

PUBLIC'S CONCERNS WITH NRC REPORT
OF INDEPENDENT SAFETY ASSESSMENT
(ISA) AT MAINE YANKEE

CASE NO. 97-03S 1/26/98

OFFICE OF THE INSPECTOR GENERAL
EVENT INQUIRY



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CASE NO. 97-03S

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CHRONOLOGY OF SIGNIFICANT EVENTS

<i><u>Date</u></i>	<i><u>Event</u></i>
September 15, 1972	Operating license issued to MYAPS at 2440 MWt
July 10, 1989	NRC approved a thermal power increase to 2700 MWt
February 6, 1995	MYAPS shutdown to repair steam generators
December 4, 1995	NRC received an anonymous allegation letter from Union of Concerned Scientists
January 3, 1996	NRC issued Confirmatory Order suspending authority and limiting power operation
January 11, 1996	MYAPS restarted operation at 2440 MWt
May 28, 1996	NRC Chairman requested independent evaluation of safety performance at MYAPS
May 30, 1996	NRC announced establishment of ISAT
May 31, 1996	ISAT Manager and Leader developed charter and coordinated assessment with State of Maine
July 15, 1996 - July 26, 1996	ISAT began initial on-site evaluation at MYAPS and at the corporate offices of MYAPCo and YAEC
July 29, 1996 - August 9, 1996	ISAT began its first review of MYAPS data and compilation of findings at NRC
August 12, 1996 - August 23, 1996	ISAT began second two-week on-site evaluation at MYAPS, MYAPCo, and YAEC
October 7, 1996	NRC issued ISAT report
October 10, 1996	NRC holds public meeting in Wiscasset, Maine to discuss ISAT findings and conclusions
December 6, 1996	MYAPS shutdown to resolve equipment operability concerns
December 18, 1996 &	NRC issued a Confirmatory Action Letter and Supplemental letter

January 30, 1997

to MYAPS to resolve equipment operability issues

March 11, 1997

NRC held an enforcement conference with MYAPS in Wiscasset,
Maine

EXECUTIVE SUMMARY

The Office of the Inspector General (OIG) initiated this inquiry based on receipt of concerns from the public regarding the Nuclear Regulatory Commission's (NRC's) report entitled, "Independent Safety Assessment of Maine Yankee Atomic Power Station," issued in October 1996. In brief, the Independent Safety Assessment Team's (ISAT) report contained findings which indicated that Maine Yankee Atomic Power Station (MYAPS) had significant items of noncompliance with NRC regulations and with its design and licensing bases. However, the ISAT concluded that the plant was considered adequate for safe operation. The concerned public believed that the ISAT conclusion that MYAPS was adequate for safe operation was contradicted by the findings of the ISAT.

In addition, the concerned citizens alleged that the ISAT report indicated that operability determinations were conducted by the ISAT regarding components associated with the Residual Heat Removal (RHR) and Component Cooling Water (CCW) systems. The citizens maintained that operability determinations by the NRC violated the NRC's regulatory authority and should have been performed by the licensee.

The OIG inquiry revealed that the significant deficiencies identified by the ISAT were either resolved by the licensee during the ISA or were provided to NRC program offices for resolution. OIG learned that the ISAT considered the balance of the good and bad of the safety systems and programs reviewed to conclude that MYAPS was in general conformance with its licensing and design bases. Additionally, the ISAT took into account MYAPS' defense-in-depth when it concluded that the plant posed no undue risk to public health and safety and was safe to operate.

The OIG inquiry found that several phrases such as "undue risk" and "adequate protection" to the public were used by the ISAT to describe the NRC's standard of protection of public health and safety as applied to MYAPS. However, OIG learned that these phrases are not clearly defined by the NRC.

The OIG concluded that those not involved with the nuclear industry may have been confused with the ISAT's assessment of MYAPS using language normally found in SALP reports.

OIG learned that the ISAT resulted in MYAPS performing additional reviews of the plant and enhancing its self-assessment processes. The Surowiec 115 kV offsite power line, the thermal relief valves to protect the heat exchangers, and the cable separation issues were uncovered by the licensee as a result of MYAPS's expanded self-assessment.

OIG found that although the ISAT report contained language to suggest the ISAT made operability determinations, OIG determined that all operability determinations were conducted by MYAPS.

BACKGROUND

NRC Initiates An Independent Assessment Of MYAPS

As a result of discussions between the Governor of Maine's office and the NRC Chairman's office regarding the safety and the effectiveness of regulatory oversight of MYAPS, the NRC Chairman directed the NRC staff to conduct an independent evaluation of MYAPS' safety performance. The NRC assembled a multi-disciplined group. This group comprised NRC personnel who were independent of any recent or significant oversight responsibility for MYAPS; representatives from the State of Maine; and contractors from the nuclear industry. This group became the Independent Safety Assessment Team (ISAT). The ISAT Manager and ISAT Leader developed a charter stating the team's overall goals and objectives as follows: (1) Provide an independent assessment of the conformance of MYAPS to its design and licensing bases including appropriate reviews at the site and corporate offices; (2) provide an independent assessment of operational safety performance providing risk perspectives where appropriate; (3) evaluate the effectiveness of licensee self-assessments, corrective actions and improvement plans; and (4) determine the root cause(s) of safety significant findings and draw conclusions on overall performance.

The ISAT was on-site at MYAPS between July 15 and 26, 1996, and again between August 12 and 23, 1996. During these periods, team members also conducted assessments at the MYAPS corporate headquarters in Brunswick, Maine, and at the YAEC offices in Bolton, Massachusetts.

ISAT Adapted From NRC's Diagnostic Evaluation Program

The independent safety assessment (ISA) was an independent, multi-disciplined, safety assessment of MYAPS in response to the NRC Chairman's request. The ISAT was the first time the NRC had embarked on such an endeavor. The ISAT Manager and ISAT Leader stated that they adapted the ISA concept and structure from the Diagnostic Evaluation Program (DEP), which is outlined in NRC Management Directive 8.7. The DEP is a formal, independent, in-depth assessment of a reactor facility conducted for the purpose of gaining additional insight into current licensee safety performance. The assessment includes significant aspects of plant operations, maintenance and testing, engineering and technical support, and management effectiveness. This adaptation of the directive and handbook governed the scope, objectives, authorities, responsibilities, and basic requirements for the ISA at MYAPS.

In accordance with its DEP adaptation, the ISAT was tasked to evaluate the adequacy of MYAPS' performance related to activities that may affect public health and safety. The ISAT was to document MYAPS' strengths and weaknesses in a formal report, placing emphasis on conformance to the licensing and design bases and root cause determination of performance problems. In addition, the ISAT was to provide sufficient information to characterize MYAPS' current safety performance and its capability within existing programs to improve its safety

performance. This information combined with existing information would form the basis for NRC's regulatory decisions regarding the MYAPS facility.

NRC Personnel, Contractors and State Of Maine Representatives Form ISAT

The ISAT comprised twenty-five members: sixteen NRC members, three State of Maine members, and six contractors. The ISAT was organized with five functional area team leaders reporting to the ISAT Team Leader. The Team Leader reported to the Team Manager who reported directly to the NRC Chairman. The Team Manager, Team Leader, and Functional Area Team Leaders were all NRC personnel. The ISAT members were independent of both the NRC Region I office and NRR.

The ISAT coordinated with the State of Maine to facilitate participation by State representatives consistent with the Commission's policy on cooperation with States at commercial nuclear power plants (57 FR 6462, February 25, 1992). In addition to the State of Maine's participation in the assessment, the State had a two-member process team observe at key assessment milestones. The process team provided the State with an evaluation of the independent safety assessment relative to its fairness, balance, and objectivity. The State also had a special five-member Citizen's Review Team (CRT) periodically briefed on the ISAT status. The CRT in turn provided the State advice on and interpretations of the ISAT process and findings.

ISAT Assesses Certain Plant Areas

The ISAT conducted an assessment in the following areas of the plant: (1) operations, (2) maintenance, (3) testing, (4) engineering, (5) analytic code support, and (6) self-assessment and corrective actions. An emphasis was placed on identifying both licensee strengths and weaknesses in the aforesaid areas. The assessment determined root causes for safety performance weaknesses as well as identified significant problem areas.

NRC Issues ISAT Report

On October 7, 1996, the NRC Chairman approved the ISAT report on MYAPS. The ISAT concluded that overall performance at MYAPS was considered adequate for operation. However, a number of significant weaknesses and deficiencies were identified by the ISAT. The team members believed that these deficiencies might result in the NRC taking enforcement action against MYAPS. The ISAT reported that the weaknesses and deficiencies appeared to be related to several root causes: economic pressures to contain costs and poor problem identification as a result of complacency and the lack of a questioning attitude.

The NRC Chairman forwarded a copy of the ISAT report to the President and Chief Executive Officer for MYAPCo. The Chairman requested that the company provide the NRC with its plans for addressing the root causes of the deficiencies noted by the ISAT. On December 10, 1996, MYAPCo provided NRC with its written response to the ISAT report. At a Commission briefing held on February 4, 1997, MYAPCo senior management agreed with the ISAT findings with respect to the root causes for MYAPS' deficiencies and outlined actions the company intended to take to resolve these matters.

Conclusions of ISAT's Assessment

The ISAT report contained the following findings, conclusions and root causes:

Maine Yankee was in general conformance with its licensing-basis although significant items of noncompliance were identified. The licensing-basis was understood by the licensee but lacked specificity, contained inconsistencies, and had not been well maintained.

The use of analytic codes for safety analyses was very good. Cycle specific core performance analyses were excellent. More complicated, less frequently performed safety analyses contained weaknesses, but the analyses were found to be acceptable based on compensating margin.

The quality and availability of design-basis information was good overall. Despite uncorrected and previously undiscovered design problems, the design-basis and compensatory measures adequately supported plant operation at a power level of 2440 MWt. However, the team could not conclude, and licensee did not demonstrate, that at a power of 2700 MWt the design-basis assured adequate net positive suction head (NPSH) for the containment spray pumps and the heat removal capability of the component cooling water system in the event of a loss-of-coolant accident.

While overall performance at Maine Yankee was adequate for operation, a number of deficiencies were identified by the team in each of the areas assessed. These deficiencies, which included weak identification and resolution of problems; weak scope, rigor, and evaluation of testing; and declining material condition stemmed from two closely related root causes. These root causes were (1) economic pressure to be a low-cost energy producer has limited available resources to address corrective actions and some plant improvement upgrades and (2) there is a lack of a questioning culture which has resulted in the failure to identify or promptly correct significant problems in areas perceived by management to be of low safety significance.

DETAILS

I. OIG REVIEW OF THE ISAT REPORT FINDINGS AND CONCLUSIONS

Concerned Citizens Request Clarification of ISAT Report

OIG initiated this inquiry as a result of concerns from the public related to the NRC report entitled, "Independent Safety Assessment of Maine Yankee Atomic Power Station," issued in October 1996 by the NRC ISAT. Upon review of the ISAT report, certain citizens called for clarification of the report findings and conclusions. One citizen stated, "The people of Maine need the techno-babble of the ISAT clearly translated. When NRC inspectors say a program or a system is acceptable with significant deficiencies of non-conformance found, what does that mean? I as a member of the nuclear community know: they, Maine Yankee Atomic Power Plant, were simply in noncompliance with existing NRC Regulatory Guides, or in other words, the law." Other citizens were disturbed by what they stated were repeated instances in the ISAT report where the ISAT identified safety significant issues or safety issues that appeared to violate NRC regulations and then dismissed the issues with vague language or casual asides.

ISAT Uses Systematic Assessment of Licensee Performance (SALP) Language To Address Its Audience

The ISAT Leader stated to OIG that the ISAT report was written, as all NRC reports, with the intent to clearly inform its audience. The ISAT members explained to OIG that they, as well as most involved with preparation of the ISAT report, knew the audience was diverse. They said that the audience for the ISAT comprised the NRC Chairman and Commission, NRC staff, MYAPCo and MYAPS, the Governor of Maine, citizens of Maine and the public-at-large. The ISAT Leader stated that he took into account the entire audience for the ISAT report and decided that the Systematic Assessment of Licensee Performance (SALP) benchmarks should be used in the report. The SALP is an integrated assessment by the NRC of how well a given licensee management is directing, guiding, and providing resources needed for the requisite assurance of safety at a power plant. The SALP benchmarks for assessing performance are superior, good, and acceptable. The ISAT Manager explained that the SALP process is an NRC effort to grade the plants' relative performance. Many of the ISAT members believed that the use of the SALP language would enhance understanding of the ISAT's assessment of MYAPS.

OIG learned, however, that the ISAT's use of SALP language may have confused the public. A member of the public who served on the Governor's CRT expressed surprise with the report's use of SALP language. The CRT member stated that the report's use of the terms 'adequate and good' were a concern to the CRT. The CRT member said, "... the average citizen would likely have difficulty understanding NRC's use of those terms, even though the report was drafted for both the NRC and the public." One ISAT Functional Area Team Leader also recognized that the SALP terminology caused some confusion. He explained that in the SALP vernacular "good means you've got a lot of faults and you're just kind of okay." The ISAT Leader acknowledged that the public was not as well informed on SALP terminology as the industry and the NRC; however, he believed the use of new or different terminology by the ISAT would have caused

more confusion.

ISAT Explains Its Conclusions

With regard to the ISAT's use of the phrase, "in general conformance" in the conclusion of the report, the ISAT Leader explained that the team chose to state MYAPS was in general conformance with its licensing and design bases because the vast majority of the safety systems and other items inspected by the team were in conformance. He further explained that "general conformance" was chosen by the ISAT to indicate to the reader "... that we looked at a very large number of specific instances and measured those instances against their licensing and design basis [sic] and found they were in compliance." One of the ISAT Functional Area Team Leaders advised OIG that there were different levels of licensee performance in the areas assessed at MYAPS. He said MYAPS did some things very well, and at the same time they "did some things that weren't bright at all." The ISAT Leader said that the ISAT report reflects the variances of MYAPS' performance. However, he stated the ISAT report concentrates on the deficiencies found at MYAPS and presents only some of the good elements at MYAPS.

In an attempt to provide additional clarification of the ISAT's conclusions, another ISAT Functional Area Team Leader told OIG that MYAPS was generally in conformance given the totality of evidence gathered by the ISAT. He added that the team took into consideration the good and bad items and concluded that in balance MYAPS was in general conformance. All the ISAT members interviewed by OIG concluded that MYAPS was in general conformance with its licensing and design bases with some safety significant deficiencies.

In the six areas assessed by the ISAT, the following areas were identified as being in conformance:

1. In the area of operations, strengths were noted in the areas of operator performance during routine and transient operating conditions; shift turnovers and pre-evolution briefs; use of risk information to assure safe operations; and the involvement of management in day-to-day operations.
2. In the maintenance area, strengths were noted regarding MYAPS' knowledge and use of risk methodologies for planning, prioritizing, and scheduling work; the control and limited use of temporary sealants; and a motivated and dedicated work force.
3. The ISAT identified strengths in the capability and experience of the engineering staff; day-to-day engineering support of maintenance and operations; in the quality of most calculations; and in the routine use and application of analytic codes.
4. In the area of self-assessment and corrective actions, strengths were noted in MYAPS' ability to effectively plan.
5. The ISAT found that MYAPS' cycle-specific core performance analyses, such as the Control Element Assembly (CEA) drop transient were excellent. Additionally, the ISAT found that MYAPS had satisfied its safety evaluation report (SER) conditions.

The NRC Chairman Discusses ISAT Procedures And Conclusions

The NRC Chairman told OIG that she agreed with the basis used by the ISAT to make the determination that MYAPS was "in general conformance with its licensing basis although significant items of nonconformance were identified." The Chairman explained that the safety significant issues identified by the ISAT were either resolved or compensatory actions were taken by MYAPS. She said these actions were consistent with NRC regulations and policies.

With regard to the significant items of noncompliance identified by the ISAT, the Chairman stated that the NRC will look at the risk and the pervasiveness of the noncompliances and then take the appropriate enforcement action. She advised OIG that the NRC has a set of regulations that the licensee is expected to live within, and if the licensee operates outside the regulations it is viewed as noncompliance. The Chairman stressed that the NRC takes appropriate action in the event of noncompliance.

The Chairman explained that full compliance with all NRC regulations is the goal the NRC would like every licensee to achieve. However, the agency recognizes that plants will not operate trouble-free. The Chairman stated to OIG that when a noncompliance occurs, the NRC must evaluate the degree of risk posed by that noncompliance to determine what specific immediate action is required. Where needed to ensure adequate protection of public health and safety, the NRC may demand immediate licensee action, up to and including plant shutdown.

The Chairman continued by stating that to determine the appropriate action to be taken, the NRC must evaluate any noncompliance both in terms of its safety significance and by assessing whether it is part of a larger pattern. This is consistent with the current NRC enforcement policy which was recently changed with Commission approval. The Chairman referenced "Enforcement Guidance Memorandum - Consideration of Risk in Enforcement Actions," dated June 6, 1997. The Enforcement Guidance Memorandum (EGM) was issued to provide guidance for considering how the risk significance of events should be factored into NRC staff decisions on enforcement actions. This EGM reflects the December 4, 1996, revision to the Enforcement Policy published on December 10, 1996, at 61 Federal Register (FR) 65088. The Chairman concluded by noting that the NRC must ensure that corrective actions are carried out by licensees in accordance with NRC policy. The Chairman informed OIG that Criterion XVI of the Code of Federal Regulations (CFR), Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," outlines measures to correct conditions of degradation or

noncompliance. The Chairman added that 10 CFR 50.59 and Generic Letter 91-18 require timely resolution of noncompliance issues.

ISAT Applies NRC Standard Of Protection Of Public Health & Safety To MYAPS

Some of the ISAT members explained to OIG that although there are safety significant deficiencies at MYAPS, the redundancy (defense-in-depth) provided by the multiple levels of design and operating requirements reasonably assured the NRC that there was no undue risk to public health and safety. The ISAT Leader stated that MYAPS' defense-in-depth was one of the

reasons the ISAT reported the plant was operating safely. The concept of defense-in-depth requires: (1) the application of conservative codes and standards, which create substantial safety margins in the design of nuclear plants; (2) high quality design, construction, and operation of nuclear plants to reduce the likelihood of malfunctions, including the use of automatic safety system actuation features; (3) the recognition that equipment can fail and operators can make mistakes, thus requiring redundancy in safety systems and components to reduce the chances that malfunctions or mistakes will lead to accidents that release fission products from the fuel; and (4) the recognition that in spite of these precautions, serious fuel damage accidents can happen, thus requiring containment structures and other safety features to prevent the release of fission products off site. The ISAT members stated that they did not find that continued operation of MYAPS posed an undue risk to public health and safety. None of the ISAT members believed that their findings of noncompliance necessitated the shutdown of MYAPS to protect public health and safety.

One of the agency experts interviewed by OIG said that the NRC standard that was applied to MYAPS is whether the deficiencies posed an undue risk to public health and safety. He stated that a deficiency that poses an undue risk to public health and safety will be a violation of NRC regulations and will result in prompt corrective action, including plant shutdown if necessary. He informed OIG that the Commission has a wide spectrum of remedies for dealing with violations of regulations. He said that because the ISAT made no finding that continued operation of MYAPS posed an undue risk to public health and safety, it was safe to operate.

The Chairman informed OIG that the NRC must ensure adequate protection of public health and safety. This is the standard to which the NRC is held. The Chairman stated that the phrase “adequate protection of public health and safety” has been referenced in past judicial proceedings involving the NRC. As an example, Chairman JACKSON cited “Revision of Backfitting Process for Power Reactors,” 53 FR 20603, dated June 6, 1988.

OIG learned that regarding the definition of adequate protection, 53 FR 20603 states: “We [NRC] argue that such a definition is not possible in the near future, but that the public and licensees are nonetheless protected against misuse of the phrase. ... there is nothing unusual or imprudent, and certainly nothing illegal, about decisions which ultimately turn on the application -- by duly constituted authority and after full consideration of all relevant information -- of phrases which are not fully defined. ... Indeed, most of the Commission’s rules and regulations are ultimately based on unquantified and, as we note below, presently unquantifiable ideas of what constitutes ‘adequate protection’.”

ISAT Turns Over Safety Issues To NRC Program Offices

OIG learned that the identification of noncompliances with NRC requirements at MYAPS was not the focus of the ISAT review. The ISAT told OIG that its focus was to assess the strengths and weaknesses of safety performance at MYAPS. However, the ISAT members maintained that they brought to the licensee's attention safety issues of significant concern, as well as communicating these safety issues to NRC Region I and NRR. The ISAT members noted that during the ISA inspection, the team informed NRC Region I and NRR of any potential safety issues so they could take appropriate regulatory action.

The ISAT Manager and ISAT Leader informed OIG that following the assessment, they provided extensive briefings and documents to NRC program offices to facilitate issue resolution and possible enforcement action. The ISAT Leader stated that when violations of requirements are identified, the NRC staff determines the appropriate action in accordance with NUREG-1600, "General Statement of Policy and Procedures for NRC Enforcement Actions." The Region I Regional Administrator stated to OIG that the NRC is considering whether enforcement action is warranted for the significant items of nonconformance identified in the ISAT report. A public enforcement conference was held in March 1997 to address MYAPS noncompliance issues.

MYAPCo, in the course of addressing deficiencies identified by the ISAT, shut down MYAPS on December 6, 1996, to resolve equipment operability issues. Later, MYAPCo agreed, pursuant to an NRC Confirmatory Action Letter (CAL), dated December 18, 1996, and Supplement 1 to the CAL, dated January 30, 1997, to resolve to the satisfaction of the NRC staff certain design and configuration control concerns at MYAPS prior to restart. The Region I Administrator informed OIG that MYAPS was under the process outlined in NRC Inspection Manual Chapter 0350, "Staff Guidelines for Restart Approval." He stated that the NRC staff would not permit restart of MYAPS until there was reasonable assurance that the plant will be operated in a manner that would pose no undue risk to public health and safety. OIG learned that subsequent to the interview with the NRC Region I Administrator, MYAPCo decided to decommission MYAPS.

Observations on ISA Process

Regarding the overall observations of the ISA process, the ISAT Manager and ISAT Leader believed that the ISAT resulted in MYAPS developing a more questioning attitude and identifying additional deficiencies at the plant. OIG learned that subsequent to the ISAT's review, MYAPS identified safety problems such as the Surowiec 115 kV offsite power line, the thermal relief valves to protect the heat exchangers, and the cable separation. The ISAT Manager said, "... we sensitized the utility to self-identification and timely correction." The ISAT

members and the Region I staff interviewed by OIG believed that the ISA preempted future decline of safety performance at MYAPS.

The ISAT Leader opined to OIG that the ISA process was a valuable tool for the NRC to assess plant performance and should be used in the future. He believed that the ISA prompted MYAPS to change its way of doing business. OIG learned that as a result of the ISAT's findings, MYAPS developed three improvement initiatives: (1) An Excellence Action Plan to address the root causes described in the ISA report and in MYAPS' self-assessments; (2) a Business Plan to establish the budget initiatives; and (3) a "Learning Process" to improve problem identification and corrective action programs for MYAPS.

The Chairman advised OIG that the ISA has had a threefold impact: (1) the ISAT's findings have been provided to Region I for follow-up action; (2) NRR has undertaken several actions regarding the regulation of MYAPS; and (3) the staff has developed a "lessons learned" document. Further, the Chairman stated that the ISA has raised license and design issues which

will result in short-term and long-term changes to agency policy. The Chairman noted that the ISAT's identification of weaknesses in MYAPS' design basis caused MYAPS to examine other areas in the plant. She said that the cable separation issue was an example of MYAPS' expanded self-assessment that occurred, in part, as a result of the ISAT. She advised that although the ISAT did not specifically review the cable separation area, their assessment caused MYAPS to perform additional reviews and enhance its self-assessment processes.

II. ISAT'S ACTIONS RELATING TO OPERABILITY DETERMINATIONS AT MYAPS

Concerned Citizens Allege ISAT Conducted Operability Determinations

OIG received allegations that during the ISA operability determinations were conducted by the NRC regarding components associated with the Residual Heat Removal (RHR) and Component Cooling Water (CCW) systems. The concerned citizens pointed out that on page 19 of the ISAT report it states: "The original transient analysis calculation was no longer available. However, the vendor was able to provide a stress report for a heat exchanger of similar design and materials. The ISA reviewed this information and concluded that these heat exchangers could be considered operable at the higher thermal values resulting from plant operation at 2700 MWt." At the end of page 19 and continuing at the top of page 20, it is again interpreted by certain citizens that the ISAT had conducted an operability determination. The report states: "Despite these non-conservatisms, the ISA team concluded that it was appropriate to consider the PCCW/SCCW systems operable at power levels up to 2440 MWt." The citizens maintained that these operability determinations were in violation of the NRC's statutory authority. One citizen advised that operability determinations of a system, structure or a component (SSC) must be made by the licensee via the formal process outlined in Generic Letter 91-18, "Information to Licensees Regarding Two NRC Inspection Manual Sections on Resolution of Degraded and Nonconforming Conditions and on Operability."

Generic Letter 91-18 Guides ISAT Review

OIG reviewed Generic Letter 91-18 which discusses degraded conditions and operability determinations. The Generic Letter provides information on two NRC inspection manual sections that clarify guidance on assessing operability of degraded or non-conforming conditions concerning important plant equipment. OIG learned that the purpose of Generic Letter 91-18 was to provide guidance to NRC inspectors for the review of licensee operability determinations affecting plant SSCs. This information was also sent to licensees to assist in assessing certain situations where further clarification on operability of important SSCs was needed. In addition, OIG learned that Generic Letter 91-18 only served to clarify existing requirements, but it did not create new or different requirements.

OIG learned that an SSC is generally said to be operable when it can perform and fulfill its intended safety function(s). If the NRC during either an inspection, safety review, or assessment develops information that questions whether an SSC could perform its safety function when required, then the SSC would be considered inoperable. NRC regulation prohibits the NRC staff from making an initial determination that SSCs are, in fact, operable. The licensee must make this determination. Generic Letter 91-18 states that the NRC staff is allowed to assess, inspect, review, and enforce the regulations to ensure that all important SSCs can perform their safety functions when required.

ISAT Explains Actions Pertaining To Operability Determinations At MYAPS

The ISAT Leader acknowledged to OIG that statements about MYAPS' operability in the ISAT

report could confuse a reader. He said, “We may say it’s safe and that it’s operable, but that’s part of our authority and our jurisdiction for making a decision or explaining to the reader [of the ISAT report] why it’s okay, why we didn't go further.” The ISAT members told OIG that at no time did anyone on the team conduct an operability determination. They maintained MYAPS made the initial operability determinations for the systems in accordance with the information set forth in Generic Letter 91-18, and the ISAT reviewed those determinations. One ISAT member stated that the team reviewed and questioned the licensee about their operability determination processes, which led to the licensee identifying inoperable conditions. According to the ISAT members, they performed independent safety assessments on the likelihood of the respective equipment performing its safety function to fulfill a primary objective of the ISAT. OIG learned that MYAPS had conducted operability determinations based on their completion of documents titled “Ensuring The Functional Capability Of A System Or Component”. These documents indicated that MYAPS made operability determinations concerning the RHR & CCW systems during the ISA.

FINDINGS

1. The OIG inquiry revealed that the significant deficiencies identified by the ISAT were either resolved by the licensee during the ISA or were provided to NRC program offices for resolution. OIG learned that the ISAT considered the balance of the good and bad of the safety systems and programs reviewed to conclude that MYAPS was in general conformance with its licensing and design bases. Additionally, the ISAT took into account MYAPS' defense-in-depth when it concluded that the plant posed no undue risk to public health and safety and was safe to operate.
2. The OIG inquiry found that several phrases such as "undue risk" and "adequate protection" to the public were used by the ISAT to describe the NRC's standard of protection of public health and safety as applied to MYAPS. However, OIG learned that these phrases are not clearly defined by the NRC.
3. The OIG concluded that those not involved with the nuclear industry may have been confused with the ISAT's assessment of MYAPS using language normally found in SALP reports.
4. OIG learned that the ISAT resulted in MYAPS performing additional reviews of the plant and enhancing its self-assessment processes. The Surowiec 115 kV offsite power line, the thermal relief valves to protect the heat exchangers, and the cable separation issues were uncovered by the licensee as a result of MYAPS's expanded self-assessment.
5. OIG found that although the ISAT report contained language to suggest the ISAT made operability determinations, OIG determined that all operability determinations were conducted by MYAPS.

LIST OF ACRONYMS

CAL	Confirmatory Action Letter
CCW	Component Cooling Water
CEA	Control Element Assembly
CFR	Code of Federal Regulations
CRT	Citizens Review Team
DEP	Diagnostic Evaluation Program
ECCS	Emergency Core Cooling System
EDO	Executive Director for Operations
FR	Federal Register
ISA	Independent Safety Assessment
ISAT	Independent Safety Assessment Team
MYAPCo	Maine Yankee Atomic Power Company
MYAPS	Maine Yankee Atomic Power Station
MWt	Mega-Watt Thermal power
NPSH	Net Positive Suction Head
NRC	U.S. Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
OIG	Office of the Inspector General
PSSW	Primary Component Cooling Water
PWR	Pressurized-Water Reactor
RHR	Residual Heat Removal
SBLOCA	Small Break Loss-of-Coolant Accident

SCCW	Secondary Component Cooling Water
SER	Safety Evaluation Report
SSC	System, Structure or Component
UCS	Union of Concerned Scientists
YAEC	Yankee Atomic Electric Company

GLOSSARY OF TECHNICAL TERMS

Code of Federal Regulations - contains rules and regulations of Federal agencies in a codified format, similar to the U.S. Code, which codifies laws passed by Congress. The CFR is divided into 50 titles or subject areas, each broken down into chapters, subchapters, parts and sections. The NRC's regulations appear in Chapter 1 of Title 10.

Component Cooling Water System - is a closed loop system which transfers heat from reactor auxiliaries to the service water system. The purpose of the CCWS includes supplying water to cool various plant components, transferring the heat generated by various plant components to the service water system, and serving as a barrier between the service water system and the radioactive or potentially radioactive fluids contained in the system and components cooled by the CCWS.

Containment - the structures, within and including the reactor building, designed to prevent the escape of radiation from the reactor to the outside environment. The reactor containment itself usually consists of layers of steel and reinforced concrete.

Defense-in-Depth - the concept of designing nuclear power plants to ensure against equipment failure, human error, and severe natural events. Multiple barriers to radiation release and redundant and backup systems are designed into the plant so that it can withstand even the most unlikely malfunctions.

Degraded Condition - a condition of a system, structure, or component in which there has been any loss of quality or functional capability.

Design Basis - is that body of plant-specific design bases information defined by 10 CFR 50.2.

Emergency Core Cooling System - a safety system that prevents the fuel in a nuclear reactor from melting should a sudden loss of normal coolant occur.

Federal Register - is a daily publication of the Federal government that provides official notification and record of Federal agency rulemaking actions, proposed rulemakings and a host of notices and announcements of the other agency actions and meetings.

Fuel Cycle - the sequence of steps involved in supplying, using reprocessing, and disposing of the fuel used in nuclear reactors.

Megawatt (t) - a standard measure of electrical capacity: one megawatt equals one million watts or a thousand kilowatts. The (t) stands for thermal heat.

Net Positive Suction Head - is the absolute pressure at the pump inlet, plus velocity head, minus the vapor pressure of the fluid at pump temperature, and corrected to the elevation of the pump

centerline in the case of horizontal pumps or to the entrance to the first-stage impeller for vertical pumps.

Nonconforming Condition - a condition of a system, structure, or component in which there is failure to meet requirements or licensee commitments

Operability Determination - The operability of a system, sub-system, train, component, or device is determined when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function(s) are also capable of performing their related function(s).

Pressurized Water Reactor - a light water reactor in which the water used as a moderator is kept under pressure, preventing it from boiling at normal temperatures.

RELAP5YA - is a computer program developed by Yankee Atomic Electric Company for analyses of thermal-hydraulic responses of the light-water reactor system of transient events and accidents, such as a loss of coolant accident.

Small Break Loss-of-Coolant Accident - a small break loss-of-coolant accident (LOCA) is a class of LOCA with smaller break sizes, normally less than one square foot, where there is no clearly distinguishable phases of blowdown, refill, and reflood like that experienced in a large break LOCA.

Systematic Assessment of Licensee Performance - a principal and regular source of data by which licensee performance is judged is the SALP program. Under the program, the performance of each licensee with a nuclear power facility in the United States is evaluated through the periodic, comprehensive examination of all available data relevant to each facility. The SALP is an integrated assessment as to how well a given licensee management is directing, guiding, and providing resources needed for the requisite assurance of safety. The purpose of the SALP review is to direct both NRC and licensee attention and resources toward exactly those areas which can closely affect nuclear safety and which need improvement.

Transient - a change in the temperature and/or pressure of the reactor coolant system due to a change in power output. Transients can be intentional or accidental.