both diesel generators malfunctioned during an event and had to be placed on the quarantine list. Technical Specifications require one diesel generator to be made operable within 72 hours. The IIT leader should review procedures developed by the licensee to meet the limiting condition for operation as well as to minimize the amount of key information that could be lost.

4.4 Quarantined Equipment List Guidelines

1. The QEL should be compiled and maintained by the licensee, and reviewed and approved by the IIT.

2. The QEL is subject to multiple revisions. The current QEL should contain its revision number, date, and the changes made to it from the previous version.

3. The QEL and its revisions should receive prompt and wide distribution including the IIT, NRC Offices, the Region, and licensee organizations, e.g., as part of the Preliminary Notification (PN) status report.

4. Equipment on the QEL should be clearly identified and secured in the plant (roped-off, tagged out, labeled, etc.) to the extent practicable. A licensee-designated individual for the particular equipment should be identified such that he/she can be contacted when access to the area/equipment is necessary and coordinate with the IIT.

4.5 Guidance for Developing Troubleshooting Action Plans

Establishing troubleshooting action plans for quarantined equipment is necessary in order to provide a process by which the probable causes of the conditions observed and equipment malfunctions can be ascertained. It is important that the troubleshooting activity on the equipment does not inadvertently result in loss of information necessary to confirm postulated causes of equipment malfunctions. Action plans ensure that the troubleshooting is systematic, controlled and well-documented, and that adequate records on the "as-found" condition of malfunctioned equipment are maintained.

A proven method of minimizing the time spent in reviewing action plans, yet ensuring their completeness, is for the IIT and licensee to agree on generic guidance that will be part of each action plan and included in the troubleshooting activities. From the generic action plan, specific action plans (one for each piece of equipment quarantined) should be developed by the licensee. When the IIT receives a specific action plan for review, it can focus on the details for the equipment under investigation.

4.6 Guidelines

1. For each item on the QEL, an action plan should be developed by the licensee for investigative or troubleshooting work and approved by the IIT leader prior to implementation. (Note: In order to minimize delays, if possible, the IIT should complete its review of all troubleshooting action plans prior to leaving the site.)

2. The action plan must clearly document the scope, affected equipment, and the objectives of the troubleshooting activity. It should be a self-contained document that provides a definitive basis for the troubleshooting work. In general, the IIT may review maintenance work orders (MWOs) for information, but not formally approve them for troubleshooting. Existing plant surveillance testing procedures, functional test procedures, or maintenance procedures can be modified or incorporated into the action plan.

3. The action plan should document all as-found conditions, such as any missing, loose or damaged components, and note their positions (open, closed, up, down, knob settings, switch positions, setpoints etc.), and any abnormal environmental conditions the operation of cooling devices, water leaks, oil leaks, loose fittings, cracks, evidence of overheating or water damage, cleanliness, bent tubing fluid levels, jumpers, lifted wires, etc. Whenever possible, photographs should be used to document as-found conditions. When necessary, samples of fluids or their residue should be retained for further analysis.

4. A cognizant licensee engineer knowledgeable in the design and performance requirements for the equipment under consideration should be identified to be the point of contact and be responsible for each action plan.

5. The action plan should include or require a review of all known information and data defining conditions existing prior to, during, and after the event. This information should include maintenance, surveillance, and test histories and any changes in design or in the method of operating the equipment and/or system. Significant findings from this review should be included in the action plan and used in formulating hypotheses for the probable causes of equipment and/or system anomalies.

6. The action plan should include, if possible, a requirement to test the equipment during conditions under which the system, train or component failed to operate properly. Such tests are extremely desirable when the causes of the failure are not obvious. The IIT should ensure that the test procedures duplicate, when practicable, the component conditions that existed during the event. When actual conditions cannot be reproduced, simulated conditions may suffice if their limitations on testing results are specified.

7. The action plan should indicate the apparent cause(s) of the equipment malfunction and include precautions against the destruction of material evidence that would substantiate the apparent or any other cause.

8. The action plan should address the degree of participation by vendor representatives. Vendor representatives should at least be contacted to discuss the performance of the equipment. Their participation should be encouraged if appropriate licensee expertise is not available. Vendor representatives are also expected to follow the action plan and requirements of the MWO.

9. The action plan should list the sequence of troubleshooting activities as procedures. If the sequence can be determined prior to the activity being performed, that sequence should be specified, with a check-off for each step. If a specific sequence cannot be determined prior to the activity, a general sequence should be identified, with specific steps documented as they are performed.

10. The sequence of troubleshooting activities should include hold points to enable observation and photographic documentation of conditions found. NRC regional staff will normally provide oversight during the troubleshooting activities.

11. Repairs or corrective maintenance to equipment should not be part of the action plan (outside the scope of the IIT). These aspects will be handled separately by the licensee and the NRC following the troubleshooting process.

12. The action plan should specify that when conditions other than what might have been expected based on the developed hypothesis(ses) are noted during troubleshooting, work should cease and appropriate licensee and NRC personnel consulted prior to resuming.

13. The action plan should state that all replaced components/equipment should be retained for subsequent review and examination, and that complete traceability should be maintained. Damaged equipment should not be discarded or shipped offsite without prior team leader approval. The IIT may require that the failed components be examined by an independent laboratory.

14. Completed action plans and the schedule for the implementation of troubleshooting activities should be reviewed by the IIT before completing the initial onsite phase of the investigation. A coordinated approach should be established so that, to the degree possible, the Team's activities do not unnecessarily delay implementation of licensee recovery actions.

15. The licensee should advise the IIT/NRC Resident Inspector as soon as practical of work plans and schedules so that arrangements could be made with the regional office to have NRC staff available to observe troubleshooting activities.

16. The licensee should notify the IIT when the probable cause of each equipment malfunction/failure has been identified. Agreement should be reached with the licensee on the extent, nature, and schedule of the troubleshooting documentation.

17. Repairs and corrective actions on the quarantined equipment should not proceed until the IIT has concurred in the probable cause determination and the piece of equipment has been removed from the QEL.

18. Generic guidance for the investigation of troubleshooting equipment is contained in Exhibit 2. Several example action plans are provided in Exhibit 3. The generic guidance and example action plans can serve to help guide the licensee's activities and should be provided for his/her information and consideration.

Exhibit 1

Sample Quarantined Equipment List

The licensee recommends that the following items remain quarantined:

1. Main Feed Pump Turbine and Controls
2. Steam and Feed Rupture Control System (SFRCS) and Associated Instrument Channels
3. Auxiliary Feed Pump Turbines and Controls
4. Main Steam Isolation Valve, Including Controls, Actuating Circuits, Pneumatic Supplies
5. Start-up Feed Valve SP-7A, and Controls
6. Source Range Instrument Channels
7. Turbine Bypass Valve (TBV) SP 13A2 - and any other components indicating water hammer damage.

   Traps and drains associated #2 TBV header: MS 2575, MS 737, MS 739, ST 3, ST 3A
8. Power Operated Relief Valve and its controls and actuation system
9. Main Steam Safety Valves and Atmospheric Vent Valves
10. Auxiliary Feed Valves AF 599 and AF 608 Valves, Actuators and Controls
11. Main Steam Valve MS 106 and Controls
12. Service Water Valve SW 502 and Controls on Auxiliary Feed Valves Alternate Supply

This item was released by the IIT:

1. Safety Parameter Display System (SPDS)

This item was added by the IIT:

1. Service Water Valve and Controls on Auxiliary Feedwater Alternate Supply

It is agreed that no work will be done in the proximity of, or on, this equipment.

The licensee agreed to complete a walkdown outside the containment building of the main steam system by appropriate personnel to identify any additional damage that may have been caused by water hammer.

Exhibit 2

Generic Guidelines for Troubleshooting the Probable Causes for Equipment Anomalies

For each item on the Quarantined Equipment List, an action plan should be developed by the licensee for investigative or troubleshooting work which provides the basis for the Maintenance Work Order (MWO). Licensee personnel (lead and/or support) developing the action plan should be identified on the action plan and have knowledge of the design criteria of the specific area being considered. Vendor engineering support will be utilized as necessary to accomplish this requirement. When used, vendor assistance should be documented.

All troubleshooting activities should be preceded by event evaluation and analysis to determine the hypothetical and probable causes of failure or abnormal operation. Conduct the analysis and evaluation as follows:

a. Collect and analyze known information and operational data for conditions prior to, during, and after the event.

b. Review maintenance, surveillance and testing histories.

c. Develop a summary of data including a and b above, that supports any proposed probable cause of failure or abnormal operation.

d. Conduct a change analysis (i.e., what has changed since the last known successful operation of the system or equipment).

e. Based on items a-d, develop primary and alternate hypothesis(ses) for the probable cause of the problem.

f. Develop plans for testing the probable causes and hypothesis (i.e., checks, verifications, inspections, troubleshooting, etc.). In developing inspection and troubleshooting plans, take care that the less likely causes/hypothesis(ses) remain testable.

g. When planning troubleshooting, try to simulate as closely as practical the actual conditions under which the system or component failed to operate properly during the event.

Plant and personnel safety take precedence over all other considerations. After notifying the IIT leader, licensee personnel can temporarily or permanently remove equipment from the quarantined equipment list to (1) achieve or maintain safe plant conditions, (2) prevent further equipment degradation, or (3) test or inspect as required by the plant's Technical Specifications.

It is very important that the investigation not result in the loss of any information caused by disturbances to components or systems. Investigations need to be conducted in a logical, well thought-out, and documented manner.

To avoid the loss of information and to assure the capture of reliable information, licensee personnel should use the following guidelines, in addition to the requirements of existing plant procedures, when initiating and implementing an MWO.

1. Review all action plans for troubleshooting and investigative work with IIT/NRC personnel prior to implementation.

2. Ensure that MWOs relating to the investigation are coordinated with the quality assurance department.

3. Document troubleshooting and repair on separate MWOs.

4. Have MWOs approved by the action plan cognizant engineer and reviewed by Quality Control and plant management prior to their implementation. It is the cognizant engineer's responsibility to assure that the investigative actions are appropriate, sufficient, properly defined, documented, and that data is preserved.

5. Assure that only current drawings and controlled vendor manuals are used.

6. Consider the need for vendor representatives. Vendor representatives should be used to assist in troubleshooting if appropriate expertise is not available in-house. The representatives will need to be given specific guidance for what they are and are not to do. Vendor representatives must follow the guidelines of this memorandum and requirements of the MWO.

7. Ensure that the MWO clearly documents the scope, affected equipment, and the desired objective of the investigative activity.

8. Document the sequence of activity on the MWO or specify procedures in the MWO. If the sequence can be determined prior to the activity being performed, define that sequence and provide a checkoff for each step. If the desired sequence cannot be determined prior to the activity, as a minimum, define the fundamental sequence to be taken and document each specific step as it is performed.

9. Document on the MWO all as-found conditions. Visually inspect and document any missing, loose or damaged components, note positions (open, closed, up, down, knob settings, switch positions, setpoints, etc.), abnormal environmental conditions, operation of cooling devices, water leaks, oil leaks, loose fittings, cracks, evidence of overheating or water damage, cleanliness, bent tubing, fluid levels, jumpers, lifted wires, etc. Describe the overall condition or appearance. Whenever possible, use photographs to document as-found conditions. When considered necessary, retain a sample of fluids or their residue for further analysis.

10. When conditions other than what might have been expected based on the developed hypothesis(ses) for the probable cause of the equipment malfunction are noted during the investigation, stop work and notify the Action Item Lead Individual. Document the discrepancy. The Lead Individual must sign-off on the discrepancy before the investigation continues.

11. Document the results of the investigation on the MWO.

12. Prior to starting any repair activities, ensure that the licensee cognizant engineer documents that all investigations have been properly completed.

13. Ensure that no equipment is to be shipped off site without prior approval of the IIT.

    Note: In all cases, follow applicable procedures. The requirements of this memorandum must be communicated to craft personnel to avoid any confusion or misunderstandings during this investigative period.

14. Retain all failed or removed components/equipment for ongoing review and examination. Maintain complete traceability.

The IIT/NRC shall be notified when the probable cause of the malfunction/failure has been made determined. As soon as practical, the results of the troubleshooting process, probable cause determinations and justification will be presented to the IIT/NRC (e.g., next day in a meeting).

The NRC shall be advised as soon as practical of plans and schedules for corrective work and before the work is performed.

Note: Any communications with the NRC personnel will be coordinated through the cognizant licensee engineer.

Exhibit 3

Example Action Plans

ACTION PLAN # 10

TITLE: REVIEW OF THE OPERATION OF THE PORV

REV	DATE	REASON FOR REVISION	BY	CHAIRMAN TASK FORCE	APPR. FOR IMPL.
0	6/21/85	Initial Issue	See Rev. 0 for Approvals		
1	7/2/85	Revised text and action plan to update.	T. Isley	[illegible]	7/2/85
2	7/8/85	Revised text and action plan to address control circuits	T. Isley	[illegible]	

TITLE: REVIEW OF THE OPERATION OF THE PORV

REPORT BY: Tom Isley PLAN NO: 10

DATE PREPARED: 07/08/85 PAGE 1 of 5

This report has been prepared in accordance with the "Guidelines to Follow When Troubleshooting or Performing Investigative Actions into the Root Causes Surrounding the June 9, 1985 Reactor Trip", Rev. 4.

I. INTRODUCTORY STATEMENT:

This report describes the way the PORV responded during the transient on 6/9/85 and identifies analysis and actions needed to identify root cause(s).

II. SUMMARY OF DATA:

During the transient on 6/9/85, the PORV cycled three (3) times. The first time the PORV opened for 3 seconds and then closed at the proper setpoint. The second time the PORV opened at the proper setpoint for 3 seconds and then closed approximately 25 psi below the required setpoint. The third time the valve opened at the proper setpoint but did not appear to reseat at the proper pressure. The operator observed that pressure was decreasing and the PORV indicated closed. Because the spray valve was fully opened (by placing the control switch in "open), the operator thought that was causing the pressure decrease. He returned the spray valve to Auto and then closed the PORV block valve as a precautionary measure. After the pressure decrease had slowed, the operator reopened the block valve while observing system pressure. He decided that the PORV was closed and was holding reactor coolant pressure.

It should be noted the PORV block valve stoke time is approximately nine seconds. The acoustical monitor indicated that flow stopped in approximately seven seconds after the block valve started to move to the close position. The exact time at which flow stopped is uncertain because the acoustical monitors are not designed to indicate accurately at low flow rates. Therefore, it cannot be positively identified if the PORV reset (at approximately 300 psi below the required setpoint) or the block valve closed which stopped the flow through the PORV.

Reviewing the previous operations of the PORV shows a total of 91 hot cycles and 17 cold prior to 6/9/85. Adding the 3 hot cycles gives a total of 94 hot and 17 cold, as compared to an allowable number of 440 hot and 25 cold cycles. It has also been determined that the temperature of the loop seal was 469°F which is greater than the required 400°F (minimum), therefore, no piping analysis is required as a result of the 6/9/85 PORV actuation.

III. MAINTENANCE AND SURVEILLANCE/TEST HISTORY:

12-14-76 The PORV was disassembled, inspected, and the seating surfaced lapped (MWO 2161). The valve had lifted 8 times since it was installed.

08-01-77 The PORV failed to open. Replaced power fuses (MWO 77-1592).

09-06-77 The PORV was disassembled, inspected, and seating surfaces lapped (MWO 77-1903). The valve had lifted 14 times since last maintenance.

09-24-77 The PORV failed open during a loss of feedwater accident. The valve was disassembled and the pilot valve was found stuck open. The pilot valve stem was replaced and the nozzle guide was cleaned. When the valve was reassembled and tested, the valve again failed open on the sixth cycle. The valve was again disassembled and inspected. The pilot valve stem was machined to correct the pilot stem-nozzle guide clearance, and the stroke of the pilot valve was adjusted. The valve was cycled 12 times at reduced pressure and once at 2200 psig with no problems. (Reportable Occurrence NP-32-77-16, MWO 77-2120 and MWO 77-2256.)

01-18-79 Because the PORV was leaking, it was disassembled and inspected. The disc, seat, and pilot valve were found to have minor cutting. They were lapped and the valve was reassembled (MWO 79-1307). The valve had lifted 67 times since last maintenance.

04-19-79 The PORV actuating linkage was checked for proper operation and proper supply voltage to the solenoid coil was verified. No problems found (MWO 79-1978).

05-17-79 The setpoints for the PORV were changed to open at 2400 psig and close at 2350 psig (FCR 79-169).

10-29-79 Because the PORV was leaking, it was disassembled and inspected. The valve disc and pilot disc were lapped and the valve was reassembled (MWO 79-3433). The valve had lifted 2 times since last maintenance.

03-24-82 Because the PORV was leaking, the valve was disassembled and repaired (MWO 81-3662). No lifts since last maintenance.

09-01-82 The PORV was stroked per PT 5164.02. No problems found.

09-06-83 The setpoints for the PORV were changed to open at 2425 psig and close at 2375 psig (FCR 79-348).

09-14-83 The bistable setpoints were checked by ST 5040.02 and found to be acceptable.

12-28-84 The bistable setpoints were checked by ST 5040.02 and found to be acceptable.

Maintenance and Test Summary

The majority of the maintenance was to correct for minor leakage. The valve failed open one time, was repaired, and had operated properly prior to June 9, 1985. The routine testing has not found any problems with the PORV.

Change Analysis

Since the PORV was last operated on September 1, 1982, the only change was to the bistable setpoints. Since the bistable functioned properly and the setpoints have been verified twice since they were changed, this did not have any effect on the operation of the PORV. There have been no other changes since the last successful operation.

Failure Hypotheses Summary

A discussion with B&W about the way the PORV operated, produced several possible causes.

1. During the first two lifts of the PORV, the loop seal could have emptied which would have allowed the valve to pass only steam during the third lift. The hot steam could have caused the disc to expand more rapidly than the valve body causing the disc to stic.. After the valve temperatures had equalized, the disc would free up and then reseat. Subsequent Toledo 'dison calculations have shown that the loop seal would have been emptied during the first lift of the PORV.

2. The linkage for the pilot valve could have broken allowing closed indication but the pilot valve would still be open, keeping the PORV open.

3. One of the solenoid coil guides could have broken causing the valve to stay open. This has happened on a similar valve by a different manufacturer.

4. Possible corrosion or boric acid buildup on the solenoid coil linkage causing the linkage to stick.

5. A piece of foreign material inside the valve caused the disc or pilot valve to stick open.

6. The possibility exists that pressurizer level was high enough to put water through the valve. This has been rejected as a possible cause for the failure because the valves tested by EPRI all worked properly when tested with water.

The Crosby Valve and Gage Co. was contacted and they were unable to provide any additional information about possible failure modes for the PORV. They reminded us that their valve worked very well in all of the testing done by EPRI.

We have reviewed the EPRI test data to determine if the testing done would provide any information. The testing done by EPRI used a similar Crosby valve with a 1 3/8" bore while ours has a 1½" bore. They had some problems initially with the pilot valve bellows cracking or being improperly machined but the valve functioned properly after those problems were corrected. Previous maintenance has detected no problems with the bellows in the valve at Davis-Besse. The EPRI test demonstrated that the tested valve closed in 0.1 to 0.2 seconds.

The EPRI test set up did have a loop seal. In one test, the conditions were very close to the conditions experienced on June 9, 1985 immediately prior to the first lift of the valve. In the EPRI test the valve closed properly, however, they only did one cycle while we experienced multiple cycles.

Our review of the NPRDS data since TMI 2 found a PORV failed open at another utility one time. The valve that failed is a different design and that failure is not believed to be related to the failure we experienced.

Our review of "Nuclear Power Experience" for PWR's found several PORV failures due to seat leakage and 6 times that a PORV failed open or could have failed open at another power plant.

- Oconee 3 - PORV failed open due to heat expansion, boric acid buildup, solenoid lever rubbing, and bent spring bracket.
- Connecticut Yankee - PORV failed open due to dirty contacts in the control circuit.
- North Anna 2 - PORV failed open when returned to service after maintenance due to improper assembly.
- Palisades - During system pressurization, the PORV was found to have excessive leakage. This was caused by the pilot valve being held open by the solenoid plunger because the plunger spring had slipped due to a loose spring guide.
- Ginna - The PORV failed open due to a restriction on the air discharge from the solenoid valve. This restriction prevented the solenoid valve from resetting when power was removed.
- TMI I - An inspection of the internals of the PORV found corrosion buildup that could have caused the valve to fail open.

The failures identified do not appear to have anything that would indicate a common type of failure.

The PORV was disassembled on 7/6/85 and inspected by the Crosby field representative. This inspection failed to show any problems that could have caused the valve to remain open after receiving a closed signal. As a result of the inspection, Crosby has recommended that the following additional testing be performed.

2

1. Check the control circuits to verify proper operation.

2. Reinstall the valve and cycle the valve several times at reduced pressure (approx. 600 psi) and then again at full pressure.

IV. HYPOTHESES:

1. The PORV stuck open due to differential expansion of the disc and body.

2. The valve mechanically malfunctioned causing it to not close during the transient.

3. The solenoid coil linkage could be broken or have corrosion buildup causing faulty operation.

4. A piece of foreign material caused the disc or pilot valve to stick.

2

5. A control circuit malfunction caused the PORV to remain open.

TRI:lrb
Attachment

Rev. 1

ACTION PLAN

PLAN NUMBER	PAGE
10	1 of 2
DATE PREPARED	PREPARED BY
07/08/85	T. R. Isley

TITLE

REVIEW OF THE OPERATION OF THE PORV (Rev. 2)

SPECIFIC OBJECTIVE

STEP NUMBER	ACTION STEPS	PRIME RESPONSIBILITY	ASSIGNED TO	START DATE	TARGET DATE	DATE COMPLETED
	ALL STEPS OF THIS PLAN ARE TO BE PERFORMED IN ACCORDANCE WITH THE LATEST REVISION OF "GUIDELINES TO FOLLOW WHEN TROUBLE-SHOOTING OR PERFORMING INVESTIGATIVE ACTIONS INTO THE ROOT CAUSES SURROUNDING THE JUNE 9, 1985 REACTOR TRIP".					
1	Perform a visual inspection of the PORV and associated linkage. Check for broken or missing parts, boric acid buildup, or other abnormalities.	T. Isley	O'Neill			
2	Under the direction of the Crosby representative, disassemble the PORV. Check the internals for damage, proper clearances, abnormal wear, or foreign material. Also check the bellows for proper fit or cracking.	T. Isley	O'Neill			
3	Analyze the results of the inspection and data surrounding the transient to determine if differential expansion caused the valve to stick open. This analysis is expected to take several weeks and will require the results of the valve inspection before proceeding.	T. Isley	Foust Straube			

ACTION PLAN

PLAN NUMBER	PAGE
10	2 of 2
DATE PREPARED	PREPARED BY
07/08/85	T. R. Isley

TITLE

REVIEW OF THE OPERATION OF THE PORV (Rev. 2)

SPECIFIC OBJECTIVE

STEP NUMBER	ACTION STEPS	PRIME RESPONSIBILITY	ASSIGNED TO	START DATE	TARGET DATE	DATE COMPLETED
4	Check the operation of the control circuits by verifying proper bistable setpoint and operation of control relays.	T. Isley	O'Neill			
2 5	Reinstall the PORV and cycle the valve at least 6 times at about 600 psi.	T. Isley	O'Neill			
6	Cycle the PORV at least 3 times at about 2155 psi.	T. Isley	O'Neill			

Exhibit 3 (Contin...)

4-16

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Rev. 1

X/P 10 (Rev. 2)

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TROUBLESHOOTING ACTION PLAN

ACTION LIST ITEM NUMBER 11b

ACTION LIST DESCRIPTION SYSTEM RESPONSE AUXILIARY FEEDWATER FV-20527, FV-20528

QUARANTINED EQUIPMENT LIST ITEM NUMBER 12b, 12c

RESPONSIBILITY OF Jim Field

PREPARED BY George Paptzun DATE January 7, 1986

DESCRIPTION OF ISSUE:

This action plan addresses the failure of the Auxiliary Feedwater to "A" Steam Generator Automatic Isolation Valve, FV-20527, identified during the December 26, 1985 trip recovery. In addition, this action plan provides for investigation of the similar Auxiliary Feedwater to "B" Steam Generator Automatic Isolation Valve, FV-20528.

FV-20527 and FV-20528 are normally closed control valves and were closed prior to the transient. During the transient, the failure of ICS caused the control valves to go to midposition with no remote control capability. In an effort to reduce Auxiliary Feedwater flow, operators were dispatched to locally manually close the control valves, FV-20527 and FV-20528 using side mounted hand jacking mechanism.

The "B" Auxiliary Feedwater control valve was partially closed by an operator The operator though he had completely closed the valve at this point. Feedwater flow to the "B" Steam Generator decreased by approximately 60%.

The "A" Auxiliary Feedwater control valve was closed manually by an operator. The operator believed that the valve was only 80% closed. A cheater was used on the "A" Auxiliary Feedwater control valve manual operators and damaged the operator.

The "A" Auxiliary Feedwater control valve reopened.

"B" Auxiliary Feedwater control valve, FV-20528, was found to be partially open. An operator fully closed the valve. Auxiliary Feedwater to "B" OTSG was stopped.

SUMMARY OF INFORMATION SUPPORTING PROBABLE CAUSE:

The Auxiliary Feedwater to "A" Steam Generator Automatic Isolation Valve, FV-20527, was manually operated in the closed direction after the valve was already closed. Excessive force was applied to the hand jacking mechanism with a cheater. The control valve popped open as a result of the force applied to the jacking mechanism with the cheater bar, shifting the jacking mechanism's attachment position. The spring on FV-20527 forced the valve open. The jacking mechanism was no longer firmly attached to the FV-20527 operator yoke allowing the valve movement.

An inspection of the valve operator FV-20527 revealed that the jacking mechanism had dropped approximately 3/4." The valve jacking mechanism is attached to the valve operator by one U-bolt and two hook bolts.

A subsequent inspection of FV-20528 revealed a similar movement of the jacking mechanism of approximately 1/2." It is not known when the jacking mechanism moved on FV-20528. Flakes of paint on the FV-20528 operator were not as obvious as those flakes of paint on the operator of FV-20527.

The hook bolts on both FV-20527 and FV-20528 are loose.

FV-20527 and FV-20528 are pnematically operated control valves. The valves are 4", 1150 psig diaphram actuated control valves. The actuators are direct acting with reverse loading positioners.

Based on controled vendor instructions and detailed vendor drawings a list of probable causes was developed for the "A" Auxiliary Feedwater control valve failure.

The hand jacking position shift may have been caused by:

1. Excessive force on the hand jacking mechanism.
2. Improper mounting bolt torque.
3. Improper positioning of the hand jack mechanism on the operator yoke.

Combination of the above may have been contributory.

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REVIEW OF MAINTENANCE, SURVEILLANCE TESTING AND MODIFICATION HISTORY

A review of maintenance and surveillance testing history shows no work initiated specifically for the hand jack mechanism during the operating history of the plant, since 1974. Both FV-20527 and FV-20528 have been reworked for seat leakage, March 1981.

The attached work request history summary sheet details all documented work on FV-20527 and FV-20528. The majority of the deficiencies required correcting the valve's control circuits or indication circuits. No modifications have been performed on the valve's operator jacking mechanism or valve yokes.

FV-20527 and FV-20528 are stroked quarterly on Surveillance Procedure SP 210.01C, Quarterly Steam and Auxiliary Feed System Valve Inspection and Surveillance. Test stroke times have been consistent through the testing history.

POTENTIAL ROOT CAUSE(S):

The primary potential root cause is operator action based on the use of a cheater to close the valve after the valve, FV-20527, was already closed.

Potential root cause, contributing to the valve failure are:

1. Excessive force on the hand jack mechanism.
2. Improper mounting bolt torque.
3. Improper positioning of the hand jack mechanism on the operator yoke.
4. Operator training.
5. Area lighting, enabling the operator to see the indicator.
6. Valve stem position indication method.

Combinations of the above may have been contributory.

OUTLINE OF TROUBLESHOOTING PLAN:

The scope of this plan encompasses FV-20527 and FV-20528. The focus of the maintenance instruction will be on the hand jacking mechanism and its attachment to the operator yoke. Potential root causes will be resolved by following the guidelines of this troubleshooting plan.

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OUTLINE OF TROUBLESHOOTING PLAN (CONT):

1. Notify the NRC/NRC Resident prior to performing troubleshooting. The purpose of this notification is to allow the NRC the opportunity to observe the troubleshooting.
2. Confirm proper application of jacking mechanism with vendor information.
3. Document as found conditions of the valve operator (limit to those conditions which can be recorded without changing conditions). Photograph valve conditions including valve position indicator. Include QC hold points in the Maintenance Instructions as required.
4. Remove hand jack mechanism from valve operator.
5. Disassemble hand jack mechanism.
6. Inspect hand jack mechanism parts for damage and wear.
7. Determine the root cause from the evidence obtained during troubleshooting.
8. Notify NRC Investigation team of the root cause determination prior to proceeding.

APPROVED BY _____ DATE 1-7-86
Action List Coordinator - SMUD

RELEASED FOR IMPLEMENTATION BY _____ DATE _____
Action List Coordinator - SMUD

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WORK REQUEST HISTORY

FY-20527

DATE	REQUEST	WORK PERFORMED
5/21/75	Both Open & Closed BLPB's stayed lit when an open command was given.	Tightened loose mechanical coupling on limit switch.
1/12/76	Valve leaks thru. I&C to stroke & note extra movement, if any.	Calibrated E/P FY-20527
1/18/76	Valve leaks in hand position. Placed valve in Auto, valve stops leaking.	Void - duplicate WR
1/9/78	Perform PM on FY. FV-20527.	Performed PM
1/29/80	Terminate and test HISS Separation circuit.	Performed STP-856.
3/13/80	Stroke valve from Bailey Control 0-100-0%. Verify valve movement locally at valve.	Operationally tested the valve by stroking it from the control room. Stroked fully open and closed, as verified by local observations at the valve.
2/3/81	Valve leaks thru excessively when in closed position and very little D/P across it. Must be restroked or repaired.	Removed valve internals for inspections. Found internals in good condition. Replaced hand operators. Replaced Gaskets. Stroked.
3/20/81	Valve position indication incorrect. When valve closed - indiation on HISS shows open, closed and auto lights all illuminated.	Adjusted switches for proper open/close indication. found wire (C-43) on switch 4 (N.O.) contacts wire (C-33) on switch 2 (N.C.) contacts. Moved wire C-33 to switch 4 N.C. contacts Moved wire C-43 to switch 2 N.C. contacts per E-205, sheet 29.
6/29/8'	Valve fails to close when BLPB pushed.	Relay EFWB is not energizing FY-20527A to close valve. contacts in EFWP relay (17 and 18) were normally closed in the relaxed state. Corrected the problem per print E10.07A-3, sheet 1 of 2. Correct position of this contact is normally open in the de-energized states. Tested valve - operates properly.

FV-20527 (continued)

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DATE	REQUEST	WORK PERFORMED
1/29/85	Reroute circuit 111F205BE I.A.W. applicable DCN's.	Work complete
7/10/85	Valve allowed some leakage during performance of the AFW Pump. Surveillance. Orange stickers placed.	Valve stroked OK air supply checked OK, E/P cell OK
9/23/85	Packing leak (Stem and between gland follower) found during SP 210.01C.	Adjusted packing 2 flats to stop leak. Control room stroked & timed.

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WORK REQUEST HISTORY

FV-20528

DATE	REQUEST	WORK PERFORMED
5/14/76	Valve does not respond to Bailey controller	Repaired Analog Memory module #5-8-15 in ICS & benched checked OK. Replaced I.C. U-1.
10/30/78	Valve failed open	Close switch does not operate S.V. only Auto and Open. Changed Auto and Closed light bulbs. Placed in Auto and valve went closed. Operated several times and it did not fail.
5/8/79	Valve operator loose on top of valve	Tightened down locknut FV-20528. Stroked valve.
9/11/79	Perform PM on FY FV-20528	Calibrated FY, set limit switches and checked solenoid & H/A station control from control room.
3/13/80	Stroke valve from Bailey control 0-100-0%. Verify valve movement locally at valve.	Stroked valve from control room and verified valve full stroke locally at valve.
7/2/80	BLPB located on HISS in control room has all three lights (Auto, Open & Closed) on when valve is actually closed.	Found wires C43 & C33 on wrong switches and on wrong contacts. Found cams in wrong position, moved wires C43 to 2 NC switch & C33 to 4NC switch. Reversed cam #2 and adjusted for proper indication per E205, Sheet 29.
8/19/80	With valve fully open the close light does not go out. Please repair.	Found microswitch not opening on full open. Adjusted switch and tested to control satisfactory.
8/20/80	Indicates intermediate position when full open and indicates closed with controller at approximately 25%.	Void - duplicate WR
2/3/81	Valve leaks thru excessively when in closed position and with very little D/P across it. Needs to be re-tested or re-paired.	Removed valve internals for inspection. Found 8" diameter ¼" red rubber gasket material. Replaced hand operators. Jammed in valve internals, stem bent straightened, stem- replace gaskets.

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FV-20528 (continued)

DATE	REQUEST	WORK PERFORMED
4/4/81	Both Open & Closed control room indicating lights are illuminated when valve is open.	Adjust limit switches
4/30/81	Body to Bonnet leak	Torqued Body to Bonnet Bolts to Engineering requirements.
5/28/81	With valve open still have closed indication on BLPB	Adjusted switch for close indication
6/18/83	Line-up system as per valve lineup sheet. Fill and vent system for Hydro Test ISI 12 3/4 and 3094.3	Voided
6/16/83	Provide Craft Hydro-static Test 3094.3	Completed set-up & Hydro Test support on 3094.3.
6/16/83	Provide calibrated gage 0-2000 1% full scale for Hydrostatic Test ISI 12 3/4	Provide 2000# gauge.
5/2/85	Open & Close indication	The Emergency Feedwater Valve would not close completely, an investigation revealed that a modification crew lifted the wires that control the valve. The wires were reconnected and satisfactory operation was obtained.

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ACTION PLAN # 8

TITLE: Action Plan for Mainfeed Pump Control System

REV	DATE	REASON FOR REVISION	BY	CHAIRMAN TASK FORCE
0	6/18/85	Initial Issue	J H Blay	B K Bey

Rev. 1

DEC 1986

REC'D JUN 20 1985

TRIAL USE ONLY

TITLE: ACTION PLAN FOR MAINFEED PUMP CONTROL SYSTEM

Report by: Jeff Blay
Don Missig
Tom Isley
Al Topor

Plan No. 8

Page 1 of 8

Date Prepared: June 18, 1985

This report has been prepared in accordance with the "Guidelines to Follow When Troubleshooting or Performing Investigative Actions into the Root Causes Surrounding the June 9, 1985 Reactor Trip", Rev. 2.

INTRODUCTORY STATEMENT

This action plan is the first step in addressing Confirmatory Action Letter Item 4a, establishing the cause of main feed pump turbine (MFPT) 1-1 trip. Item 4b will be addressed at a later date.

SUMMARY OF DATA:

The following is a discussion of the events which took place prior to and shortly after the No. 1 MFPT trip on June 9, 1985.

On June 9, 1985 at approximately 1:2[illegible]:49 computer alarm Q 626 indicated "MFPT 1 Main Oil Pump 1 ON". This indicates the standby main oil pump started approximately 12 minutes before No. 1 MFPT tripped. The Data Trend Table for No.1 MFPT speed indicates that turbine speed increased 29 RPM and then decreased 23 RPM at approximately the same time the standby main oil pump started. This indicates that control valve movement dropped the hydraulic header pressure to <170 psig, therefore starting the standby main oil pump.

Since the MDT 20 control system was installed, valve movement, as described above, has started the standby main oil pump due to the quick response of the unit. Another indication that the control valves moved is the feedwater flow recorders. Approximately 12 minutes before MFPT 1-1 tripped, the charts indicate a change in feedwater flow to both Steam Generators.

The data available concerning No. 1 MFPT trip indicates that the trip was caused by an actual overspeed condition. Recording charts, hooked up after the June 2 problems, show that Limit Switch LS16 was the first indication of a trip. LS16 provides tripped indication of the trip dump valve. Under normal conditions the trip dump valve will trip due to solenoid valve SV-12 energizing, the manual trip lever being actuated, or by the emergency governor plunger due to an overspeed condition. The chart recorders indicate that the hydraulic trip solenoid valve SV-12 did not energize when MFPT 1-1 tripped. Therefore, the trip protection devices associated with SV-12 have been eliminated as possible causes of the turbine trip.

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Using the computer readout of turbine speed as an indication for speed change with respect to time, it can be seen that MFPT 1-1 increased speed by approximately 1591 RPM between 1:34:24 and 1:34:53. This change in speed would be more than sufficient to reach the setpoint for the emergency overspeed plunger to actuate therefore causing the trip dump valve to trip.

The emergency overspeed trip device should actuate between 5866 RPM and 5984 RPM (reference: MFPT Manual GEK 83602). Testing performed after the MDT 20 was installed during the 1984 refueling outage shows that MFPT 1-1 tripped on overspeed at 5920 RPM, 5888 RPM, and 5892 RPM. This testing was performed per PT5136.03, MFPT Overspeed Periodic Test, which requires three consecutive acceptable overspeed trips.

Another indication that MFPT 1-1 speed increased is the feedwater flow charts. At approximately 0135 on June 9, a step increase of approximately 2.5 mpph feedwater flow occurred for total feedwater flow to Steam Generator 1-1 and 1-2. At this time, MFPT 1-1 was in "AUTO" and MFPT 1-2 was in "HAND". This rapid change in feedwater flow indicates that MFPT 1-1 increased speed, therefore increasing total feedwater flow to the Steam Generators. The turbine speed increased until MFPT 1-1 tripped due to an overspeed condition which initiated a plant runback due to a loss of MFPT 1-1 above 55% power.

Following the trip MWO 1-85-1935-00 was initiated on June 9th to attempt to troubleshoot the cause of the MFT trip. Under this work order voltage readings were taken on MFPT 1-1 and compared to readings taken on MFPT 1-2. No significant differences were noted. All work on this MWO was halted on June 9th.

Maintenance And Test History

The MDT 20 control system for the MFPTs was installed during the 1984 refueling outage. After installation of the MDT 20 control system, Test Procedure TP520.83, Main Feedwater Pump Turbine and Auxiliary Support Systems, was performed to test the equipment.

Testing requested by MPR Associates, Inc. was performed by TED personnel on installed equipment in November and December of 1984 which included:

A) A test to establish the dynamic input/output characteristics of the MDT 20.

B) A test to establish the steady state input/output characteristics of the MDT 20 valve positioner.

C) A dynamic response test of the MDT 20 valve positioner.

D) A dynamic response test of the MDT 20 governor during feedwater flush.

Analysis of these tests by MPR concluded that the MDT-20 governor will provide satisfactory feed pump differential control with internal settings as recommended by GE and the Integrated Control System (ICS) settings established prior to the outage with the MHC governor.

Discussion of events concerning April 24th trip:

During operation at 98% full power a flux/delta flux/flow RPS trip occurred. Approximately eight seconds after the Reactor trip, MFPT 1-1 tripped. The cause of the MFPT trip was never positively identified.

Testing was performed to determine if the thrust bearing wear detector trip circuitry could pick up if the standby oil pump is started. Test gauges were installed per MWO 1-85-1442-00 in place of the pressure switches and the standby oil pump was cycled to see if pressure would increase to the trip setpoint. During this testing, pressure did not increase to the trip setpoint. The turbine was also ran through different speed changes to determine if oil pressure could have dropped to trip the turbine. The turbine speed was increased at three different initial speed settings consisting of the following:

1) 3700 RPM to 3900 RPM
2) 3500 RPM to 3900 RPM
3) 3300 RPM to 3900 RPM

This testing indicated that the oil pressure did not decay to the trip setpoints.

Periodic test PT 5136.06, MFPT Emergency Overspeed Governor Tests, was performed to test the overspeed governor. This test was completed successfully.

In addition to the testing which was performed the following instruments were recalibrated:

1) The active and inactivate thrust bearing wear detector pressure switches.
2) The turbine bearing low oil pressure trip switches.
3) The feedpump bearing low oil pressure switches.
4) The main feed pump high discharge pressure trip switches.
5) The MFPT vacuum trip switches.
6) The RFR target speed voltage was adjusted from 4.0090 VDC to 3.6045 VDC.

Discussion of events from June 2nd trip:

During main turbine control valve testing, a high turbine vibration signal tripped the main turbine. The ARTS tripped the reactor. Within four seconds after the turbine/reactor trip, both main feed pump turbines tripped.

Pri. Theory — The theory behind both the MFPT's tripping concerns the following four parameters.

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1. Rapid Feedwater Reduction (RFR) target speed being set too high due to not adding in a bias to the RFR setpoint.

   From January, 1985 until April 24, 1985, the RFR target speed was thought to be set at 4800 RPM, when in fact it was actually 5150 RPM.

   Following the April 24 trip, the RFR target speed was thought to be reset to 4600 RPM, when in fact it was actually 5000 RPM. Reference MWO 1-85-1489-00.

   Following the June 2nd trip, it was found that a voltage bias needed to be added to the RFR setpoint. RFR target speed was reset to 4600 RPM. Reference MWO 1-85-1908-00

2. Main steam header pressure increasing to approximately 1070 psig after the reactor tripped causing the MFPT speed to increase.

3. Booster feed pump suction pressure increasing due to increasing deareator level plus deareator pressure. This would cause main feed pump discharge pressure to increase.

4. Feedwater valves partially closing down causing MFP discharge pressure to increase.

   Based on the above four parameters, there is a possibility that the MFPT's tripped on high discharge pressure of 1500 psig, which is one of the trips that could have tripped both pumps almost simultaneously.

Alt. Theory

Quick response time associated with the MDT 20 hydraulic control system could cause hydraulic oil pressure swings which could have activated trip circuitry. This theory is not conclusive based on the following:

Testing indicated that the MFPT's would not trip after the hydraulic control system was subjected to rapid swings by cycling the control valves.

Based on the above theory, the MFPT 1-1 control valves were cycled repeatedly through full stroke cycles as fast as possible with the GE representative. This was performed to try to decrease the oil pressure to activate trip circuitry associated with the hydraulics. No MFPT 1-1 trips were activated. The testing indicates that the MDT 20 hydraulic control system responds from the valves

crack point to full open in approximately 0.6 seconds.

Continued testing by GE identified that the #1 MFPT could be tripped when stopping the #2 Main Oil Pump (MOP). If the #2 MOP was left in-service for a period of time and then turned off, the #1 MFPT would not trip. It was recommended by GE not to turn off the #2 MOP on #1 MFPT until after it had run for awhile. This was only a short term solution to the problem. Long term solution will be to inspect both MOP discharge check valves along with PRV3 during a major outage.

While increasing power and performing PT5136.01, MFPT Stop Valve Periodic Test, on #1 MFPT, #2 MOP came on during stroke valve testing. The operators left #2 MOP on for approximately 20 minutes as instructed and then shut-down the #2 MOP after which the #1 MFPT tripped. At 0155 the plant was at approximately 56% power and experienced a runback to 55% power.

Repeated testing after the 6-5-85 0155 MFPT 1-1 trip:

0630 After stopping the #2 MOP MFPT1-1 would trip.

0800 After stopping #2 MOP the MFPT tripped two out of six times.

1400 After stopping #2 MOP the MFPT would not trip. This was performed numerous times with the MFPT on turning gear and at speeds of approximately 4000 RPM's.

1900 Broke vacuum to install additional instrumentation to monitor the active thrust bearing pressure switches.

6-6-85 Additional testing was performed and the MFPT would not trip when either #1 or #2 MOP was stopped.

GE Factory Personnel and Representative felt that the #2 MOP discharge check valve was sticking open and remained open momentarily after stopping #2 MOP. Under this condition, #1 MOP would pump oil back into the #2 MOP impeller and the 55 psig header pressure would decrease. It is possible that the check valve remained open long enough to have the pressure control valve that reduces pressure from 250 to 55 psig (PRV3) to open to maintain header pressure at 55 psig. After the #2 MOP discharge check valve seated, preventing back flow, with PRV3 open the 55 psig header could experience a pressure surge picking up the thrust bearing wear detector trip circuitry. Based on repeated testing, the cause for the check valve to remain open evidently cleared itself.

Strip chart recorders were connected to monitor particular electrical signals and oil system pressures after the June 2 trip to determine the

cause of MFPT 1-1 trip which initiated the reactor trip. The recorders were hooked up to monitor the following information for MFPT 1-1.

CTRM Cabinet Room:

1. Lube Oil Pressure to feed pumps (PS25)
2. Bearing Header Pressure (PS19)
3. Thrust Bearing Wear (PS 2 & 12)
4. Main Feed Pump Discharge pressure (Q628)
5. Speed Reference Signal (TP111)

Locally at MFPT 1-1:

1. Limit switch LS16
2. Solenoid valve SV12
3. Hydraulic header pressure
4. Control oil pressure
5. Thrust bearing wear detective (Active)

FAILURE HYPOTHESES SUMMARY

On the April 24th and June 2nd trips, the reactor tripped and the MFPT(s) tripped shortly afterwards. On the June 9th trip, the MFPT initiated the transient which caused the reactor trip. On the April 24th and the June 2nd trips there was no apparent MFPT overspeed condition. On the June 9th trip we very clearly saw an indication of a MFPT overspeed condition. As a result, we feel that the June 9th trip is unrelated to the previous trips. We will continue to monitor electrical and oil pressure signals.

On June 9, the chart recorder monitoring the speed reference signal shows that demanded speed for MFPT 1-1 was steady until actual turbine speed increased and the main feedwater control valves began to close due to the increased feedwater flow. The ICS speed control for the MFPTs is derived from the pressure drop across the feedwater control valves and from the feedwater demand signal. Due to a developed feedwater flow error signal, the main feedwater control valves closed down and the pressure drop across the valves increased. The ICS turbine speed control circuitry responded properly by reducing the speed reference signal (demanded turbine speed). This indicates the ICS input signal and the MDT 20 electronic circuitry which produces the speed reference signal did not cause the overspeed condition. This also rules out an inadvertent RFR initiation.

An electrical connection problem/malfunction may have developed in the MDT 20 circuitry (excluding the circuitry producing the speed reference signal).

Another possible explanation for the overspeed trip is a hydraulic/mechanical control system malfunction which drove the steam control valves open therefore causing an overspeed condition.

Another possible cause for the overspeed condition could have been a mechanical coupling failure betwen the pump and turbine. Since feedwater flow increased as turbine speed increased, this possibility was ruled out.

An industry poll by MPR revealed that an overspeed failure occurred in an Indiana power station due to a faulty MDT-20 speed circuit. A former G.E. Service Representative was contacted, and he recalled troubleshooting a high speed failure due to a faulty frequency to voltage integrated circuit.

There is indication from the feedwater flow recorders that the problem may be intermittent, which may make it extremely difficult to locate the problem. This fact is also recognized by G.E.

CHANGE ANALYSIS

1. Until the 1984 refueling outage, the MFPT's were equipped with mechanical/hydraulic speed governors (General Electric Model MHC). These MFPT's were replaced with more modern electrical/hydraulic speed governors (General Electric Model MDT-20) installed per FCR 81-075.

   After the April 24, 1985 trip, the following work (Items 2 through 9) were performed:

2. Installed Test gauges on 4-24-85 in place of the active and inactive thrust bearing wear trip pressure switches PS 2715 and PS 2717. Disconnected the test gauges and reconnected PS 2715 and PS 2717 on 4-25-85 per MWO 1-85-1442-00.

3. Recalibrated PS 2715, Active thrust bearing wear trip pressure switch, per MWO 1-85-1451-00.

4. Recalibrated PS 2717, Inactive thrust bearing wear trip pressure switch, per MWO 1-85-1451-01.

5. Recalibrated PSL 1161, MFPT 1-1 turbine bearing low oil pressure trip switch, per MWO 1-85-1451-02.

6. Recalibrated PSL 1192, BFP 1-1 bearing low oil pressure trip switch, per MWO 1-85-1451-03.

7. Recalibrated PSH 506, MFPT 1-1 discharge high pressure trip switch, per MWO 1-85-1451-04.

8. Recalibrated PS 2535A and PS 2535B, MFPT 1-1 low vacuum pressure trip switches, per MWO 1-85-1451-05.

9. Recalibrated the Rapid Feedwater Reduction (RFR) Target Speed Setpoint from 4.0090 VDC to 3.6045 VDC which was thought to correspond to 4600 RPM.

TRIAL USE ONLY

After the June 2, 1985 trip, the following work (Items 10, 11, 12 and 13) were performed:

10. Additional MFPT System test points were monitored and recorded by field mounted strip chart recorders installed per MWO 1-85-1887-00 and 01.

11. Again recalibrated the RFR Target Speed Setpoint from 3.6045 VDC to -2.000 VDC which corresponds to 4600 RPM per MWO 1-85-1908-00.

12. Operational change: #1 Main Oil Pump was changed from primary to backup service and #2 Main Oil Pump was changed from backup to primary service.

13. Operational change: #2 MFPT was placed in ICS manual operation from automatic operation. #1 MFPT was left in automatic operation.

HYPOTHESES INVESTIGATION

Based on the information gathered, it appears that several conditions could have caused MFPT 1-1 to overspeed:

1. Loose connections associated with the electrical circuitry for the MDT 20 system.

2. A circuit board component malfunction.

3. Hydraulic/Mechanical control problem.

ACTION PLAN

ID CODE

Rev. 0

PLAN NUMBER	PAGE
8	1 of 4
DATE PREPARED	PREPARED BY
6-18-85	J. E. Blay D. E. Mibbs A. S. Tuper T. R. Inley

TITLE

MFPT 1-1 Control System Problem

SPECIFIC OBJECTIVE

To determine the root cause of MFPT 1-1 overspeed trip on 6-9-85

STEP NUMBER	ACTION STEPS	PRIME RESPONSIBILITY	ASSIGNED TO	START DATE	TARGET DATE	DATE COMPLETED
	All steps of this Action Plan are to be performed in accordance with the latest revision of "Guidelines to Follow When Troubleshooting or Performing Investigative Actions Into the Root Causes Surrounding the June 9, 1985, Reactor Trip".					
	Action plan steps will be performed in the sequence listed.					
1	Loose connections: Visual inspections and troubleshooting will be performed locally at the pump and at the control cabinet.	J. Blay				
	A log will be maintained to document the troubleshooting performed and the findings. A DVOM or an oscilloscope will be used to monitor connections while performing these checks.					

TRAIL USE ONLY

Rev. 1

Rev. 1

TRIAL USE ONLY

ACTION PLAN

Rev. 0

PLAN NUMBER	PAGE
8	2 of 4
DATE PREPARED	PREPARED BY
6-18-85	J. E. Blay ~~D. B. Misel~~ ~~A. S. Tupur~~ T. R. Isley

TITLE

MFPT 1-1 Control System Problems

SPECIFIC OBJECTIVE

To determine the root cause of the MFPT 1-1 overspeed trip on 6-9-85

STEP NUMBER	ACTION STEPS	PRIME RESPONSIBILITY	ASSIGNED TO	START DATE	TARGET DATE	DATE COMPLETE
2	Circuit board component malfunction:	J. Blay				
	Under the direction of a GE representative, using a check-list per the MWO, an electrical check of the circuits will be performed and no adjustments will be made. A log will be maintained to document the tests performed and the findings.					
	Particular boards of interest are:					
	i) Redundant Speed Pickup Circuitry					
	ii) Speed Summation & Valve Lift Reference Circuitry					
	iii) Operator & Pilot Valve Position Feedback Circuitry					
	iv) Servo Amplifier Circuitry					
	Function signal generators may be used for input signals					

ACTION PLAN

Rev. 0

PLAN NUMBER	PAGE
8	3 of 4
DATE PREPARED	PREPARED BY
6-18-85	J. E. Blay D. C. Hissig ~~A. S. Taper~~ T. R. Isley

TITLE

MFPT 1-1 Control System Problem

SPECIFIC OBJECTIVE

To determine the root cause of MFPT 1-1 overspeed trip on 6-9-85

STEP NUMBER	ACTION STEPS	PRIME RESPONSIBILITY	ASSIGNED TO	START DATE	TARGET DATE	DATE COMPLETED
3	Hydraulic/Mechanical Control System:	J. Blay				
	a) Testing of the hydraulic and mechanical control system will be performed per GE recommendations. Tests such as cycling the valves through full stroke may be performed along with other GE recommended tests. While moving the valves, testing of appropriate electrical signals may also be performed.					
	b) Sample oil and inspect filters for contamination.	J. Blay				
4	If the root cause is not determined from steps 1,2, or 3, then an Aux Steam/Main Steam run of MFPT 1-1 will be performed to obtain data to compare to previous information gathered earlier by MPR. GE may also perform additional checks.	J. Blay				

TRIAL USE ONLY

Rev. 1

TRIAL USE ONLY

Rev. 1 DEC 1986

ACTION PLAN

Rev. 0

PLAN NUMBER	PAGE
8	4 of
DATE PREPARED	PREPARED BY
6-18-85	J. E. Blay ~~D. E. Hisaig~~ ~~A. S. Tupur~~ T. R. Isley

TITLE

MFPT 1-1 Control System Problem

SPECIFIC OBJECTIVE

To determine the root cause of MFPT 1-1 overspeed trip on 6-9-85

STEP NUMBER	ACTION STEPS	PRIME RESPONSIBILITY	ASSIGNED TO	START DATE	TARGET DATE	DATE COMPLETED
5	a) If the root cause is not determined from steps 1,2,3 or 4, then the circuit boards will be sent to GE at Fitchburg for stress tests in an attempt to locate a failure.	J. Blay				
	b) If the root cause is not determined from steps 1,2,3, or 4, then a field wiring check will be performed, such as a megger test.	J. Blay				

Report Preparation

GUIDELINES FOR THE PREPARATION OF THE INCIDENT INVESTIGATION TEAM REPORT

IIT Procedure 5

5.1 Purpose:

To provide guidance for the preparation, release and distribution of the Incident Investigation Team (IIT) report resulting from the investigation.

5.2 Background

The purpose of the incident investigation report is to convey in clear and concise language the results of the IIT investigation. The report constitutes the public record by which the investigation will be measured for thoroughness, accuracy, and objectivity, and to which subsequent reference will be made. Followup actions directed by the Executive Director for Operations (EDO) will be based largely on the contents of the report. The Office for Analysis and Evaluation of Operational Data will coordinate with the Director of the Office of Administration to provide staff to assist IITs in writing, editing, word processing and publication of reports through the Division of Technical Information and Document Control.

5.3 Writing and Publishing Guidelines

These guidelines list the sections that typically appear in an IIT report and describe the general approach for how each should be written or by whom it will be compiled. (Exhibit 1 shows a sample IIT report contents.) This procedure section also provides guidelines for the following report preparation requirements:

- submitting graphics material
- transmitting advance copies of the report
- scheduling preparation of the report.

Also listed are the assumptions on which the report preparation schedule are based and required publication forms.

5.4 Report Writing Guidelines

1. The cover, title page, and spine will be sent to Graphics for preparation by the technical writer/editor assigned to the team.

2. The NUREG number will be obtained by the technical writer/editor.

3. The abstract should be 200 words or less, and describe the "what, where, and when" about the incident and the "how," as space permits. It should state the team's task, that it was sent by the EDO, and that the report contains findings and conclusions. The abstract should not discuss findings and conclusions.

4. The table of contents will be compiled by the technical writer/editor.

5. The list of figures and tables will be compiled by the technical writer/editor.

6. The acknowledgement section should list the names of team members.

7. The acronyms and abbreviations section will be compiled by the technical writer/editor. In the text, terms for which acronyms are used should be spelled out the first time they are used, followed by the acronym in parentheses. Thereafter, the acronym can be used. This practice should be followed for each major section of the report.

8. The report introduction should begin with a brief background statement containing the facility's name, utility, location, reactor type (or type of facility process and materials involved), and date licensed for operation. The introduction should contain a brief description of the incident. In a separate paragraph, the purpose and scope of the IIT's mandate should be described, followed by a description of what is contained, section by section, in the remainder of the report. Findings and conclusions should not be discussed in the introduction.

9. The IIT investigation process section should describe the methodology used by the team in conducting the investigation. This section should include a table of interviews and meetings identifying those interviewed by job title rather than by name.

10. The narrative section of the report tells the story of the incident in chronological order from start to finish. Time markers should be used throughout the description to keep readers abreast of the sequence. The use of a.m./p.m. clock notations should be used since this section of the report will be most widely read by those unfamiliar with 24-hour clock notations. The use of transitional terms that specify time ("in the meantime," "at this point," "before," "after," "then") should be used also. The narrative should be written in the past tense and descriptions of activities of the people involved in the event should be in the third person, unless someone is quoted directly. Quoted statements should be enclosed in quotation marks and the person speaking should be identified by job title. The narrative should not be interrupted with lengthy explanations. A sentence or two of explanation essential for the reader to understand the significance of what is being described is appropriate.

11. The system description section should begin by providing a brief overview statement of what function a system or subsystem performs and of how it is integrated with other pertinent systems before a detailed description of the system or subsystem is given. Equipment and systems should be referred to consistently. The terms and abbreviations that are used in the text should be identical to those on figures.

12. The equipment performance sections and human performance sections should begin with a narrative description of the sequence of events associated with the performance described. While the complete narrative section of the report contains many "threads" that are interwoven throughout the event, the performance sections each describe a single "thread" from start to finish (e.g., the entire story associated with failure of a pump). An equipment performance section may contain some human performance aspects (e.g., a personnel error caused the equipment failure), and vice versa. The degree to which human factors concerns ought to be included in the equipment performance section, or vice versa, should be based on the

dominant characteristic of the sequence and the relevance of the activity to the problem being explored. In addition to describing what happened, the performance sections should explain why it happened (e.g., the results of any troubleshooting, the probable cause).

13. The equipment performance section, as with the system descriptions section, should provide a brief explanation of the function or purpose of the equipment. Where pertinent, any problems the equipment had before the event should be described concisely.

14. The human performance section should be written from the point of view of the people who operate or repair the instrumentation and equipment being described. Operator errors should be described objectively, not judgmentally. Judgments are appropriate for the conclusions section.

15. The precursors section should document all precursor events fully, carefully distinguishing between facts and opinions. Opinions should be identified as such. In general, this section should pertain to all similar events applicable to the event at the facility, e.g., if it could have happened at that plant, it is a precursor.

16. A section of significant items of interest found during the investigation but that were not directly related to the event should be included in the report as needed (e.g., a significant design deficiency that did not play a role in the event was found during the review of a drawing of a system).

17. The findings and conclusions section should distinguish clearly between findings and conclusions. A finding is what the team learned or "found" based on its investigation (i.e., factual information). For example: a piece of equipment failed; its failure caused the loss of a system; operators did not respond quickly to the system failure; procedure manuals do not address this specific sequence of events. A conclusion states a judgment and specifies the significance or implications of a finding. For example: the equipment failed because of poor maintenance; operators were not properly trained to respond to the sequence of events that occurred; the procedures need to be revised to address this sequence of events. The findings and conclusions must be correlated carefully with those discussed elsewhere in the report. The findings and conclusions section should not introduce new information; i.e., nothing should appear as a finding or conclusion for which the basis is not provided in the report; conversely significant issues in the report should be reflected as findings and conclusions.

    In general, for early drafts, it is easier to put the findings and conclusions in the text where they logically would occur and to label them with a heading, "conclusions." This way they can be easily identified when the findings and conclusions for the entire report must be compared for accuracy and consistency before being compiled in a separate section. In later drafts they can be collected into a separate section and the labels in the text removed. This system makes it easier to ensure that there is adequate support for each conclusion.

18. The reference section should contain only accurate and retrievable references which are essential to establishing the basis or credibility of the

IIT report. The reference format style in the NRC Style Manual, NUREG-0650 and in NUREG-0650, Supplement 1 are preferred. The technical writer/editor will assist with the reference format.

19. The appendices section should contain material that clarifies or supplements a finding or explanation crucial to the incident but that is so detailed or voluminous that it would impede readers if it appeared in the body of the report. Typically, this material includes calculations, extensive data summaries, pertinent memos and correspondence, trip reports, texts of interviews, and other information needed to support the team's investigation but not readily available elsewhere. Material from NUREG reports, for example, can be cited in a reference section rather than appearing in an appendix because NUREG reports are readily available.

5.5 Graphic Guidelines

The following guidelines provide instructions for submitting work to the Graphics Section.

1. All work should be submitted by the originator so that he/she can answer technical questions, if necessary. Figures should be coordinated with the technical writer/editor before being submitted to Graphics.

2. Original artwork should be submitted when possible.

3. For original artwork, instructions should be put in writing. The IIT member should retain a copy of the artwork and instructions for future reference.

4. IIT members should put their name and telephone number on the back of each figure submitted.

5. Artwork from previously published work (from another report or manual), should be submitted in the original or in the best copy available. Changes should be marked on a copy of the original in red.

6. If the original appears in a copyrighted source, permission to reproduce should be obtained before the IIT report is issued. The technical writer/editor will provide the appropriate copyright release form.

7. If appropriate, the name of the source from which the original was obtained should be acknowledged.

8. For oversized artwork, the original, not a reduced version, should be submitted.

9. Changes to existing artwork should not be marked on the tissue overlays.

10. The terminology and abbreviations in the text and in the figures should be consistent.

11. The standardized equipment diagram symbols provided in Exhibit 2 should be used. Intentional deviations should be marked with an asterisk and footnoted.

12. Zeros should contain a diagonal line through them (Ø) to distinguish them from the letter O. Likewise, the letter Z should contain a horizontal line through it (Ƶ) to distinguish it from the number 2.

13. For photographs requiring callouts (labels), the callouts and arrows should appear on the copied version. (No writing should appear on the face of the actual photograph.) The original photo and a marked copy should be submitted together. As with other figures, the submitter's name and telephone number should appear on the back of work submitted. A felt-tip rather than a ballpoint pen should be used to write on the back of the original photograph.

14. If the photograph is to be cropped, the crop marks should be marked on a copy of the photograph.

15. Paper clips should not be used on a photograph without padding.

5.6 Publication Forms

The following forms are required to be filled out in order to publish the IIT report as a NUREG document:

1. Form 426, Publications Release for Unclassified NRC Staff Report . This form is filled out by the technical writer/editor and signed by the team leader.

2. Form 335 Bibliographic Data Sheet. This form is filled out by the technical writer/editor.

3. Form 379, Manuscript Review and Cost Data. This form is filled out by the technical writer/editor.

5.7 Distribution of the Advance Copy

An Advance Copy of the team's investigation report is necessary because the final published NUREG will not be available before the Commission briefing. Each copy of the report will clearly indicate on the outside cover that it is an "Advance Copy," and will be stamped for "Official Use Only." Information contained in the report is not to be released until the day of the Commission briefing when a copy will be placed in the NRC's Public Document Room (PDR). The technical writer/editor will consult with the team leader to determine the proper report distribution contained in the transmittal memorandum (Exhibit 3). As a minimum, the NRC Commissioners, EDO, Office Directors and Deputy Directors, Regional Administrators, and the IIT should be on distribution for an Advance copy. The Incident Investigation Staff (IIS) will make arrangements to have couriers deliver the Advance Copies to the Commissioners and to the EDO as soon as it is available.

An additional 75 copies of the team's report will be required for the Commission briefing and delivered by courier to the Office of the Secretary on the day of the briefing. These copies will not be marked OUO or "Advance Copy." The EDO may forward a courtesy copy of the IIT report to the affected licensee before the Commission briefing, and simultaneously forward copies of the advanced report to the Public Document Room and the Local Public Document Room. Following the Commission briefing, the EDO will transmit a copy of the team's final investigation report to the licensee and the staff for review and comment. The purpose for this is to allow the licensee and the staff an opportunity to provide comments on the team's report prior to the EDO defining and assigning follow-up actions to NRC offices. Any changes in the final investigation report are to be documented and handled in accordance with established IIS administrative procedures.

5.8 Distribution of the Published NUREG

The technical writer/editor will arrange for proper report distribution after consulting with the team leader. As a minimum, distribution should be made to NRC Branch Chiefs and above (technical offices only), including Regional Offices, all resident inspectors, and enough copies to accompany the Generic Letter. In general, the Regional Administrator of the affected Region should receive 15 copies and the Office for Analysis and Evaluation of Operational Data (AEOD) should receive 75 copies of the report. The final copies for IIT members will come from AEOD's allotment. The technical writer/editor should call each of the following offices to learn of their requirements:

1. Office of Congressional Affairs

2. Office of Public Affairs

3. Office of State Programs

4. Office of International Programs

5. ACRS

5.9 Schedule

The IIT shall prepare and transmit its final report to the Commission and the EDO in about 45 days from the time the team is activated, unless the EDO grants an extension of the schedule. The EDO will schedule a meeting approximately one week after the Advance Copy has been distributed for the IIT to brief the Commission on its investigation.

The following writing/editing schedule provides guidance to ensure that the report is finished on time.

Days 1-14 - Team's onsite investigation.

Days 15-32 - Team members write their sections and include findings and conclusions in text.

- Members prepare draft figures and select photographs during this period to give Graphics adequate preparation time.

- Original drafts are typed on the IBM 5520 work processing system.

- Authors/team leader review and authors rewrite.

- Drafts are revised on the IBM 5520.

Days 33-41 - The team assembles an essentially complete draft of the report for each member to review. The Director and Deputy Director of AEOD should be given this draft for information and review as they deem appropriate. (The purpose of the AEOD review is to provide suggestions to the team leader concerning the completeness of the report.)

- Following this review, the team meets to discuss comments on each section. (The team leader rewrites on the master copy as the discussion proceeds.)

- The team leader's master copy is then revised on the IBM 5520.

- The editor reviews each section.

- The authors review the editor's comments and resolve problems.

- The team leader extracts findings and conclusions into a separate section, but leaves findings and conclusions in text.

- The draft is revised on the IBM 5520.

- The team meets to resolve team and AEOD comments. The team leader determines which AEOD comments to incorporate into the report.

Day 42 - The team leader (with the Director of AEOD) briefs the EDO on findings and conclusions.

Day 43 - The team moves to the Electronic Text Processing Branch (ETP, formerly CRESS) for its final review and corrections.

- The team makes final review of the complete draft for typos, consistency, and errors, and reviews findings/conclusions for accuracy and consistency. Team members review the same draft (i.e., review sections in series).

- The final draft is put into single-space format.

- The team leader and editor review the final text, resolve typos, etc., and the team leader prepares a transmittal memorandum (Exhibit 3).

- All team members should concur on the report and on the transmittal memorandum.

Day 44 - The editor and team leader assemble the final version and send it to Reproduction.

- Reproduction makes 25 copies of this "Advance Copy" version for distribution by courier to the Office of the Secretary for the Commission Briefing.

Day 45 - Couriers deliver Advance Copies to Commissioners and the EDO.

Day 6 - The EDO will transmit a copy of the report to the licensee and staff for review and comment. Copies will also be sent to the PDR.

Day 52 - IIT presents its report to the Commission.

Day 60 - The EDO will define and assign follow-up actions based on the IIT report and comments received from the licensee and staff.

Assumptions Upon Which the Schedule is Based:

- That at least three typists and IBM 5520 terminals will be available during the week and extra help will be available on the weekends.

- That the team will schedule the completion date for the Advance Copy on a Monday so that the team can use ETP facilities and operators during the weekend.

- That it is prudent not to release the team's report for printing as a NUREG until after the Commission briefing.

- That the team will work 10-12 hour days, including weekends and holidays, while on site.

- That the team will work 8-10 hour days with a little weekend work upon its initial return to Headquarters.

- That the team will work 12-14 hour days, including weekends, during the final 2-3 weeks.

Exhibit 1
Sample Report Outline

Abstract

List of Figures and Tables

The NRC Team for the (Facility Name) Event of (Event Date)

Acronyms and Abbreviations

1. INTRODUCTION

2. DESCRIPTION OF FACT FINDING EFFORTS

   2.1 General Approach
   2.2 Interviews and Meetings
   2.3 Plant Data
   2.4 Quarantined Equipment and Troubleshooting Procedures

3. NARRATIVE OF THE INCIDENT

4. SYSTEM DESCRIPTIONS

5. EQUIPMENT PERFORMANCE

6. HUMAN PERFORMANCE

   6.1 Introduction
   6.2 Shift Staffing
   6.3 Event Recognition
   6.4 Adequacy of Procedures
   6.5 Compliance with Procedures
   6.6 Role of the Shift Techical Advisor
   6.7 Licensed Operator Training
   6.8 Nonlicensed Operator Training
   6.9 Radiation Protection and Emergency Plan

7. PRECURSORS TO THE EVENT AND RELATED NRC AND LICENSEE ACTIONS

8. SIGNIFICANCE OF THE INCIDENT

9. ADDITIONAL ISSUES

10. CONCLUSIONS

    10.1 Principal Findings and Conclusions
    10.2 Other Findings and Conclusions

APPENDIX

Executive Director for Operations memorandum establishing the team.

Exhibit 2
Graphics Attachment

TRIAL USE ONLY

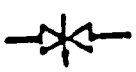
VALVE SYMBOLS

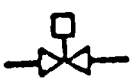
GATE (OPEN)

GATE (CLOSED)

GLOBE

GLOBE (STOP CHECK)


NEEDLE


MOTOR OPERATED

AIR OPERATED

FLOW CONTROL

DIAPHRAGM

SAFETY or RELIEF

ANGLE

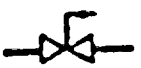
THREE-WAY

STOP CHECK (OPEN)

STOP CHECK (CLOSED)

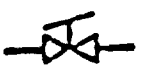
CHECK

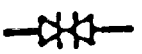
BUTTERFLY (DAMPER)

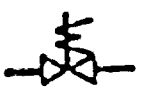

GLAND LEAK-OFF

PLUG or BALL

SAUNDER'S TYPE


QUICK HAND OPERATED


GATE (DOUBLE DISK)


SOLENOID

TRIAL USE ONLY

VALVE SYMBOLS

SQUIB ACTUATED SHEAR PLUG

DE-ENERGIZED

NEXT PORT OF CLOSURE

ENERGIZED

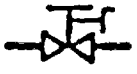
GLAND SEAL WATER

FLOAT

DIAPHRAGM OPERATED CONTROL (OPENS ON AIR FAILURE)

DIAPHRAGM OPERATED CONTROL (CLOSES ON AIR FAILURE)

MANUAL REMOTE


MANUAL OVER RIDE

MANUAL TRIP & RESET

EXCESS FLOW CHECK

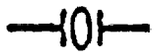
SPECIAL ANGLE (SIPHON)

GLOBE "Y" PATTERN

TRIAL USE ONLY

MISCELLANEOUS DEVICES

REDUCER, INCREASER

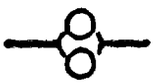

EXPANSION JOINT

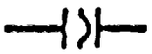
FLEXIBLE CONNECTION

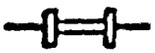
EDUCTOR

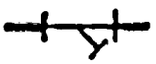
AIR EJECTOR

BASKET STRAINER (SIMPLEX)


BASKET STRAINER (DUPLEX)


RUPTURE DISC


SPOOL PIECE


"Y" TYPE STRAINER

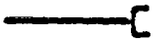
SPECTACLE FLANGE

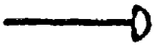
FILTER

TRAP

FLOW METER (POSITIVE DISPLACEMENT)

THREADED CAP

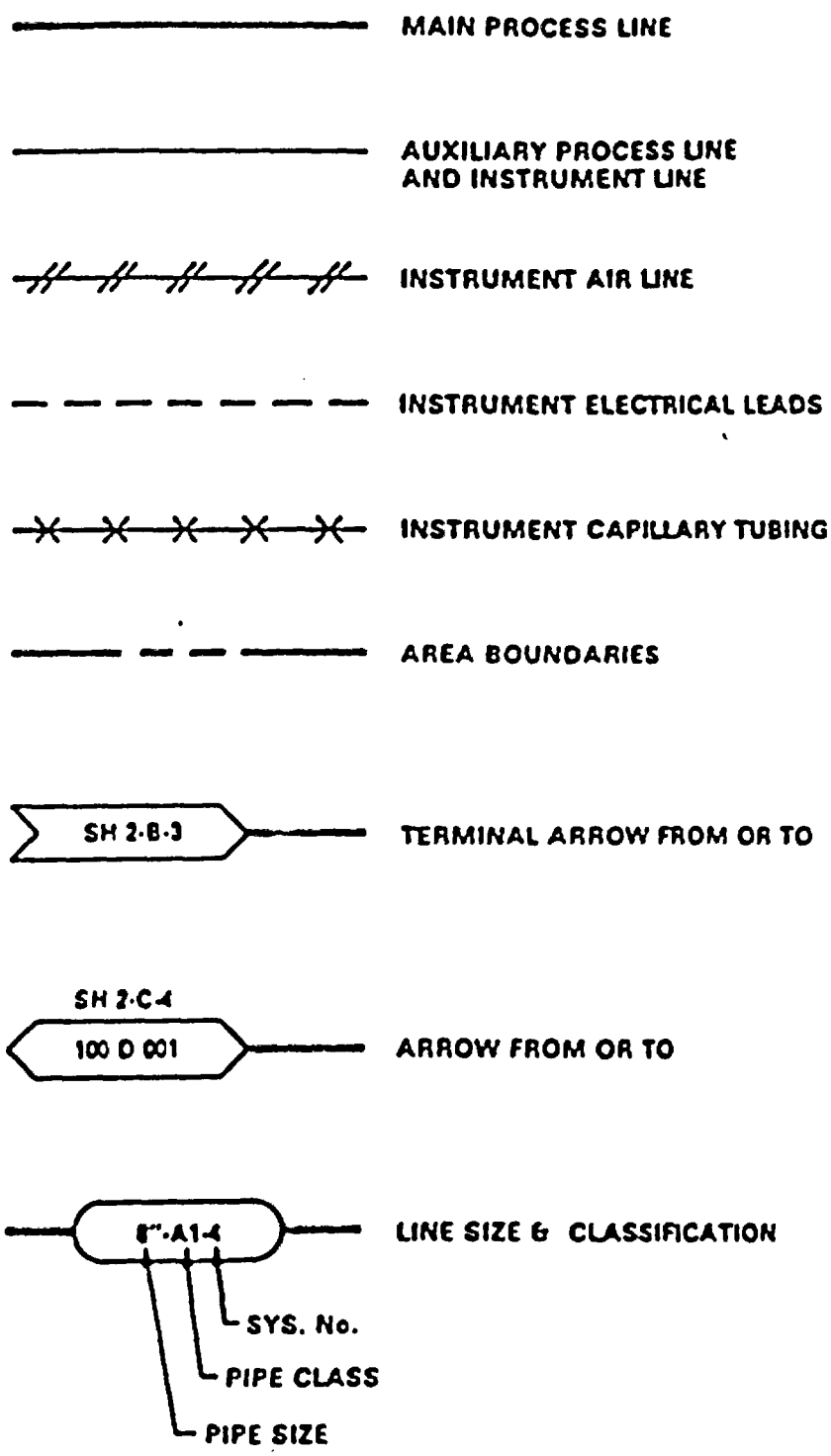

QUICK DISCONNECT


WELD CAP

HOSE CONNECTION

TRIAL USE ONLY
Graphics Attachment

LINE CODING

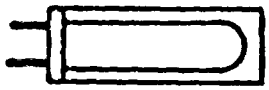


MISCELLANEOUS DEVICES

Graphics Attachment

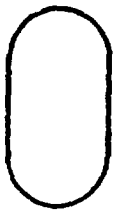
TRIAL USE ONLY

HEAT EXCHANGER

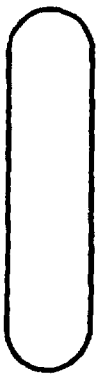


HEAT EXCHANGER (DOUBLE TUBE)

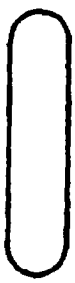
ACCUMULATOR



DIAPHRAGM TANK



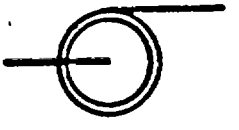
STEAM GENERATOR



PRESSURIZER

PUMPS

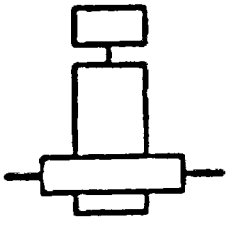
CENTRIFUGAL PUMP



SMALL CANNED MOTOR PUMP

FAN, BLOWER, OR COMPRESSOR

POSITIVE DISPLACEMENT PUMP



REACTOR COOLING PUMP

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ELECTRICAL/INSTRUMENTS

I/P — CONVERTER (CURRENT PNEUMATIC)

REMOTE OR LOCAL PANEL

R "X" P — MULTI POINT RECORDER

MAIN CONTROL ROOM

S — ELECTRONIC TRIP UNIT

A_H — ALARM HIGH

A_L — ALARM LO

USED WHEN SERVICE IS DEFINED

C — COMPUTER SIGNAL

LOGIC

BUS

LOCAL

GENERATOR

T — TRANSMITTER

BREAKER

O — OPEN
C — CLOSED
LIGHT

TRANSFORMER

BATTERY

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

Exhibit 3

February 15, 1986

TRIAL USE ONLY

MEMORANDUM FOR: Victor Stello, Jr., Acting
Executive Director for Operations

FROM: Frederick J. Hebdon, Leader
Rancho Seco Incident Investigation Team

SUBJECT: TRANSMITTAL OF THE TEAM'S REPORT CONCERNING THE LOSS OF INTEGRATED CONTROL SYSTEM POWER AND OVERCOOLING TRANSIENT AT RANCHO SECO ON DECEMBER 26, 1985

Enclosed for your information and appropriate followup action is the Team's report which documents the circumstances and probable causes of the loss of integrated control system power and overcooling transient that occurred at Rancho Seco on December 26, 1985. The Team's report discusses the major implications of the event and includes the Team's findings and conclusions.

It is our understanding that you will take appropriate actions on the important matters contained in the Team's report. Thus, with this report and subsequent appropriate briefings, the work of the Team will be completed. The enclosed report is an advance copy of NUREG-1195, which will be released publicly at the time of the Commission briefing now scheduled for Tuesday, February 25, 1986.

If I can provide any additional information or clarification regarding the Team's report or activities, please let me know.

Frederick J. Hebdon

Frederick J. Hebdon, IIT Leader
Rancho Seco Incident Investigation Team

Enclosure:
As stated

cc w/enclosure:
Chairman Palladino
Commissioner Roberts
Commissioner Asselstine
Commissioner Bernthal
Commissioner Zech

Rev. 1

DEC 1986

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S. Miner, NRR
G. Edison, IIT
H. Bailey, IIT
J. T. Beard, IIT
H. Eaton, IIT
F. Hebdon, IIT

Appendix A

IIP Manual Chapter 0513

Form NRC-489
(1-76)

U. S. NUCLEAR REGULATORY COMMISSION
NRC MANUAL
TRANSMITTAL NOTICE

CHAPTER NRC-0513 NRC INCIDENT INVESTIGATION PROGRAM

SUPERSEDED:	Number	Date	TRANSMITTED:	Number	Date
			TN	0500-18	
Chapter			Chapter	NRC-0513	8/8/86
Page			Page		
Appendix			Appendix	NRC-0513	8/8/86

REMARKS:

This new chapter and appendix define the scope, objectives, authorities and responsibilities, and establish the basic requirements for the investigation of significant operational events involving reactor and non-reactor facilities licensed by the NRC.

U.S. NUCLEAR REGULATORY COMMISSION
NRC MANUAL

Volume: 0000 General Administration
Part: 0500 Health and Safety AEOD

CHAPTER 0513 NRC INCIDENT INVESTIGATION PROGRAM

0513-01 COVERAGE

This chapter defines the scope, objectives, authorities, and responsibilities, and establishes the basic requirements for the investigation of significant operational events involving reactor and non-reactor facilities licensed by the NRC. The Incident Investigation Program includes two investigatory initiatives involving responses by either an Incident Investigation Team or the less formal Augmented Inspection Team for certain safety-significant operational events. The investigation begins after the facility is placed in a safe, secure and stable condition, and, if applicable, after any incident response as defined in Chapter NRC-0502. Operational events of lesser safety significance will continue to be reviewed and evaluated as described in NRC-0515.

0513-02 OBJECTIVES

The overall goal of the Incident Investigation Program is to promote public health and safety and provide for the common defense and security by reducing the frequency of incidents and preventing accidents. This goal is accomplished by ensuring that the investigation of significant operational events is timely, structured, coordinated, and formally administered; and that a complete technical and regulatory understanding of such events is achieved. The following objectives are designed to meet this goal:

021 Ensure that significant operational events are investigated in a manner that is timely, objective, systematic and technically sound, that factual information pertaining to the events is documented, and that probable cause(s) are ascertained.

022 Increase the effectiveness of NRC regulatory programs and licensee operations by the prompt dissemination of the facts, conditions, circumstances, and probable causes of significant operational events and the identification of appropriate followup action.

023 Improve regulatory oversight of licensee activities by uncovering facts that could show whether the regulatory process prior to the event contributed directly to the cause or course of the event.

Approved: August 8, 1986

0513-03 RESPONSIBILITIES AND AUTHORITIES

031 The Executive Director for Operations approves the investigation of significant operational events by Incident Investigation Teams and is responsible for and ensures that followup actions are taken as a result of each investigation, as defined in Appendix 0513, Parts I and II.

032 The Director, Office for Analysis and Evaluation of Operational Data, maintains responsibility for establishment and maintenance of NRC investigatory capability and for arranging for training of designated team members, as defined in Appendix 0513.

033 Other NRC Offices have responsibilities for the Incident Investigation Program as defined in this chapter and appendix.

034 NRC staff functions in the execution of the Incident Investigation Program as defined in NRC Appendix 0513, Parts II and III.

0513-04 DEFINITIONS

041 Incident Investigation. A formal process conducted for the purpose of accident prevention which includes the gathering and analysis of information; the determination of findings and making conclusions, including the determination of probable cause(s) concerning significant operational events; and dissemination of the investigation results for NRC, industry, and public review.

042 Incident Investigation Team (IIT). A group of technical experts who do not and have not had previous significant involvement with licensing and inspection activities at the affected facility and who perform the single NRC incident investigation of significant operational events as defined in Appendix 0513, Part II. The IIT is led by a senior NRC manager. Each IIT reports directly to the Executive Director for Operations, and is independent of Regional and Headquarters Office management.

043 Augmented Inspection Team (AIT). A group of Regional technical experts augmented by personnel from Headquarters or other Regions, led by a Regional manager, that performs incident inspections as defined in Appendix 0513, Part III. Its members may have had prior involvement with licensing and inspection activities at the affected facility. The AIT reports directly to the Regional Administrator.

044 Significant Operational Event. Any radiological, safeguards or other safety-related operational event at an NRC-licensed facility which, by its consequences, poses an actual or potential hazard to public health and safety, property, or the environment. A Significant Operational Event may also be referred to as an incident.

The investigatory response is defined by the potential safety significance of the event, the nature and complexity of the event, and the potential generic safety implications of the event. The levels of investigatory responses are defined as follows:

a. An IIT performs the single NRC investigation of significant operational events which may include one or more of the following characteristics:

(1) A significant radiological release, a major release of uranium recovery byproduct material to unrestricted areas, or personnel over-exposure.

(2) Plant operation that exceeded, or was not included in, the design bases of the facility.

(3) Appears to involve a major deficiency in design, construction, or operation having potential generic safety implications.

(4) An event that led to a site area emergency.

(5) A safety limit of the licensee's Technical Specifications was exceeded.

(6) A significant loss of integrity of the fuel, the primary coolant pressure boundary, or the primary containment boundary of a nuclear reactor.

(7) Loss of a safety function or multiple failures in systems used to mitigate an actual event.

(8) An event that is sufficiently complex, unique, or not understood to warrant an independent investigation, or an event which warrants an investigation such as an event involving safeguards concerns to best serve the needs and interest of the Commission.

b. An AIT performs inspections of events of lesser safety or safeguards significance. Events whose facts, conditions, circumstances and probable cause(s) would contribute to the regulatory and technical understanding of a generic safety concern or an important lesson of experience will be assessed by an AIT. The characteristics of these events may include one or more of the following:

(1) Multiple failures in safety-related systems.

(2) Possible adverse generic implications.

(3) Are considered to be complicated and the probable causes are unknown or difficult to understand.

(4) Involve significant system interactions.

(5) Repetitive failures or events involving safety-related equipment or deficiencies in operations.

(6) Involve questions/concerns pertaining to either licensee operational or managerial performance.

Approved: August 8, 1986

0513-05 BASIC REQUIREMENTS

051 Applicability. The provisions of this chapter and its appendix apply to the Headquarters and Regional Offices of NRC.

052 Appendix 0513. Defines the major components of the Incident Investigation Program (i.e., Incident Investigation and augmented Inspection).

a. Appendix 0513, Part I, INCIDENT INVESTIGATION PROGRAM. Establishes responsibilities and functions for NRC offices for incident investigation; defines objectives, authorities, and provides general guidance.

b. Appendix 0513, Part II, INCIDENT INVESTIGATION TEAMS. Outlines Incident Investigation Team (IIT) response, objectives, and authorities, provides guidance for development of procedures, and establishes followup responsibilities.

c. Appendix 0513, Part III, AUGMENTED INSPECTION TEAMS. Outlines Augmented Inspection Team (AIT) response, objectives, authorities, and provides general guidance.

Approved: August 8, 1986

PART I
INCIDENT INVESTIGATION PROGRAM

A. COVERAGE

This part defines the responsibilities and functions of the various Offices of NRC in establishing and implementing IITs and AITs.

B. DUTIES

1. Executive Director for Operations (EDO):

   a. Determines whether a potentially significant operational event is to be investigated by an Incident Investigation Team (IIT) (See Appendix 0513, Part II).

   b. Selects the IIT leader and team members, provides policy and technical direction, and ensures the independence of the Incident Investigation Team.

2. Director, Office for Analysis and Evaluation of Operational Data:

   a. Administers the Incident Investigation Program to meet the objectives set forth in this Chapter, with the assistance of other NRC Offices.

   b. Assures that procedures governing IITs are developed, coordinated, approved, distributed and maintained.

   c. Identifies and provides staff to be members and leaders of IITs and AITs.

   d. Provides administrative support to IITs necessary to achieve objectives defined in Appendix 0513, Part II, with assistance from other NRC Offices.

   e. For events which warrant at least an AIT response, consults with the Regional Administrator and the Directors of NRR or NMSS, and IE to decide if an AIT or IIT response is appropriate. Identifies the potential safety issues and provides recommendations to the EDO on events warranting an IIT response.

   f. Establishes and maintains rosters of potential team leaders and team members who are certified in incident investigation via formal training, and makes recommendations to the EDO concerning IIT composition.

   g. Identifies needed training and coordinates training requirements for IIT candidates with the Office of Administration.

h. Assesses the effectiveness of the Incident Investigation Program activities and recommends action, as appropriate, to improve the program.

3. Director, Office of Inspection and Enforcement:

a. Assures that procedures governing AITs are defined, developed, coordinated, approved, distributed and maintained.

b. Identifies and provides staff to be members and leaders of IITs and AITs.

c. Provides assistance in implementing the NRC Incident Investigation Program.

d. Recommends to and coordinates with the appropriate Regional Administrator on events which may warrant an AIT as defined in Appendix 0513, Part III.

e. For events which warrant at least an AIT response, consults with the Regional Administrator and the Directors of NRR or NMSS, and AEOD to decide if an AIT or IIT response is appropriate. Identifies the potential safety issues and provides recommendations to the EDO on events warranting an IIT response, including the IIT composition.

4. Director, Office of Nuclear Reactor Regulation:

a. Identifies and provides staff to be members and leaders of IITs and AITs.

b. Provides assistance in implementing the Incident Investigation Program.

c. Recommends to and coordinates with the appropriate Regional Administrator on events which may warrant an AIT as defined in Appendix 0513, Part III.

d. For events which warrant at least an AIT response, consults with the Regional Administrator and the Directors of AEOD and IE to decide if an AIT or IIT response is appropriate. Identifies the potential safety issues and provides recommendations to the EDO on events warranting an IIT response, including IIT composition.

5. Director, Office of Nuclear Material Safety and Safeguards:

a. Identifies and provides staff to be members and leaders of IITs and AITs.

b. Provides assistance in implementing the NRC Incident Investigation Program.

c. Recommends to and coordinates with the appropriate Regional Administrator on events which may warrant an AIT as defined in Appendix 0513, Part III.

d. For events which warrant at least an AIT response, consults with the Regional Administrator and the Directors of AEOD and IE to decide if an AIT or IIT response is appropriate. Identifies the potential safety or safeguards issues and provides recommendations to the EDO on events warranting an IIT response, including the IIT composition.

6. Director, Office of Administration:

a. Provides staff to assist IITs in writing, editing, word processing and publication of reports through the Division of Technical Information and Document Control.

b. Manages, directs and coordinates the training program for IIT candidates through the Employee Development and Training Staff.

7. Regional Administrators:

a. In coordination with NRR or NMSS, and IE, determine those operational events warranting investigation by an AIT; and as soon as it becomes clear that at least an AIT is warranted, preferably before an AIT is actually established, consult with the Directors, NRR or NMSS, IE and AEOD, to consider whether an IIT response is appropriate. Identify the potential safety issues and provide recommendations to the EDO on events warranting an IIT response, including the IIT composition.

b. Select the AIT leader and team members and direct, coordinate and approve the performance of AITs.

c Provide assistance in implementing the NRC Incident Investigation Program.

d. Identify and provide staff to be members and leaders of IITs and AITs.

e. For all IITs and some AITs, issue a Confirmatory Action Letter, as appropriate, to the affected licensee requiring that, within the constraints of ensuring plant safety, relevant failed equipment is quarantined and subject to agreed upon controls for troubleshooting, that information and data related to the event is protected, and that the plant is maintained in a safe shutdown condition until concurrence is received from the NRC to restart.

8. Director, Office of Public Affairs:

   a. Follows established NRC public information policies for release of information relating to NRC investigatory responses to operational events (See Appendix 0513, Parts II and III).

   b. Promotes the NRC policy of encouraging licensees to take the lead in information dissemination activities related to incident investigations at their facilities.

   c. Identifies and provides staff to support IITs.

9. Director, Office of Nuclear Regulatory Research:

   a. Identifies and provides staff to be members and leaders of IITs and AITs.

   b. Provides assistance in implementing the NRC Incident Investigation Program.

10. Office of the General Counsel:

   a. Provides assistance in implementing the NRC Incident Investigation Program.

   b. Identifies and provides staff to support IITs.

PART II
INCIDENT INVESTIGATION TEAMS

This Part defines the investigatory initiative involving a response by an Incident Investigation Team (IIT).

A. OBJECTIVES OF INCIDENT INVESTIGATION TEAM

Conduct a timely, thorough, systematic, formal and independent investigation of certain safety-significant events occurring at facilities licensed by the NRC.

Collect, analyze, and document factual information and evidence sufficient to determine the probable cause(s), conditions, and circumstances pertaining to the event.

B. SCOPE OF INCIDENT INVESTIGATION

The investigation performed by an IIT emphasizes factfinding and determination of probable cause for a significant operational event (as defined in this chapter). The scope of the investigation is sufficient to ensure that the event is clearly understood, the relevant facts and circumstances are identified and collected, and the probable cause(s) and contributing cause(s) are identified and substantiated by the evidence associated with the event. The investigation shall consider whether licensee and NRC activities preceding and contributing to the event were timely and adequate.

It is expected that the scope of an IIT will include conditions preceding the event, event chronology, systems response, human factors considerations, equipment performance, precursors to the event, emergency response, safety significance, radiological considerations, and findings and conclusions.

The scope of the investigation does not include:

1. Specific assessment of violations of NRC rules and requirements; or

2. Review of the design and licensing bases for the facility except as necessary to assess the cause for the event under investigation.

C. SCHEDULE

The IIT shall be activated as soon as practical after the safety significance of the operational event is determined and will begin its investigation as soon practicable after the facility has been placed in a safe, secure and stable condition. If there is an NRC incident response, the investigation will begin after it is deactivated.

The IIT shall issue interim reports at appropriate intervals outlining the status, plans and relevant new information related to its investigation.

The IIT shall prepare and transmit its final report to the Commission and the EDO in about 45 days from activation of the team, unless relief is granted by the EDO.

D. TEAM COMPOSITION AND QUALIFICATIONS

The IIT will be composed of technical experts selected on the basis of their expertise, potential contributions to the event investigation, and their freedom from significant involvement in the licensing and inspection of the facility involved or other activities associated with issues that had a direct impact on the course or consequences of the event. The number of members and areas of technical expertise required for each IIT will be determined based on the type of facility and characteristics of the event.

The team leader and expert members should, in general, be selected from rosters of candidates who have been certified through formal training in incident investigation. The team leader shall be a senior NRC manager from the Senior Executive Service.

E. DUTIES

The IIT carries out the single NRC factfinding investigation of the event and is authorized and responsible to pursue all aspects of an event that are within its scope as defined above. NRC response personnel on site shall provide support as needed to assure the efficient and effective transition to investigation of the event, not to interfere with plant safety.

The following duties are in addition to the duties defined in this chapter and appendix.

1. Executive Director for Operations:

   a. Approves the need for, establishes, and provides policy and technical directions to the IIT.

   b. Determines that the investigation was effectively conducted and consistent with the goals of the Incident Investigation Program.

   c. Assigns followup actions associated with the IIT report.

2. Director, Office for Analysis and Evaluation of Operational Data:

   a. Provides administrative support to the IIT by assisting the Team to meet its objectives and schedule.

   b. Provides advice and consultation to IIT leader on procedural matters and suggestions regarding completeness of IIT report.

   c. Coordinates with Director, Office of Administration, to provide support necessary to publish an IIT report as a NUREG document.

3. Regional Administrators:

   a. Provide assistance in briefing and providing background information to the IIT when it arrives on site.

   b. Provide on-site support for the IIT during its investigation.

   c. Identify and provide staff to monitor licensee troubleshooting activities to assess equipment performance.

4. IIT Leader:

   a. Directs and manages the IIT in its investigation and assures that the objectives and schedules are met for the investigation as defined in this chapter and appendix.

   b. Identifies, adds and removes equipment from the quarantined list within the constraints of ensuring plant safety and equipment testing and maintenance requirements and of determining causes for equipment anomalies.

   c. Serves as principal spokesperson for the IIT activities in interacting with the licensee, NRC Offices, ACRS, news media, and other organizations on matters involving the investigation.

   d. Prepares frequent status reports documenting IIT activities, plans, significant findings, and safety concerns that may require timely remedial actions, or issuance of Information Notices, Bulletins, or Orders.

   e. Receives direction and supervision from the Executive Director for Operations.

   f. Identifies and requests that the EDO provide additional IIT resources (e.g., additional members, consultants, contractor assistance) as needed.

   g. Identifies and recommends to the EDO the need for further studies and investigations, such as staff performance in regulatory activities prior to the event, when significant concerns could not be thoroughly evaluated because of time or resource limitations.

F. CONDUCT OF INVESTIGATION

The investigation process is based on the principles of incident investigation provided in IIT training programs and described in IIT procedures.

1. The team composition of the IIT shall be structured and the procedures developed to maintain independence and objectivity. Personnel possessing a high degree of independence, ingenuity, and resourcefulness should be selected to assure that the investigation is conducted in a timely, professional, thorough and coordinated manner.

2. Implementing Procedures. Procedures to guide and control the establishment and investigatory activities of an IIT are to be included in an investigation manual. At a minimum, the following procedures shall be developed by the Office for Analysis and Evaluation of Operational Data:

   a. A procedure for activating an IIT including responsibilities, coordination, communication, team composition and guidance.

   b. A procedure for IIT investigation of an operational event including responsibilities, work plan, communication, interfaces, scope, and schedule.

   c. A procedure for interviewing personnel.

   d. A procedure for collecting and maintaining records, documents, data and other information.

   e. A procedure for treatment of quarantined equipment.

   f. A procedure for preparation, release, and distribution of the IIT report and related documents.

   g. A procedure defining administrative support requirements for an IIT.

G. FOLLOWUP ACTIONS

Upon receipt of the IIT report, the EDO shall identify and assign NRC Office responsibility for generic and plant-specific actions resulting from the investigation that are safety significant and warrant additional attention or action. Office Directors shall provide a written status report on the disposition of each assigned action as directed by the EDO.

Followup actions associated with the IIT report do not necessarily include all licensee actions, nor do they cover NRC staff activities associated with normal event followup such as authorization for restart, plant inspections, or possible enforcement items. These items are expected to be defined and implemented through the normal organizational structure and procedures.

PART III
AUGMENTED INSPECTION TEAMS

This Part defines the inspection initiative involving a response by an Augmented Inspection Team (AIT).

A. OBJECTIVES OF AUGMENTED INSPECTION TEAM:

Conduct a timely, thorough and systematic inspection related to significant operational events at facilities licensed by the NRC.

Assess the safety significance of the event and communicate to Regional and Headquarters management the facts and safety concerns related to the event such that appropriate followup actions can be taken (e.g., study a generic concern, issue an Information Notice or Bulletin).

Collect, analyze, and document factual information and evidence sufficient to determine the cause(s), conditions, and circumstances pertaining to the event.

B. SCOPE OF AUGMENTED INSPECTION

The AIT response should emphasize fact-finding and determination of probable cause(s) and should be limited to issues directly related to the event.

The AIT response should be sufficiently broad and detailed to ensure that the event and related issues are well defined, the relevant facts and circumstances are identified and collected, and the findings and conclusions are identified and substantiated by the information and evidence associated with the event. The inspection should consider the adequacy of the licensee actions during the event.

The scope of the inspection shall be defined and revised, as appropriate, by the Regional Administrator directing the AIT inspection.

C. SCHEDULE

The AIT shall be activated as soon as practical after the safety significance of the event is determined and should begin its inspection as soon as practicable after the facility has been placed in a safe, secure and stable condition.

The AIT shall prepare and transmit its report to the Regional Administrator within 30 days from activation, unless relief is granted by the Regional Administrator.

D. TEAM COMPOSITION AND QUALIFICATIONS

The AIT will be composed of technical experts from the responsible Regional Office, augmented by personnel from Headquarters or other Regions with special technical qualifications to complement the technical expertise of the Regional response. The size of the AIT and the areas of expertise will be

determined by the Regional Administrator and coordinated with other NRC Offices based on the event and its implications.

The AIT Leader will normally be selected from the responsible Regional Office unless lead is transferred to another NRC Office by mutual consent through a Task Interface Agreement.

E. DUTIES

The AIT is authorized and responsible to pursue all pertinent aspects of an operational event. The following duties of NRC offices are in addition to those defined in this chapter and appendix.

1. Director, Office of Inspection and Enforcement:

   a. Monitors and evaluates the AIT process and products, and assures that AIT procedures are properly maintained.

   b. Defines, develops, coordinates, approves and maintains the necessary procedures to guide and control AIT activities.

2. Regional Administrators:

   a. Staff, direct, supervise, coordinate, and approve the performance of AITs.

   b. Ensure that the AIT response is initiated, defined and conducted in a manner that achieves the objectives.

   c. Evaluate if and when the AIT inspection should be upgraded to an IIT, and, in consultation with the Directors of NRR or NMSS, AEOD and IE, recommend to the EDO that an IIT response is warranted.

   d. Provide administrative support and resources to AITs in assisting the AIT to meet its objectives and schedule.

   e. Issue a periodic Daily Staff Note to the EDO when an AIT response is implemented and provide updates as appropriate.

   f. Identify and request additional expertise for AIT response from other NRC Offices.

   g. The duties defined in this part for a specific AIT may be transferred to another NRC office by mutual consent through a Task Interface Agreement.

3. AIT Leader:

   a. Manages the AIT in its inspection and assures that the objectives and schedules are met for the inspection as defined in this chapter and appendix.

b. With the approval of the Regional Administrator, adds and removes equipment from a quarantined list (if applicable) within the constraints of ensuring plant safety, determining causes for equipment anomalies, and testing and maintenance considerations.

c. Serves as principal spokesperson for AIT activities in interacting with the licensee, NRC Offices, ACRS, news media, and other organizations on matters involving the inspection.

d. Prepares interim status reports documenting AIT activities, plans, and new information. Communicates to NRC offices any significant findings and safety concerns that may require timely remedial actions for issuance of Information Notices, Bulletins, or Orders.

e. Receives direction and supervision from the Regional Administrator.

F. AIT IMPLEMENTING PROCEDURES

At a minimum, the following AIT implementing procedures shall be prepared by the Office for Inspection and Enforcement and included in the Investigation Manual:

1. A procedure for activating an AIT including responsibilities, coordination, communication, and guidance.

2. A procedure for AIT investigation of an operational event including responsibilities, communication, interfaces, scope and schedule.

G. FOLLOWUP

Identification, review and approval of licensee corrective actions, licensee actions prior to restart, and NRC enforcement actions shall be through the normal organizational structure and procedures.

Followup actions such as changes in inspection programs or the Incident Investigation Programs, issuance of Information Notices, Bulletins, or generic letters shall also be through the normal organization structure and procedures.

Appendix B

IE AIT Procedure

IE MANUAL CHAPTER XXXX

PROCEDURE FOR AUGMENTED INVESTIGATION TEAM (AIT) RESPONSE TO OPERATIONAL EVENTS

XXXX-01 COVERAGE

This procedure establishes the objectives, responsibilities, and basic requirements for augmented investigation team (AIT) response to operational events. AIT response to a transient or incident provides for prompt augmentation of the region's onsite event investigation. This procedure is not applicable to emergency actions taken in accordance with the NRC Incident Response Plan (NUREG-0845).

For background, the reader is referred to NRC Manual Chapter 0515, "Operational Safety Data Review," and to NRC Manual Chapter 0513, "NRC Incident Investigation Program." This procedure is a specialized procedure within the scope of the prompt data review and follow-up actions required in Chapter 0515. The activities described in this procedure are for investigations of events of less potential significance than the events investigated by the Incident Investigation Team (IIT) described in NRC Manual Chapter 0513.

This procedure is applicable only to onsite investigations classified as AIT responses by NRC staff management. It is not intended to inhibit the normal interactions between NRC and the licensee in following up on operational events. For example, an office in headquarters may send a group of people to a site to study diesel generator problems without responding with an AIT. However, after assignment to a particular operational event, the AIT will take precedence over other NRC inspections at this plant site (except for the IIT) in the event of conflicts.

This procedure does not include recommendations for enforcement actions by NRC and does not cover any examination of the regulatory process.

XXXX-02 OBJECTIVES

02.01 To augment regional personnel with additional personnel from headquarters or other regions for onsite fact-finding investigations of certain events.

02.02 To communicate the facts surrounding the events investigated to regional and headquarters management.

02.03 To identify and communicate any generic safety [illegible] related to the events investigated to regional and headquarters management.

02.04 To document the findings and conclusions of the onsite investigation.

XXXX-03 RESPONSIBILITIES AND AUTHORITIES

An AIT response to an event may be initiated by the Regional Administrator in consultation with the Director of IE, NRR, NMSS, or AEOD. Differences among IE, NRR, NMSS, AEOD, and a region on initiating an AIT should be brought to the EDO for resolution. Additionally, other offices shall provide support as needed to ensure an effective AIT response to designated events.

The region will normally have the lead for implementation, including the preparation of a "Report of AIT Response" as discussed in Section 07. The lead may be transferred to another office by mutual consent through a Task Interface Agreement (TIA). It is not necessary to have a representative from each office on the AIT. The need for any particular office to be represented will depend on the nature of the event and the technical expertise required for evaluation. Conflicts related to an AIT response may be referred to the EDO as appropriate.

It is recognized that the range of possible events that may be encountered is very broad. This inspection procedure should not be construed as limiting the AIT's authority and responsibility to pursue all pertinent aspects of an event. However, safety concerns raised that are not directly related to the event under investigation should be reported to headquarters and/or regional management for appropriate action by the NRC organizations normally responsible for the action.

The AIT leader shall have full authority and responsibility for the conduct of the investigation at the site. The leader is authorized to direct and supervise the team, organize the investigation and its report, and act as the spokesman for inquiries from the media.

The regional office will report in the Daily Staff Notes to the EDO when an AIT response is implemented and provide updates of AIT activities when appropriate.

XXXX-04 SELECTION AND SCOPE OF EVENTS FOR AIT RESPONSE

The most significant plant events will be investigated by the IIT. Some events should not cause the initiation of an onsite IIT response but should warrant an onsite AIT response.

Onsite AIT response is expected to result from events that include one of the following characteristics:

- Result in multiple failures in safety-related systems.
- Have possible adverse generic implications.

- Are complicated and the probable cause is unknown or difficult to understand.
- Involve significant system interactions.
- Involve questions on operator or licensee management performance.

The scope of the AIT response should be defined as early as practical and should be limited to issues that are closely related to the event. The Regional Administrator implements AIT response and defines the AIT scope for the team leader. The scope may be revised during the inspection. The length of the AIT investigative phase should normally be one week or less and the total AIT, including the report writing, should not last more than 30 days, unless extended by the Regional Administrator.

If at any point in an AIT response the EDO determines that an IIT is warranted, then the AIT will be expanded or replaced as appropriate in accordance with IIT procedures.

XXXX-05 INSPECTION REQUIREMENTS

05.01 Initial Actions of AIT

a. Evaluate the significance of the event, performance of safety systems, and actions taken by the licensee.

b. When appropriate, ensure that the licensee preserves in an undisturbed state (quarantines) those components that mis-operated or failed in the event. Request the licensee to inform NRC before initiating repairs of failed equipment. The actions in this item, however, must be secondary to plant safety. The AIT leader will recommend equipment to be quarantined to the Regional Administrator. The Regional Administrator will then determine which equipment is placed on (or removed from) the quarantined list. Before removing equipment from the quarantined list, the Regional Administrator should verify that no IIT inspection is planned by the EDO.

05.02 Follow-up Actions. Review and collect the information for a detailed evaluation of the event. The following items should be considered.

a. Details regarding the probable cause(s) of the event.

b. Event chronology.

c. Functioning of safety systems as required by plant conditions.

d. Equipment failures that occurred during the event.

e. Consistency of licensee actions with license requirements, approved procedures, and the nature of the event.

f. Radiological consequences (onsite or offsite) and personnel exposure, if any.

g. Verification that plant and system performance were within the limits of analyses described in the Final Safety Analysis Report (FSAR).

XXXX-06 SELECTION AND TRAINING OF TEAM MEMBERS

The Regional Administrator will select the AIT leader, who will normally be assigned from the regional office. The AIT leader and the headquarters AIT members will normally be chosen from a roster of IIT personnel maintained by the Office of AEOD. The Offices of IE, NRR, AEOD, NMSS, and the regions will each maintain at least six persons on this roster.

The Regional Administrator will staff the AIT with members having expertise in the specific areas of concern. Members of an AIT should be relieved of other duties until either the investigation is completed or they are released from the AIT by the AIT leader (e.g., their portion of the AIT is complete). The intent is to avoid either interference with the functioning of the AIT or an undue burden on AIT members. There is no limit to the number of members; however, any event requiring more than five members would normally be investigated by an IIT. The formal procedures for fact finding/data collection (when used) will be those used by the IIT as appropriate.

XXXX-07 DOCUMENTATION

The AIT leader will determine if interviews and meetings will be recorded and then will follow-up as appropriate. The regional office will provide resources for any formal fact finding or data collection.

The AIT leader will prepare a PN and supplements or regional daily report items during the onsite investigation to keep NRC personnel informed of the progress of the investigation.

The AIT leader shall promptly submit a special "Report of AIT Response" to the regional office at the conclusion of an AIT response. Normally, this report shall take the format of a special inspection report unless significant generic lessons learned from the event warrant the preparation of a NUREG report. A period of approximately 3 weeks, following the investigative phase, shall be allowed for report writing. The regions will transmit the final report to the Offices of NRR, IE, NMSS, AEOD, and other regional offices. This report should describe the following:

- Description of transient or occurrence
- Sequence of events
- Equipment failures
- Human factor deficiencies
- Radiological consequences
- Root cause of the event
- Findings and conclusions

XXXX-08 FOLLOW-UP ACTIONS

Normally, licensee corrective actions, licensee actions before restart, and NRC enforcement actions shall be reviewed or administered by the normal NRC organizational structure and procedures.

Recommendations for follow-up actions, such as changes in inspection programs, issuance of information notices, bulletins, or generic letters, shall also be through the normal organizational structure and procedures.

END

Appendix C

SECY 85-208

June 10, 1985

POLICY ISSUE
(Notation Vote)

SECY-85-208

For: The Commissioners

From: William J. Dircks
Executive Director for Operations

Subject: INCIDENT INVESTIGATION PROGRAM

Purpose: To request the Commission's approval of the staff's plans to improve the existing program for the investigation of significant operational events.

Background: A recent study by the Brookhaven National Laboratory (BNL) identified a number of ways in which the NRC program for the investigation of gnificant operational events could be improved. The staff has reviewed this report as well as additional comments on this subject that have been prepared by ACRS and OPE. In addition, the staff has considered the comments provided at the Commission meeting on this subject which was held on May 9, 1985.

Discussion: As a result of this evaluation, the staff has identified a number of changes in the existing program for the investigation of significant incidents that will substantially improve the program and will incorporate the substance of the comments and recommendations that have been made by the various groups that have reviewed this issue. The general concept and characteristics of these changes are given below. The specific details of the changes will be developed during the coming months as the detailed procedures for implementing this program are developed.

The Incident Investigation Program

In order to ensure that the investigation of significant events is structured, coordinated and formally administered, the staff plans to develop and implement an expanded program of event investigation. This expanded and strengthened program contains two new initiatives. For the few significant events with clear and serious implications for public health and safety, an inter-office, interdisciplinary team will be formed to conduct a

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prompt, thorough and systematic investigation of the event. For a larger number of events with lesser significance or whose implications are not as clear, the regional-based investigation will be augmented by the assignment of one or more headquarters technical expert(s) who will participate directly and fully in the event investigation and analysis, and preparation of the final report.

The general concept and characteristics of the revised incident investigation program are discussed below.

1. Significant operational events (reactor and nonreactor) will be investigated by a multi-discipline team made up of technical experts from the various NRC offices. If necessary, additional technical expertise will be obtained from National Laboratories and from technical consultants.

2. The duties, responsibilities and schedules to be followed will be formally established in an NRC Manual Chapter and associated supporting procedures. In cases where an Incident Investigation Team (IIT) is activated, the IIT will constitute the single NRC fact-finding investigation of the event.

3. Guidance will be developed and documented in the NRC Manual Chapter regarding the significant operational events to be investigated by the IITs. It is currently anticipated that the IITs will investigate approximately 2-3 events per year.

4. Each IIT will be formally established by the EDO based on recommendations from a Regional Administrator or a Program Office Director. In order to ensure the maximum degree of independence for the IITs, each IIT will report directly to the EDO.

5. Each team leader will be selected by the EDO. The team leader will be at the SES level and, to the extent practical will not have had any significant direct involvement in the licensing or inspection of the subject plant.

6. The number and composition of each IIT will be established by the team leader from pre-approved rosters based on the characteristics of the specific event to be investigated. Team members will be automatically relieved from existing duties for the duration of the investigation. Care will be taken to ensure that each team contains persons with detailed knowledge of the

subject plant (e.g., the Resident Inspector) and a sufficient number of persons who are independent of the licensing and inspection of the subject plant (e.g., AEOD, RES). To the extent possible, team members will be selected on the basis of their technical or operations expertise, potential contributions to the event investigation, and their freedom from significant direct involvement in the licensing and inspection of the plant involved or activities directly associated with the event. Candidates for participation on IITs will be identified in advance on rosters to be maintained by AEOD.

7. Candidates for team leaders and for IIT members will receive formal training in incident investigation. To the extent practical, this training will be completed before they are assigned to an IIT.

8. Procedures will be developed to ensure that sufficient information is provided to IE, NRR, NMSS, or the Regions to enable immediate action to be taken (e.g., IE Bulletin, NRC Shutdown Order), if required, while maintaining the independence of the IITs.

9. Each IIT will prepare a single comprehensive report which will focus on a description of the event, fact-finding, identification of the root cause(s) of the event, and findings and conclusions. The report will be issued simultaneously to the Commission and the EDO. Copies of the report will be placed in the PDR and will be forwarded to the ACRS for independent review. Specific procedures will be established for the EDO to initiate appropriate follow-on actions and to formally respond to the IIT report. The approval and implementation of resulting corrective action will follow existing procedures, including CRGR review.

10. IIT will emphasize the collection and documentation of factual information and evidence associated with the event. The resulting record will include, as appropriate: documented statements of plant personnel involved with or influencing the event; pertinent records and documents such as logs, strip charts, computer printouts, procedures, and maintenance manuals and histories; and other documentation such as photographs and subsequent test and inspection results.

11. Consideration will be given: to providing the capability to invite representatives from outside the NRC (e.g., INPO, NSSS suppliers) to participate in the IIT

investigation; to providing subpoena power to the IIT; and to providing the authority to pre-empt parallel investigations by other organizations if they interfere with the IIT investigation.

12. Whenever an IIT is activated, an immediately effective Order or Confirmatory Action Letter, as appropriate, will be issued to the affected licensee requiring that, within the constraints of maintaining plant safety, the equipment is left in the "as found" condition and information and data concerning the event are retained. Specific procedures will be established in the Order or Confirmatory Action Letter to permit the team leader to lift all or part of the order as soon as possible in order to minimize the impact on continued plant operation. Specific procedures will be established to ensure that at no time will a "freeze" order interfere with maintaining a plant in a safe and stable condition.

13. Investigations will begin as soon as possible after identification of the significance of the event, but consistent with the need to ensure that the plant is placed in a safe and stable condition. Specific procedures will be established to define the relationship between the IIT and the NRC personnel on site who are monitoring the plant to ensure that it is placed and maintained in a safe and stable condition (e.g., Regional Response Team).

14. The IITs will be specifically directed to emphasize fact-finding and determination of probable cause and not to specifically search for violations of NRC rules and requirements in order to minimize any adversarial atmosphere during an investigation. Follow-on action regarding possible enforcement actions, based on factual information developed by an IIT investigation, will remain the responsibility of IE and the Regions. The information will also be provided to OI and OIA, as appropriate.

15. AEOD will administer the Incident Investigation Program, including development of the NRC Manual Chapter, and will provide necessary administrative support to the IITs.

16. It is currently expected that the IIT Manual Chapter and supporting procedures and personnel rosters will be prepared and approved on a timescale to allow implementation in early 1986.

17. In addition to the investigation of significant operating events by IITs, events of lesser significance which may involve a generic safety concern or

important lesson of experience, will be investigated by regional-based personnel augmented by technical experts from headquarters program offices or contractors. Events warranting this augmented approach will be identified by the Regional Administrator or by a Director of IE, NRR, or NMSS and will be coordinated with the appropriate Regional Administrators. These investigations will also emphasize prompt fact-finding, determination of root cause and "freezing" of conditions. Added training on technical investigations will be conducted for the involved staff.

18. Procedures for conducting augmented investigations of less significant events will be developed by IE, reviewed with other NRC offices and incorporated into the IE Manual. It is expected that these procedures will be available and special training initiated in early 1986.

19. In the interim, should a significant event occur, the staff response will be consistent with the above policies and practices, to the extent practical.

Conclusions: The changes in the NRC Incident Investigation Program described above incorporate the intent of the comments and recommendations made by the various groups (e.g, BNL, ACRS, OPF) regarding needed improvements in event investigation. The revised incident investigation program will ensure that NRC investigations of significant events are conducted in a thorough, structured and coordinated manner that emphasizes fact-finding and determination of probable cause.

Finally as noted previously, the team leader and team members will be selected on the basis of technical competence and potential contributions to the investigation. To the degree possible, the team will be largely staffed with individuals with no significant involvement with licensing and inspection activities associated with the event or plant. Thus, independence from previous licensing and inspection activities will be achieved. This revised program provides a substantial improvement in the way staff investigates significance events with a minimum of disruption, increase in resources or realignment of existing office responsibilities.

Recommendation: That the Commission:

1. Approve the course of action described in this Commission Paper and in Enclosure 1.

2. Note that a copy of this Commission Paper will be placed in the Public Document Room.

Scheduling: If scheduled on the Commission agenda, I recommend that this paper be considered at an open meeting. No specific circumstance is known to the staff that would require Commission action by any particular date in the near term.

William J. Dircks
Executive Director for Operations

Enclosure:
Draft Memo to C. J. Heltemes
from W. J. Dircks

Commissioners' comments or consent should be provided directly to the Office of the Secretary by c.o.b. Thursday, June 27, 1985.

Commission Staff Office comments, if any, should be submitted to the Commissioners NLT Thursday, June 20, 1985, with an information copy to the Office of the Secretary. If the paper is of such a nature that it requires additional time for analytical review and comment, the Commissioners and the Secretariat should be apprised of when comments may be expected.

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DRAFT

MEMORANDUM FOR: C. J. Heltemes, Jr., Director
Office for Analysis and Evaluation
of Operational Data

FROM: William J. Dircks
Executive Director for Operations

SUBJECT: IMPLEMENTATION OF A REVISED PROGRAM FOR THE INVESTIGATION OF SIGNIFICANT OPERATING EVENTS

In order to ensure that the investigation of significant events is structured, coordinated, and formally administered, you are requested to develop the necessary guidance for an expanded program of event investigation. This guidance is to be consistent with the commitments and characteristics of the revised program for the investigation of significant events as defined in my paper to the Commission dated June _____, 1985.

Specifically, you are requested to:

1. Prepare an NRC Manual Chapter that will define the duties, responsibilities, and schedule for event investigation of significant events. This Manual Chapter is to contain guidance regarding the significant operational events to be investigated by an Incident Investigation Team (IIT).

2. Prepare personnel rosters of candidate IIT leaders and members so that an IIT can be promptly established. These candidates should be preapproved by the Office Directors on the basis that if the individual is selected for IIT duty, he or she will be automatically relieved from existing assignments.

3. Develop appropriate training plans for candidate IIT leaders and members and provide assistance for arranging for such training to be conducted as soon as possible.

4. Prepare supporting procedures covering IIT activities. These procedures are to include the specific points and concerns identified in the Commission Paper.

5. Work with ELD to draft suitable language and procedures for issuing (and removing) an immediately effective Order or Confirmatory Action Letter requiring that, within the constraints of maintaining plant safety, equipment is left in the "as found" condition and information and data concerning the event are retained.

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6. Investigate the need for and feasibility of providing the capability to invite representatives from outside the NRC (e.g., INPO, NSSS suppliers) to participate in the IIT investigation; to providing subpoena power to the IIT; and to providing the authority to preempt parallel investigations by other organizations if they interfere with the IIT investigation.

You are requested to accomplish the above activities on a timescale to allow an IIT to be established in accordance with approved guidance and personnel rosters in early 1986.

William J. Dircks
Executive Director for Operations

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Enclosure 3
Resolution of Industry Comments

SUBJECT: RESOLUTION OF INDUSTRY COMMENTS ON THE DRAFT INCIDENT INVESTIGATION PROCEDURES

REFERENCES:

1. Letter from P. W. Lyon, INPO, to C. J. Heltemes, Jr., NRC, Subject: Review of Incident Investigation Procedures, dated September 15, 1986.

2. Letter from L. D. Butterfield, WOG, to C. J. Heltemes, Jr., NRC, Subject: Westinghouse Owners' Group (WOG) Comments on Incident Investigation Procedures, dated September 30, 1986.

3. Letter from T. A. Pickens, BWROG, to C. J. Heltemes, Jr., NRC, Subject: BWROG Comments on Draft Incident Investigation Manual, dated November 26, 1986.

4. Letter from J. H. Taylor, B&W, to C. J. Heltemes, Jr., NRC, Subject: Incident Investigation Procedures, dated October 21, 1986.

5. Letter from J. K. Gasper, CEOG, to C. J. Heltemes, Jr., NRC, Subject: C-E Owners' Group Comments on NRC Incident Investigation Manual, dated December 2, 1986.

In early August 1986, a draft of the subject IIT procedures was provided to all the Owners' Groups, the Institute of Nuclear Power Operations (INPO), and the Nuclear Safety Analysis Center (NSAC) for comment. Due to prior commitments, NSAC has indicated they will be unable to formally respond; however, they will be prepared to discuss any concerns regarding the IIT procedures in a future meeting with the Incident Investigation Staff (IIS) to be scheduled when a regional workshop is held in their vicinity.

We have resolved all of the comments that we have received and have revised a number of the IIT procedures accordingly. The resolution of each comment is explained as follows.*

Comment 1

We agree that it would be desirable to have INPO or industry participation on IITs, either as observers or members, to increase the IITs expertise and broaden its perspective. We feel that this can best be accomplished by selecting INPO or industry participants with the necessary expertise to provide input to the IIT, particularly during the onsite phase of the investigation. The

* Note: Editorial comments have been resolved but are not specifically addressed in the enclosure.

level of participation by INPO or the industry should be developed through further discussions, in an effort to achieve mutual agreement as to their role in the various aspects of investigations. (Ref. 1)

Response

Working meetings between industry representatives and the Incident Investigation Staff (IIS) are planned to develop guidance for industry participation in IITs. The NRC objective is to have team members from outside organizations participate fully in the IIT activities. Such team members would need to have the same qualifications as NRC members, i.e., specific technical expertise, independence such as no current involvement with the plant or utility, and organizational freedom to participate fully for the full duration of the team's activities.

Comment 2

Item 1 on page 1-2 states the "personnel overexposure" is one of the types of events for which an IIT should be considered. However, the next clarifying sentence says that the "potential offsite consequences" should be given primary attention. There is some inconsistency between these statements. (Ref. 1)

Response

Personnel overexposure can occur as a result of an event involving a loss of control of radioactive materials and could involve facility personnel and/or members of the public. This characteristic is applicable to reactor and non-reactor-type events. Specific additional guidance concerning the application of the IIP to events of this type will be considered, in the development of the IIP procedures for non-reactor events and will be incorporated in the next revision of the IIT procedures.

Comment 3

Item 6 on page 1-3 includes some examples that are not as well known or considered as severe as the other examples. Recommend the last two examples (1980 San Onofre loss of saltwater cooling and 1985 Trojan failure of auxiliary feedwater) be deleted so the importance of this category is not diluted. (Ref. 1)

Response

The examples were deleted as suggested.

Comment 4

Recommend Item 8 on page 1-3 be deleted from the list. This type of event should initially warrant an AIT, and then if necessary, be upgraded to an IIT when additional information is obtained to make such a determination. (Ref. 1)

Response

No change made because this item provides the criterion for a response to a significant operational event in order to fulfill the agency's mission to protect the health and safety of the general public.

Comment 5

Vendor manual and electrical logic diagrams should be added to the list on page 1-25. (Ref. 1)

Response

The list containing background information for IIT briefing has been revised to include appropriate vendor manuals, electrical logic diagrams and preliminary written statements (if available) as suggested.

Comment 6

Written statements should be prepared by each individual involved in the event, that outlines his involvement. The statements should be taken as soon as possible after the event, should be done independently, and will form the basis for much of the initial interview with the individual. (Ref. 1)

Response

Because an IIT response is usually within 24 hours after the event, and because the operators are the first to be interviewed, the necessity to obtain independent written statements from operators does not appear to be warranted. In general, obtaining operator written statements is usually left to the licensee and the statements made available to the IIT when it arrives onsite.

Comment 7

On page 2-3, recommend the second sentence of item 6 be changed to say "The secretary should act as custodian for the transcripts." (Ref. 1)

Response

No change made because the original statement is more definitive.

Comment 8

One page 2-10, second paragraph, reword as follows:

If the Institute of Nuclear Power Operations (INPO) is developing a Significant Event Report (SER) on the event, they will attempt to assure that the SER is not inconsistent with the facts of the event as understood by the IIT. This will be accomplished by INPO providing a draft of the SER to the licensee prior to issuance. The licensee will coordinate review of the SER with the IIT, and will assure any inconsistencies are made known to INPO so they can be resolved prior to issuance of the SER by INPO. (Ref. 1)

Response

The procedure has been reworded as suggested.

Comment 9

On page 2-13, recommend the outline of the report be developed before leaving the site. (Ref. 1)

Response

The procedure has been revised to include the statement "...before leaving the site...."

Comment 10

Recommend the licensee review the technical portions of the report (all except the findings/conclusions sections) for accuracy before it is issued as a NUREG. (Ref. 1)

Response

NRC policy is that the licensee is to be given a copy of the advance report when the report is made publicly available. The procedure has been revised to indicate that the EDO will forward a courtesy copy of the report to the affected licensee before the Commission meeting and, at the same time a copy of the advanced report will be forwarded to the Public Document Room (PDR).

In addition, the procedure has been revised to provide for a formal review and response by licensees and staff to the IIT report. The EDO will transmit the report to the licensee and the staff for review and comment after issuance of the team's report. The licensee's and staff's responses will be considered by the EDO before he defines follow-up actions to NRC offices.

Comment 11

On page 2-29, operator written statements should be included. (Ref. 1)

Response

See response to Comment 5.

Comment 12

On pages 2-31 through 2-41, it is not clear that this function (referral of investigation information to NRC offices) is consistent with the scope and purpose of the IIT. Specifically, page 2-1 says that "The scope of the investigation does not include assessing violations of NRC rules and requirements..." In addition, some of the guidance on pages 2-32 and 2-33 is fairly subjective. (Ref. 1)

Response

The scope of IIT investigations does not include assessing violations of NRC rules and regulations. However, there may be instances during an investigation where the team uncovers a situation, while not in the scope or charter of the investigation, that warrants follow-up action by other NRC offices or other

organizations. Similarly, there are other activities associated with the IIT process that do not necessarily involve the IIT. These include selected licensee actions associated with the event, and NRC staff activities associated with normal event follow-up such as authorization for restart, plant inspections, corrective actions or possible enforcement items. These items are expected to be defined and implemented through the normal organizational structure and procedures. See NRC Manual Chapter 0513.

Comment 13

One page 3-2, item 5, the lead IIT spokesman should also be responsible for controlling the interviewers to assure they do not lead the interviewee or pursue areas that are beyond the scope of his knowledge. (Ref. 1)

Response

The procedure has been revised to include controlling the interview as part of the responsibilities of the lead spokesperson.

Comment 14

In general, the formality of the interview process (official transcripts that will be entered into the public document room) will probably have a tendency of stifle truly open discussion and fact finding. This may also constitute some infringement on an individual's right to privacy. (Ref. 1)

Response

While there may be some perceived concerns about the formality of transcribing interviews, past experience has shown that transcribed interviews are important to develop a clear, factual record of what occurred during the event and do not stifle the exchange of information. Normally, privacy issues will not be involved in the interview. The interview process is discussed with each interviewee at the beginning of each interview to allay qualms or answer any questions.

Comment 15

On page 4-9, item 10, "discrepancies" should be more clearly defined. Does this mean a condition other than what might have been expected while doing troubleshooting? Does it include previously identified possible causes of failure? (Ref. 1)

Response

The procedure has been revised to state that discrepancies are conditions other than what might have been expected based on the developed hypothesis(ses) for the probable cause of the equipment malfunction.

Comment 16

On pages 4-11 through 4-39, we assume that inclusion of these examples in the procedure means they are considered acceptable. (Ref. 1)

Response

These examples are actual action plans which were found acceptable by previous IITs.

Comment 17

On page 5-3, item 15, recommend expanding on exactly what the "precursors section" should include. Should all similar events at the plant, at similar plants, or within the industry be included? (Ref. 1)

Response

The precursors section, in general, should pertain to all events similar to the event being investigated by the IIT that could have happened at that plant. The procedure has been revised to clarify the meaning of this section.

Comment 18

On page 5-7, recommend adding a review of the technical portions of the report for accuracy by the licensee, sometime in the day 33-41 time frame (see Comment 10). (Ref. 1)

Response

See response to Comment 10.

Comment 19

On page 5-16, recommend electrical distribution symbols be included (transformers, breakers, batteries, etc.). (Ref. 1)

Response

The procedure has been revised as suggested.

Comment 20

The WOG feels that the scope of events that can initiate an IIT is too broad. It not only spans a wide spectrum of safety levels but also includes non-safety related public policy concerns. This spectrum of events is inconsistent with the stated criterion that the threshold for activating an IIT is intended to be high and limited to events having significant safety implications. Thus, we suggest that the number of operational events warranting an IIT should be reduced in accordance with that principle. (Ref. 2)

Response

The overriding criterion for activating an IIT is the safety significance of the event as it relates to ensuring the public health and safety. Historically, events that resulted in an IIT response have involved a combination of the characteristics presented in the procedures. The purpose of describing event

characteristics is to provide guidance to the decision making process; however, this guidance is balanced with sound engineering and managerial judgment as it relates to the potential safety significance of the event.

The decision to send an IIT is a decision made by the EDO based on recommendations by senior NRC management using the criteria in the procedures. If after an IIT is activated the event does not warrant an IIT, the investigatory response will be changed or cancelled. For events where an AIT is sent, as part of its charter, the AIT recommends if the safety significance of the event warrants upgrading the NRC's response to an IIT.

A perspective on the threshold (and the NRC's decision making process) is provided by noting that to date in 1986, there have been no IITs, although more than 3000 reportable events have occurred.

Comment 21

The procedures provide a good framework with which to operate Incident Investigation Teams and provide very specific instructions for NRC IIT members. However, utility interfaces are not well defined. Specifically, we feel that the utility involvement in the IIT activation process, maintenance of plant safety and concurrence with quarantined equipment decisions should be strengthened. (Ref. 2)

Response

The procedures have been revised to more clearly define the utility's role in the above areas. As a matter of practice, the Regional Administrator coordinates with utility senior management concerning the IIT activation process, particularly the Confirmation of Action Letter. (See response to Comment 71.) The Quarantined Equipment Procedure was revised to clarify the licensee's responsibility for plant safety, maintenance of the quarantined equipment list, and participation in quarantined equipment decisions.

Comment 22

The scope of the investigation should be clearly defined to include only the determination of the root cause of the event, the extent of damage and remedial actions necessary for restart of the unit. Secondary findings not directly contributory to the cause of the event or to plant recovery, should not impact a restart decision. Questions that arise, for example, concerning basic design philosophy should be pursued through the Backfit procedure as a separate issue. Also, the scope of the IIT should not be limited to root causes that are attributable to design and/or equipment. (Ref. 2)

Response

As defined in NRC Manual Chapter 0513 - NRC Incident Investigation Program, the investigation performed by an IIT emphasizes fact-finding and determination of probable cause(s) for a significant operational event. The scope of the investigation is sufficient to ensure that the event is clearly understood, the relevant facts and circumstances are identified and collected, and the probable

cause(s) and contributing cause(s) are identified and substantiated by the evidence associated with the event. See response to Comment 12 concerning the restart comment.

Comment 23

The use of transcripts during interviews is of concern to the WOG. The threat to the interviewee, perceived or actual, of enforcement actions as a result of IIT investigations could have a detrimental effect on the usefulness of IITs. (Ref. 2)

Response

See response to Comment 14. An IIT investigation is a serious matter. In this activity, as in other activities, individuals knowingly providing false information to the government may be subjected to legal sanctions. However, that would be true whether or not the interview is transcribed. As noted elsewhere, transcripts serve as an important method of developing an accurate and clear factual record.

Comment 24

The procedures do not clearly explain the expected role of the various organizations that are likely to be on site after an incident (e.g., IIT, Regional Response Team, Utility, etc.) and, they are not clear on the scope and responsibilities for each of these organizations. For example, as the safety of the plant is ultimately the responsibility of the utility, the utility's role should be more clearly delineated with regard to hands-on troubleshooting. (Ref. 2)

Response

The licensee has the ultimate responsibility to maintain the safety of the plant. In general, for events warranting an IIT response, the IIT will be activated as soon as practical after the safety significance of the operational event is determined and will begin its investigation as soon as practicable after the facility has been placed in a safe, secure, and stable condition. If there is an NRC incident response, the investigation will begin after it is deactivated. This is defined in the NRC Manual Chapter 0513 and has been included in the procedures.

The Quarantined Equipment Procedure was revised to clarify the licensee's responsibilities with regard to decisions affecting quarantined equipment.

Comment 25

The WOG agrees that the nuclear industry should participate in IITs, though in a role of an observer rather than an integrated team member. This participation would allow better use of the findings of the IIT in preventing further

incidents by providing immediate access to the Owners Groups of the information on the incident for their use in responding to the event and conducting applicability evaluations. The nuclear industry should always be given the opportunity to participate in the IIT. (Ref. 2)

Response

The NRC will invite industry participation as IIT members and the EDO will approve each member after the candidate meets the three criteria for participation, e.g., specific technical expertise, independence, and full-time participation. We believe that NRC and industry will benefit from the IIT process when the industry representative is a full-time participant in the investigation just like the other team members. "Observer" status does not permit the full integration of technical expertise, knowledge and experience that is provided by a full-time member. The NRC objective for industry participants on the IITs cannot be fully satisfied by "observers."

See response to Comment 1.

Comment 26

Page 1-2, Selection and Scope of Events for IIT Response, the examples given to clarify the characteristics of significant events should be made an integral part of the definition in order to prevent the overly general and broad definitions from being excerpted without accompanying clarification. (Ref. 2)

Response

See response to Comment 20.

Comment 27

It appears there is a direct tie between IIT team activation and an NRC order to permit re-start. It should be clarified that an IIT investigation and issuance of a report is not necessarily required for a plant to restart. It appears there may be an intent to tie IIT activation and a CAL to keep a plant shut-down. The procedure should make it clear that these are not necessarily tied together and that a plant can re-start during an IIT investigation. (Ref. 2)

Response

The interpretation is correct. MC-0513 states that the plant is to remain shutdown "...until concurrence is received from the NRC to restart." This concurrence will be given when a determination is made that the plant can safely resume operations, and it is not required that the IIT's report be issued as a prerequisite. The procedures have been revised to indicate that it is not required that the team's report be issued as a prerequisite for plant restart.

Comment 28

Page 1-6: Move the discussion on the comparison between AIT and IIT to the introduction and add more detail on the purpose of an AIT as compared with an IIT. (Ref. 2)

Response

The procedure has been revised to clarify the AIT objectives. The objectives of the AIT initiative is to: (1) augment regional personnel with additional personnel from headquarters or other regions for onsite fact-finding investigations of certain events; (2) communicate the facts surrounding the events investigated to regional and headquarters management; (3) identify and communicate any generic safety concerns related to the events investigated to regional and headquarters management; and (4) document the findings and conclusions of the onsite investigation.

Comment 29

Page 1-8: What is the purpose for transcribing interviews with utility employees? WOG is concerned that these interviews will be used in enforcement actions against individuals. (Ref. 2)

Response

See response to Comment 14. The purpose of the transcript is to develop a reasonably complete and accurate record as to what happened. Enforcement actions against individuals are extremely rare, and would normally be taken only after the completion of a separate and independent investigation.

Comment 30

Page 1-18: paragraph (2) should emphasize that equipment necessary to maintain plant safety must not be quarantined and, limit potential equipment quarantine to equipment that did not function as it was designed. Equipment that was called upon to perform and, in fact, did perform as designed should not be quarantined.

The Confirmatory Action Letter should state that the licensees can take any action involving quarantined equipment deemed necessary to achieve or maintain safe plant conditions, prevent further equipment degradation, or conduct testing or inspection activities required by plant Technical Specifications. (Ref. 2)

Response

The generic Confirmatory Action Letter and the Show Cause Order have been revised to include wording similar to those which appear on page 4-1 of the IIT procedures.

Comment 31

Page 1-22: The Show Cause Order should state that the licensee can take any action involving quarantined equipment deemed necessary to achieve or maintain

safe plant conditions, prevent further equipment degradation, or conduct testing or inspection activities required by plant Technical Specifications. (Ref. 2)

Response

We agree with the comment. See response to Comment 30.

Comment 32

Page 2-4, Item #4: The NRC should develop a standing check list identifying those support facilities and administrative items expected to be provided by a licensee in an IIT investigation. This item should address space requirements inside and outside security, telephone requirements, general administrative support, tour guides, etc. (Ref. 2)

Response

The region is expected to provide most of the administrative support for the IIT. Depending upon regional resources, the licensee may be requested to provide some administrative items such as meeting rooms, escorts and technical staff assistance, and reproduction facilities. The licensee is under no obligation to supply any additional administrative support than is normally expected during any NRC inspection.

Comment 33

Page 2-5, Item #6: The requirement for posting the IIT is unnecessary and redundant with other NRC requirements. The right of any employee to talk with NRC is already posted in various locations at plant sites. (Ref. 2)

Response

The purpose of notifying plant staff that an IIT investigation is being conducted is to ensure that all relevant information is obtained from all plant personnel and this information is promptly communicated to the team leader rather than to other NRC personnel.

Comment 34

Page 2-6, Item #7: "...equipment related to the event." should be changed to "...equipment significantly involved in the event that failed to perform it's intended function." (Ref. 2)

Response

The procedure has been revised as suggested.

Comment 35

Page 2-6, Item #9: To require that an action plan be available before any work can proceed is overly restrictive. Work on quarantined equipment should be permitted given concurrence of the IIT leader. (Ref. 2)

Response

Establishing troubleshooting action plans for quarantined equipment is necessary in order to provide a systematic and controlled process to ascertain the probable causes of the conditions observed and equipment malfunctions. It is important that the troubleshooting activity on the equipment does not inadvertently result in loss of information necessary to identify and/or confirm postulated causes of equipment malfunctions. Action plans ensure that the troubleshooting is systematic, controlled and well-documented, and that adequate records on the "as-found" condition of malfunctioned equipment are maintained. Past experience has demonstrated that allowing work on equipment to be performed prior to the establishment of an action plan can result in valuable information being lost. Please note that the team leader has the authority to release equipment from the quarantined equipment list at any time.

Comment 36

Page 2-7, Plant Tour of Equipment and Systems, Item #3: This statement conflicts with page 1-4 which indicates that IIT will obtain photographic services. (Ref. 2)

Response

Although the IIT can obtain photographic services, in previous investigations some licensees preferred to provide this service. Thus, as a matter of protocol, the IIT usually gives the licensee an opportunity to provide this service. However, The licensee is under no obligation to provide photographic services for IIT investigations. The procedure has been revised to clarify this point.

Comment 37

Page 2-8, Item 2 (on QEL): change "troubleshooting" to "work" to be consistent with previous items and also identify that the team leader can allow work to be performed on equipment before the action plan is approved. (Ref. 2)

Response

The procedure has been reworded to be consistent with previous items; however, work cannot be performed on quarantined equipment prior to the establishment of an action plan except as specifically approved by the IIT team leader.

Comment 38

Page 2-8: Press inquiry could be a significant issue and needs more attention. Assurance should be obtained that the NRC and the licensee do not have separate press conferences or provide press releases that provide conflicting information. (Ref. 2)

Response

The procedure has been revised to indicate that the Regional Public Affairs Officer, IIT leader, and the licensee should coordinate press conferences and responses to press inquiries.

Comment 39

Page 2-10: Regarding INPO Significant Event Reports, the procedure indicates that INPO will coordinate their findings with NRC. The procedure then indicates that this review will be coordinated by the licensee. This is internally inconsistent. WOG feels that INPO should coordinate this review, not the licensee. (Ref. 2)

Response

See response to Comment 8.

Comment 40

Page 2-22, Item #16: This item should not be all inclusive. The archival requirement should not apply to records and documents that deal with safeguards information that is the responsibility of the licensee. (Ref. 2)

Response

No changes are deemed necessary because this issue is already addressed in the procedure on page 2-20.

Comment 41

IIT Procedure 3, Guidelines for Conducting Interviews

This procedure provides a viable interview process; however, the WOG feels that the use of sketches, diagrams and photographs should be minimized so that interviewees do not become confused with trying to describe the incident using visual aides that may not be meaningful to that individual's thought processes. Should the person being interviewed propose to introduce materials, he should be discouraged at this juncture and encouraged to write his own memorandum with respect to the sketch, diagram or photograph and to submit it through his established channels.

Because information gained in an interview could be used against an individual in assessing a civil penalty, specific individual civil rights information must be provided prior to the start of the interview. The WOG suggests detailed guidance be given in this area to personnel conducting interviews in regard to appraising individual interviewees of their rights. (Ref. 2)

Response

Explanatory sketches, diagrams or photographs when combined with a narrative statement may be valuable supplements to the interviewee's statement. We agree that they are not a substitute for a narrative statement. The interviewee may use any visual aides or other documents which he/she feels is useful to explaining some aspect of the event. Miranda rights are not provided by the IIT since there is no allegation of criminal activity. Further, if the interview started with a definition of legal rights, the interview would take on the appearance of a legal hearing (which it is not) rather than focusing on factual information.

Comment 42

Page 3-1, third paragraph: Same Comment as 29 above.

Response

See response to Comment 29.

Comment 43

Page 3-2, Item 4: It is suggested that the interview not be conducted with the entire IIT team. It should be recognized that this is a very stressful time for the person interviewed. An interview with the entire team will give the appearance of an inquisition and may result in extreme pressure on the individuals being interviewed. (Ref. 2)

Response

We recognize there is a potential impact on the interviewee as a result of having the entire IIT team present at the interview; however, past experience indicates that there are cases where the benefit (e.g., everyone hears the whole story first hand) of conducting interviews with the entire team present outweighs the potential impact on the interviewee if the interview is conducted properly. The procedure has been revised to state that the selection of IIT members that will actively participate as interviewers during an interview should be minimized, and based on team member assignments and appropriate technical expertise.

Comment 44

Page 3-3, Item 9: The licensee is entitled to provide counsel from the Corporate Legal Department. Strike the work "normally." (Ref. 2)

Response

The interviewee is entitled at his request to have personal counsel during the interview. The licensee may provide this representative if requested by the interviewee. However, if it appears that the presence of a company attorney during an interview may involve a conflict of interest or could influence the degree to which the interviewee is willing to identify and discuss the facts relevant to the event, the interview may be suspended and other action taken.

Comment 45

Page 4-1: The licensee should maintain the Quarantined Equipment List (QEL). The licensee and the NRC should agree on what equipment should be quarantined but the licensee is responsible for the equipment, not the NRC. (Ref. 2)

Response

The QEL is compiled by the licensee and is reviewed and approved by the IIT. The licensee and the IIT should coordinate on the scope of the QEL. The

procedures were clarified to indicate that the licensee has responsibility for the equipment ard is responsible for decisions affecting quarantined equipment.

Comment 46

Page 4-2, Item #4: The Shift Supervisor should be responsible for access to quarantined equipment, not the licensing engineer. (Ref. 2)

Response

The procedure has been revised to state that a licensee-designated individual as being responsible for access to quarantined equipment.

Comment 47

Page 4-6: Appropriate document control provisions should be included on the QEL (e.g., revision number and date). (Ref. 2)

Response

The example has been revised to include revision number and date.

Comment 48

Responsibilities of the IIT team leader should be more specific. Since the IIT team leader approves deviations to the quarantine list, the team leader must be on call 24 hours a day so as to not adversely affect plant safety. (Ref. 2)

Response

As stated on page 4-1, at any time, the licensee can take action involving quarantined equipment it deems necessary to: (1) achieve or maintain safe plant conditions; (2) prevent further equipment degradation; or (3) test or inspect as required by the plant's Technical Specifications. To the maximum degree possible, these actions should be coordinated with the team leader in advance or notification made as soon as practical.

Comment 49

Is the NRC or the licensee responsible for "hands-on" troubleshooting? (Ref. 2)

Response

The licensee is responsible for "hands-on" troubleshooting. The IIT or in most cases the Region, will monitor the troubleshooting activities.

Comment 50

The IIT should be responsible for safeguarding and returning strip charts, logs and other documents to the utility. (Ref. 2)

Response

The IIT is responsible for safeguarding all documents obtained during the investigation. It is expected the IIT will obtain copies of each document for its own personal use and retention during the investigation.

Comment 51

The licensee should be allowed to have their own stenographers at interviews and meetings so that the licensee can have the same benefit from the meetings and interviews as the NRC. (Ref. 2)

Response

The NRC provides resources for stenographic services, and there is no need for the licensee to do so. The licensee may review transcripts of group meetings at any time during the IIT investigation. Additionally, interviewees may review his or her transcript at any time and after the IIT report is issued, all transcripts are made available to the licensee and the public.

NRC's established policy is to release the transcripts to the licensee at the time the IIT report is placed in the public document rooms. After considerable discussions between licensees and NRC counsels, this policy was developed to best serve the needs of both the IIT and the affected licensee. The transcripts are used in the team's investigation in a systematic and detailed evaluation of what occurred during the event. Until the team completes its deliberations, the release of the transcripts is premature and could result in misleading use and statements taken out of context since a comprehensive understanding of all related and relevant information has not been achieved. This could lead to the IIT spending time to respond to inquiries rather than conducting its investigation.

This policy ensures that the team leader is the only source of information regarding the investigation, and precludes false impressions and inaccurate information from being communicated to the public. Further, premature release of the transcripts could stifle truly open discussion and fact finding, and lead to many inquiries during the investigation that the timeliness and thoroughness of the investigation could be severely impacted.

Comment 52

The potential for deployment of an IIT before enough information is available (or sufficiently understood) to justify the action. The impact, in terms of both resources and public relations, of IIT deployment is significant upon the subject utility and can inhibit or even prevent constructive utility response to the incident. Certainly, response of an IIT "within 24 hours of the event" could lead to hasty judgments, efforts to respond that might turn out to be unnecessary and potential situations (which we believe that the regulatory agency would want to avoid) in which it would be necessary to downgrade an IIT to an AIT or some other lesser effort. (Ref. 3)

Response

See response to Comment 20.

Comment 53

The potential for excessive quarantining of equipment is a concern. While your procedures appear to reflect concerns previously expressed in this area, we wish to reiterate those concerns. (Ref. 3)

Response

The procedures developed and the training of potential IIT members addresses this concern by emphasizing that only equipment that failed or malfunctioned during the event and had an impact on the sequence of events should be quarantined.

Comment 54

Procedures or guidelines are needed for (Ref. 3):

(a) Review of the incident investigation report.

(b) Granting permission to licensee to begin implementation of corrective actions.

(c) Determination that licensee can restart the plant.

Response

(a) See response to Comment 10.

(b) Corrective actions are addressed in the quarantine procedure on page 4-5.

(c) See response to Comment 27.

Comment 55

"Events" numbers 8 and 9 lack the specificity of the other examples listed. It would be appropriate to include these in the section (p. 1-5) regarding augmented inspection team (AIT) response with the AIT having the responsibility for providing an input to the determination that deployment of an IIT is appropriate. (Ref. 3)

Response

See response to Comments 4 and 20. We agree, news media coverage alone does not warrant an IIT response. Characteristic 9 will be deleted as suggested. The responsibilities of the AIT with regard to providing recommendations to upgrade the investigation to an IIT is contained in Appendix B of the procedures.

Comment 56

For those events that do not clearly warrant deployment of an IIT (see Comment 55 above), the AIT should be assigned responsibility for advising Office Directors and the Regional Administrator on whether or not IIT deployment is appropriate. (Ref. 3)

Response

This point is already addressed in the AIT procedures (Appendix B).

Comment 57

Regarding IIT "response time after event," it is believed that the establishment of an IIT within 24 hours could lead to "false alarms" and situations wherein it would be desirable to downgrade to an AIT. Such a situation would be detrimental to both the NRC and licensee. A longer period, e.g., 48 hours, would enable all parties (including an AIT) to make a better-informed recommendation. (Ref. 3)

Response

See response to Comment 20.

Comment 58

"Items requiring licensee assistance" should include provision of a list of equipment that failed or is suspected to have failed. (Ref. 3)

Response

We agree. The procedure has been revised as suggested.

Comment 59

Some utilities may not be able to provide adequate photography services. Consideration should be given to assigning this responsibility to the NRC in the same fashion as currently stipulated for the provision of on-site stenographic services. (Ref. 3)

Response

See response to Comment 36.

Comment 60

The preliminary list of failed equipment suspected of performing abnormally during the event should be developed by the licensee prior to the entrance meeting and presented to the NRC at the meeting. (Ref. 2)

Response

We agree. See response to Comment 58.

Comment 61

At least one utility or other industry professional person should be included in each IIT. The qualifications of and selection criteria for industry personnel should be the same as specified in "IIT Membership" (p. 1-3, IIT Procedure 1) and "Team Composition and Qualifications" (NRC Appendix 0513, Part 2, Draft). This participation would not only bring the independent perspective and expertise mentioned, but would also help to avoid potential conflicts with "parallel investigations" (discussed on pp. 2-9 and 2-10).

It is suggested that the appropriate owner's group could be responsible for maintaining a group of qualified personnel for participation in IIT deployments, perhaps from personnel already assigned to the associated regulatory response groups (RRGS). (Ref. 3)

Response

We endorse this recommendation. See response to Comment 1.

Comment 62

A "discrepancy" which would warrant cessation of trouble-shooting should be clearly defined. (Ref. 3)

Response

See response to Comment 15.

Comment 63

Same as above (p. 4-9, item 10). (Ref. 3)

Response

See response to Comment 15.

Comment 64

The opening portion of the Incident Investigation Manual could be improved by starting with a discussion of the purpose of the program, rather than simply talking about the purpose of the document. It would be helpful to include some brief background similar to that contained in SECY 85-208. Inasmuch as successful investigations require cooperative efforts, this introduction should also try to set the tone for the investigation and to promote cooperative actions. (Ref. 4)

Response

We agree. The Incident Investigation Manual will contain a preface describing the purpose of the Incident Investigation Program (IIP) and the Manual.

Comment 65

It is recommended that Incident Investigation Team activities and enforcement related activities be completely divorced. Where the IIP procedures refer to enforcement actions, the need for legal counsel, etc. there is an implicit barrier to open communication. It should be clear that all parties can benefit by complete, thorough, efficient investigations. By focusing the incident investigation activities on technical facts and eliminating all implication of fault finding or penalties, the investigations will likely be conducted more efficiently and effectively. (Ref. 4)

Response

The focus of an IIT is on technical issues. However, it should be clear that the IIT report could be reviewed during enforcement activities. However, enforcement-related activities are essentially separate from the IIT process. See response to Comment 12.

Comments 66 and 67

We understand that the procedures have been developed for trial use and comment, but the duration of the trail period is not stated. It may be appropriate to explicitly state that the trial use period will be for the next __x__ events to which the IIP is applied.

We also understand that after the trail use period, the final document will only constitute a guideline and by emphasizing that point, some potential hangups on minor comments could be avoided. (Ref. 4)

Response

Currently, the IIT procedures have been issued for trial use and comment. After the procedures have been reviewed and discussed in regional workshops, the procedures will be issued in final form. This is expected to occur in early 1987. These procedures, however, will continue to be revised and refined based upon experience.

Comment 68

Page 1-2: This information is very important, but emphasis should be given to the importance of the statement, "...and substantially reduce the safety margins that insure public health and safety." The importance of this emphasis is clearer when looking at items such as paragraphs 2 and 4 on this page in isolation. In other words, slightly exceeding the design basis of a facility or slightly exceeding a safety limit in the technical specifications in and of themselves does not constitute the basis for an IIT. (Ref. 4)

Response

See response to Comment 20.

Comment 69

Page 1-3: It is suggested that Item 9 be deleted. A lot of media attention should not be the cause of initiating an IIT. (Ref. 4)

Response

See responses to Comments 4, 20, and 55.

Comment 70

Page 1-4: Item 4 on the top of this page gives guidance as to the types of people to be included on the IIT. While not imposing any specific limits, it should also provide guidance to limit the number of people to something reasonable. (Ref. 4)

Response

Because the size and composition of the team is highly dependent upon the type of event, it is difficult to set limits on the number of personnel for an IIT. It is expected that most IITs will be composed of five to seven team members.

Comment 71

Page 1-5: The first time contact between the NRC and the licensee is mentioned in the manual is in Item 6 on this page. That contact is in the form of a Confirmatory Action Letter. It would appear that the first contact between the two organizations regarding activation of an IIT should be a timely telephone call. (Ref. 4)

Response

Past experience shows that the region and site management have considerable dialogue concerning the event before an IIT is activated. Generally, after the Regional Administrator obtains a good understanding of the event, he recommends to the EDO that the event warrants response by an IIT. (The Regional Administrator may decide that a response by an AIT is more appropriate.) For events which the EDO agrees that an IIT is warranted, the Regional Administrator notifies the affected licensee that an IIT response to the event has been initiated by the EDO. The Regional Administrator then follows up the telephone call with a Confirmation of Action Letter (CAL) confirming the licensee's statement of intent and action as discussed between the licensee and Regional Administrator.

Comment 72

Page 1-5: Industry participation should be defined and permitted based on a decision by the utility experiencing the event. (Ref. 4)

Response

See response to Comment 1.

Comment 73

Page 2-9: Consideration should be given to designating ahead of time which industry representatives will be contacted. Because they are already in existence, perhaps the industry representative could be the RRG Chairman for each respective Owners' Group. (Ref. 4)

Response

See response to Comment 1 and the draft procedure covering industry participation (Section 1.7).

Comment 74

Page 2-9, Parallel Investigations: Parallel investigations are inevitable, but in the interest of efficiency, duplication and conflict should be minimized. However, it does not seem appropriate that the first action taken by the team leader when a delay is encountered is to report to the Director of AEOD. In the spirit of cooperation, attempts should be made to resolve the problem at the lowest possible level. (Ref. 4)

Response

We agree. The team leader should try to resolve the problem at the lowest possible level and if attempts fail or the situation is not resolved to the satisfaction of the team leader, the team leader should then contact the Director of AEOD. The procedure has been revised to clarify this point.

Comment 75

Page 2-10: The agreement between INPO and the NRC should work both ways. In other words, INPO has agreed to allow the NRC to review SERs prior to release. The NRC should allow INPO to review the IIT report prior to release. This would not only increase the effectiveness and efficiency of the actions caused by the final reports, but also would increase the cooperative nature of the investigations. (Ref. 4)

Response

See response to Comment 10.

Comment 76

Page 2-21: The IIT should be instructed to leave a copy of their final bibliography in the possession of the licensee. (Ref. 4)

Response

The IIT can leave a copy of the bibliography for the licensee if requested; however, because a great deal of information is still being collected after the onsite investigation, the bibliography is continually being updated until the day the final report is released. At that time a copy of the final bibliography can be sent to the licensee for information if requested.

Comment 77

Page 3-2: The opening statement provided in Item 7 should include mention of the right to have an additional person, of the interviewee's designation, present during the interview. The present manual write-up provides this information in Item 8, but it would be better if it were moved up. (Ref. 4)

Response

The opening statement has been revised as suggested.

Comment 78

SECY 85-208, page 4: Consistent with the general comments above, it is recommended that no further consideration be given to providing subpoena power to the IIT. (Ref. 4)

Response

Subpoena power will be handled through the normal organizational structure if required. The procedures contain guidance for the IIT team leader on who to contact if a situation arises potentially requiring the need for a subpoena.

Comment 79

Page 1-3: Characteristic 8 of operational events which should be considered for an IIT response as currently worded i very general and subject to interpretation. It is suggested that this wording be made more specific or that the characteristic be deleted.

Characteristic 9 does not appear to be of similar relevance as the others. It is suggested that it be deleted. (Ref. 5)

Response

See responses to Comments 4, 20, and 55.

Comment 80

The activating process procedure should include immediate notification of the licensee whose facility will be receiving the IIT. (Ref. 5)

Response

See response to Comment 71.

Comment 81

On Table 1, the comparison of IITs and AITs includes estimates for the number of both IITs and AITs per year. These estimates should be deleted. They do not add any useful information to the table and they could become de facto minimum targets. (Ref. 5)

Response

The statements have been deleted as suggested.

Comment 82

The licensee should be notified immediately of any upgrading or downgrading of any regulatory response. (Ref. 5)

Response

This is already stated in the second paragraph on page 1-10.

Comment 83

The generic Confirmatory Action Letter should include wording similar to those which appear on page 4-1 so as to make it clear that the licensee can take action involving quarantined equipment which is deemed necessary for these stated reasons. (Ref. 5)

Response

See response to Comment 30.

Comment 84

The comment above on the generic Confirmatory Action Letter applies to the sample Order to Show Cause as well. (Ref. 5)

Response

See response to Comment 30.

Comment 85

The definition of equipment to be included on the QEL should be clarified to limit the scope to equipment that did not function as it was designed. Equipment that performed as designed during the event should not be quarantined. (Ref. 5)

Response

See responses to Comments 34 and 53.

Comment 86

On page 4-4, the meaning of the word discrepancies needs clarification. (Ref. 5)

Response

See response to Comment 15.

Comment 87

Licensees have in place a process for approval of maintenance work orders. This approval process should be sufficient. (Ref. 5)

Response

See response to Comment 35. Past experience has demonstrated that normal maintenance work orders established for troubleshooting work do not always ensure that valuable information for determining the probable cause(s) of equipment failure is preserved.

Comments By NRC Staff

Comment 88

Concerning confidentiality,

a. Who is authorized to grant or deny?

b. How does the IIT obtain authority to grant?

c. When and under what conditions should it be granted or denied?

Response

Section 2.21 was added to Procedure 2 to address confidentiality during the conduct of investigation. The EDO, Regional Administrators, Director of AEOD, and those specifically delegated by them may grant confidentiality. In cases where the IIT leader believes that needed information will only be obtained by providing assurance that the NRC will not identify the individual (i.e., source of the information) the team leader should contact the Director of AEOD, who will coordinate the situation with the EDO, OGC and others in order to obtain a delegation of authority to the team leader to grant confidentiality.

Confidentiality is not to be granted as a routine matter. Rather, confidentiality will be granted only when necessary to acquire information related to the Commission's responsibilities or where warranted by special circumstances. It will ordinarily not be granted when the individual is willing to provide the information without being given confidentiality.

If an explicit request for confidentiality is made, information will be sought from the individual to make a determination as to whether the grant of confidentiality is warranted in the particular circumstances at hand. The following information will be solicited from the individual to assist in making this determination.

1. Has the individual provided the information to anyone else, i.e., is the information already widely known with the individual as the source?

2. Is the NRC already knowledgeable of the information, thereby obviating the need for a particular confidential source, i.e., why subject the NRC to the terms of a Confidentiality Agreement unless necessary?

3. Does the individual have a past record which would weigh either in favor of or against granting confidentiality in this instance, i.e., has the individual abused grants of confidentiality in the past?

4. Is the information which the individual offers to provide within the jurisdiction of the NRC, i.e., should he/she be referred to another agency?

5. Why does the individual desire confidential source status, i.e., what would be the consequences to the individual if his/her identity were revealed?

Depending on the information gathered by the authorized NRC employee, a determination will be made as to whether granting confidential source status would be in the best interest of the agency.

Comment 69

a. Who is authorized to issue subpoenas and administer oaths?

b. How does the IIT obtain authority to administer oaths and issue subpoenas?

c. When and under what conditions should subpoenas and oaths be considered?

Response

Section 2.22 was added to Procedure 2 to address subpoena power and power to administer oath and affirmation.

At the staff level, the EDO and the Regional Administrator are authorized to issue subpoenas and administer oaths.

During an IIT investigation, should the situation occur where the administering of an oath may be needed, the team leader should contact the Director of AEOD, who will coordinate the situation with the EDO, OGC, and Regional Administrator, and, if appropriate, obtain a delegation of authority to administer oath and affirmation to the team leader. The authority to issue subpoenas is not further delegable.

In general, oaths are administered to ensure that individuals interviewed properly recognize the gravity of the situation. The point at which an oath is administered depends upon the circumstances surrounding the interview.

Subpoena power is available to the NRC to assist it in gathering information which is related to the agency's public health and safety mission. Most investigations conducted by the NRC are accomplished without the need for a compulsory process because most interviews and information are given voluntarily. Consequently, whenever information is considered vital to the investigation and

the individual refuses to either testify or to provide documentary evidence, the use of a subpoena will be seriously considered.

Comment 90

Can "draft" documents or other material prepared by the team be released to the licensee?

Response

The EDO issued policy guidance to the staff concerning the release of draft materials, documents, and reports. (See memoranda dated October 7, 1983 and December 3, 1984). NRC policy prohibits the release of draft inspection and investigation reports, such as IIT reports, except as required by safety or security concerns. Thus, draft IIT reports, either in their entirety or excerpts from them cannot be released to licensees or their agents, or to any source external to the NRC without the express permission of the EDO. Other material which may be available to or used on IITs such as preliminary notifications and press releases are routinely released to the public and may be released after final issuance.

Comment 91

How does the IIT refer allegations, potential wrongdoings or safeguards information to other organizations for follow-up and depositions?

Response

Section 2.20 of Procedure 2 has been added to address referral of information to other NRC offices.

ENCLOSURE 4

POLICY ISSUE
(Notation Vote)

October 28, 1986 SECY-86-317

For: The Commissioners

From: Victor Stello, Jr
Executive Director for Operations

Subject: PERFORMANCE INDICATORS

Purpose: To obtain approval of the staff's Performance Indicator Program for operating nuclear power plants.

Summary: An interoffice task group, chaired by the Office of Inspection and Enforcement (IE), was established to develop a set of performance indicators to be monitored and evaluated by the NRC for making timely regulatory decisions about performance of nuclear power plants. A trial program was conducted using a selected set of indicators and plants with data collection, confirmation and validation of the trial indicators as well as interactions with industry representatives. Based on the recommendations of the task group and discussions with industry representatives, the staff has selected seven (7) performance indicators for monitoring in the final program. The performance indicator data will be collected on an ongoing basis and evaluated on a quarterly basis for providing input to the NRC management decision process in response to poor or declining performance as well as to the SALP program. As experience is gained with the program, additional or different indicators may be developed.

The Division of Emergency Preparedness and Engineering Response (DEPER), IE is responsible and accountable for the implementation of the performance indicator program including the coordination of the continued development work at other offices.

Background: In the Secretary's memorandum of March 10, 1986 (COMLZ-86-3), the Commission directed the staff to submit a proposal on performance indicators for final approval. In SECY-86-144, Performance Indicators of May 5, 1986, the staff provided the status of current use and development efforts and stated that an interoffice task group had been established

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492-4149

to review previous work, select indicators, conduct a trial program, and provide a final recommendation by the end of September 1986. That due date was subsequently extended to the end of October to expand the trial program data to include all operating reactors. The results of the task group work including the final recommendations, are summarized below and provided in detail in the enclosed task group report, "Performance Indicator Program Plan for Nuclear Power Plants" (Enclosure 1). Appendix A of the task group report contains the data used for the trial program and Appendix B provides responses to the Commission comments on SECY-86-144. Enclosure 2 contains a sample report based on updated data for all operating nuclear power plants similar to the report the staff plans to issue in the future on a quarterly basis. The sample report in Enclosure 2 was available for review during the senior NRC management meeting of October 21-22, 1986.

Discussion: The term "performance indicator" reflects a set of data that should have correlation with individual plant safety performance. There are two kinds of performance indicators: (1) direct indicators of current plant performance, such as safety system failures, and (2) indirect or programmatic indicators, such as the Enforcement Action Index. Direct and indirect indicators are useful to the NRC as well as licensees.

For selecting a set of performance indicators and developing a plan for monitoring them, the key assumptions used by the task group were that (1) the evolving SALP program is the cornerstone of the NRC effort to evaluate overall licensee performance, (2) trending a set of performance indicators on a periodic basis is necessary to detect symptoms of poor or declining performance, and (3) structured decisionmaking in response to poor or declining performance is necessary.

The task group started its activities with a review of the past and ongoing work on the issue within the NRC and industry. The review identified several key elements of the performance indicator development process that included conducting a trial program with selected indicators and plants, confirmation and validation of the trial indicators, interactions with the industry, and selection of a minimum set of indicators for the final program.

For the initial selection of indicators to be considered during the trial program the following desired attributes were developed:

1. The performance indicators should be related to nuclear safety and regulatory performance.

2. The data should be readily available to the NRC in a timely manner.

3. The data should not be susceptible to manipulation.

4. The data should be comparable between licensees.

5. The indicators should be worthy goals for licensees.

6 The indicators should reflect a range of performance.

7. The indicators should be independent of each other.

8. The indicators should be leading (i. e., predictive of the future performance).

9. The set of performance indicators should be broad enough for correlation with SALP.

To provide a framework for relating the performance indicators to plant safety, the task group developed a logic model outlining some of the key components that contribute to plant safety. The logic model was based on the concept that operational safety requires a low frequency of transients and a high reliability/availability of safety systems, which would also include a low potential for common-cause failures. Therefore, the performance indicators should include measures of at least the frequency of transients, availability of safety systems, and potential for common-cause failures. Other aspects of plant safety, such as inherent design features and potential for cognitive error, were considered to be beyond the scope of this program.

On the basis of the desired attributes and the logic model, 17 indicators were selected for the trial program. The task group also selected 50 plants at 30 sites for the trial program. Most of the data required for the trial program were readily available within the NRC. The remaining data were collected by the regional staff and resident inspectors.

To begin the validation process, the task group determined that the 17 indicators selected were pertinent to the measurement of either transients, safety system availability, or potential for common-cause failures. Thus, the indicators had logical validity. The next step was to correlate each of the indicators individually and several indicators in sets to the average SALP score based on the functional areas of operations, maintenance, surveillance, and quality programs for the most recent SALP report. Several of the 17 indicators exhibited moderate to strong correlations with SALP; others did not.

A set of indicators, consisting of those with useful individual correlations to SALP, demonstrated a good correlation with plant SALP scores within reasonable limits with a few exceptions. The strongest contributor to the correlation was the Enforcement Action Index. When the Enforcement Action Index was excluded from the set, the remaining set of indicators still correlated with SALP scores within reasonable limits for most plants.

To further investigate the capability to detect poor or declining performance, trends in the indicators for Davis-Besse and Rancho Seco were analyzed up to the time of their major events. The results showed declining performance for Davis-Besse, but not such a clear trend in the case of Rancho Seco.

Selection of An Optimum Set of Performance Indicators for the Final Program

Although the principal objective of the task group was to develop a "minimum" set of performance indicators, in practice an "optimum" set was derived. The group considered comparisons between the ideal attributes and the logic model as well as the nature of the data and the results of validation studies. Eight indicators were selected which, in the group's overall judgment, represented the optimum set of indicators for implementation at this time. In addition, where the indicators were similar to indicators already being used by INPO, identical definitions were adopted to avoid needless confusion. The resultant set is as follows:

1. Automatic Scrams While Critical: This is identical to the indicator, Unplanned Automatic Scrams While Critical, used by INPO. In addition, the number of automatic scrams from above 15% power per 1000 critical hours and the number of automatic scrams while critical below 15% power will be monitored.

2. Safety System Actuations: This is identical to the indicator, Unplanned Safety System Actuations, used by INPO and includes actuations of ECCS (actual and inadvertent) and emergency ac power system (actual).

3. Significant Events: These events are identified by the detailed screening of operating experience by NRR and IE, and include degradation of important safety equipment, unexpected plant response to a transient or a major transient, discovery of a major condition not considered in the plant safety analysis, or degradation of fuel integrity, primary coolant pressure boundary, or important associated structures.

4. Safety System Failures: This includes any event or condition that alone could prevent the fulfillment of the safety function of structures or systems. Twenty-four systems or subsystems will be monitored for this indicator.

5. Forced Outage Rate: This indicator's definition is identical to the one used by INPO and the NRC Grey Book (NUREG-0020), and is the number of forced outage hours divided by the sum of forced outage hours and service hours.

6. Maintenance Backlog: This is identical to the indicator, Corrective Maintenance Backlog Greater Than 3 Months Old, used by INPO. It is the fraction of all corrective maintenance work requests, not requiring an outage and are more than 3 months old.

7. Enforcement Action Index: This includes all enforcement actions issued as a result of inspections completed in a given period weighted by severity levels adapted from 10 CFR 2.

8. Equipment Forced Outages per 1000 Critical Hours: This is the inverse of the mean time between forced outages caused by equipment failures. The mean time is equal to the number of hours the reactor is critical in a period divided by the number of forced outages caused by equipment failures in that period.

Each of the eight performance indicators supports at least one of the elements of the plant safety logic model. Some of the indicators, such as Significant Events, support more than one element of the logic model.

To obtain additional insight into plant management and operations, the following information was recommended by the task group for further development, collection, and monitoring:

1. systems involved in scrams, safety system actuations, significant events, and safety system failures

2. causes associated with scrams, safety system actuations, significant events and safety system failures such as personnel error, maintenance problems, equipment failures and design/fabrication/construction error

3. number of forced outages

After the task group's selections were made, comments were sought from industry representatives. The objections to the maintenance backlog indicator were more serious than the task group had thought. Some commenters indicated that the indicator could provide a negative incentive, such as minimizing the number of work requests rather than minimizing the amount or importance of backlogged work. Therefore, the staff proposes to not include the maintenance backlog indicator in the final set while additional data are collected to determine the best means of monitoring maintenance effectiveness. This data collection and evaluation will be carried out on a high priority basis during implementation of the program.

Program Implementation

Data Collection - AEOD currently collects and analyzes much of the operational data pertinent to several performance indicators. IE will collect operational data via the 10 CFR 50.72 reports and other information from the Operations Center to ensure timeliness. AEOD will provide operational data pertinent to a number of performance indicators using available files from 10 CFR 50.72, 10 CFR 50.73 and NUREG-0020 (Grey Book) reports. The Enforcement Action Index data will be derived from the existing 766 file with assistance from the regions. NRR will determine the Significant Events in cooperation with IE for inclusion in the program. The staff is coordinating with INPO on a plan to share and quality check the data.

The computer system developed for the trial program will be used for the data collection and analysis in the short-run. In the long-run, the Corporate Data Network (CDN) that is currently being developed will be used. The use of CDN will enable the performance indicator program to become an on-line system accessible to the whole agency. It also will improve the reliability of the data.

Display and Presentation Method - The performance indicator data will be presented on a quarterly basis in a report similar to the one provided as Enclosure 2. It will include the latest and four-quarter moving average values for each of the indicators and most recent SALP ratings for all plants. In addition, two types of charts will be included in the report. One type will illustrate the trend of all indicators for a plant against the plant's own mean values and against industry mean values. The other type will illustrate the history of each performance indicator on a plant-specific basis and will include data for the most recent quarter and at least four previous quarters. The data presentation will continue to evolve based on direct experience, review of presentations developed by industry, and feedback from users.

Evaluation Method - The quarterly report will contain a summary of the evaluations performed by staff. The evaluation will primarily consist of a review of the performance indicator data and charts. The review will examine both the trends and values of indicators. This review is expected to identify plants that may require a closer look for determining whether their performance is in fact poor or declining or for determining the underlying reasons and appropriate NRC response.

It is recognized that the performance indicator program has its limitations. Monitoring and evaluation of the indicators are expected to provide only a screening tool for identifying plants whose performance may be poor or declining. Detailed in-depth analysis and judgments will be required on a case-by-case basis before any regulatory action. However, the performance indicators are expected to provide a valuable tool that will assist the NRC with early identification of potential performance problems.

Analysis Process - Quarterly performance indicator data will be compiled into a report and issued promptly to headquarters and regional offices. The report will flag certain plants for potential consideration based on simple

tests such as determining the existence of apparently poor results or significant trends. Then the regional and headquarters offices will perform additional evaluation to supplement the report. These evaluations will be more comprehensive and will include consideration of previous regulatory or licensee actions, the results of recent inspections or evaluations, and the judgments of knowledgeable staff. The plants selected by the Office Directors will be discussed at the next senior management meeting with the EDO.

Management Decision Process - The task group did not attempt to develop detailed criteria that could be applied by the NRC management for determining the regulatory actions in response to poor or declining performance. This was not believed to be feasible or desirable since the appropriate actions will depend on several factors including previous actions taken, the SALP ratings, performance indicators trends, results of recent inspections or evaluations, and judgments of knowledgeable staff. The senior management will review the available information and meet periodically to consider all the factors involved for making decisions. A frequency of semiannual senior management meetings is recommended as a starting point.

Some of the actions that the senior management should consider in response to deficient performance are:

1. generally increase the level of inspection or conduct a special evaluation (such as a diagnostic evaluation team) to better understand current performance

2. communicate the NRC's concerns to licensee management by letters or meetings (this can be done at the middle management, senior management, or Commission level, as appropriate)

3. request or require a license performance improvement program

4. request or require the shutdown of a plant or certain operations pending improvements

Milestones - The performance indicator program will be implemented in accordance with the following schedule:

February 1987 - provide the first quarterly report based on performance indicator data through December 1986 for all plants

May 1987	-	provide the second quarterly report based on data through March 1987
August 1987	-	provide the third quarterly report based on data through June 1987
November 1987	-	provide the fourth quarterly report based on data through September 1987
December 1987	-	incorporate changes to the program based on experience gained (this may include changes to the set of indicators, redefinition of the indicators, or report frequency)

Resource Estimates - The task group has estimated that four to six FTEs will be required to implement the performance indicator program. The FTEs have been obtained by reprogramming existing IE headquarters staff resources. No new resources are requested to implement the program. Furthermore, it is anticipated that the performance indicator program may improve the efficiency of the SALP process data collection since some of the information and data required for SALP will have been already collected and analyzed for the performance indicator program.

Continued Developmental Work - The task group has identified several indicators that need further development. The most important ones are programmatic and predictive indicators, such as causes, LCO Action Statements, Safety System/Train Unavailability and Reliability/Risk-Based Indicators.

Priority attention is directed toward development of indicators related to maintenance because maintenance backlog was removed from the optimum set of performance indicators. The development work on these indicators should be continued by RES with assistance from AEOD, NRR, IE and the regions. Other areas requiring continued work include presentation and display of performance indicators, ongoing validation, interpretation of the data, and further consideration of alert levels. The developmental activities will continue under IE oversight on an orgoing basis.

Disposition of Other Related Programs - The task group has recommended, and the staff agrees, that the program that was underway at IE to test a methodology for assessing licensee performance by review and analysis of data from the 766 file, separate performance indicator programs at regions, and indicators used by other offices to assess

licensee performance are no longer necessary and will be discontinued by February 1987 when the first set of performance indicator data is available for all plants. Although other offices should continue to employ programmatic performance indicators, such as overall maintenance indicator, to assess industry performance related to a specific program, IE will be responsible for continued coordination and oversight for plant performance indicator programs.

Recommendation: That the Commission

Approve the staff's final plan on performance indicators as described in this paper.

Scheduling: I have directed the staff to proceed with the initial steps of this plan pending Commission review. Commission direction can be incorporated during this implementation of the program.

Victor Stello, Jr.
Executive Director for Operations

Enclosures: Commissioners, SECY, OGC & EDO only
1. Performance Indicator Program
   Plan for Nuclear Power Plants
2. Report on Performance Indicators

Commissioners' comments or consent should be provided directly to the Office of the Secretary by c.o.b. Wednesday, November 12, 1986.

Commission Staff Office comments, if any, should be submitted to the Commissioners NLT Friday, November 7, 1986, with an information copy to the Office of the Secretary. If the paper is of such a nature that it requires additional time for analytical review and comment, the Commissioners and the Secretariat should be apprised of when comments may be expected.

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