

REP 68-1

J. P. O'Reilly, Chief, Reactor Inspection & Enforcement Branch, Division of Compliance, HQ

March 18, 1968

*N. C. Moseley*  
N. C. Moseley, Senior Reactor Inspector  
Region I, Division of Compliance

JERSEY CENTRAL POWER & LIGHT COMPANY  
DOCKET NO. 50-219

The attached report by our field inspectors of visits to the subject facility on November 14-16, 17, 20 and 21, 1967; December 7, 13, 14, 18, 19, 28 and 29, 1967; January 9-11, 26 and 30, 1968; and February 5-6, 1968, is forwarded for information. It is noted that detailed coverage of the reactor vessel stub tube problem, and the results of the quality assurance team inspections will be provided in other reports.

Since the last visit covered by this report, some progress has been made in most of the specific items discussed in Addendum I and II, except the following:

1. Additional Quality Assurance

Both GE and Jersey Central indicate that they understand that we are looking for more depth in their review of the overall plant quality assurance program. At this time, however, no definite commitments have been made by either company regarding the scope and depth of the additional effort. If our efforts in the next week are unsuccessful in getting a definite commitment for this program, we plan to have another meeting with top management.

2. Control Rod Hydraulic Penetrations

The GE-Jersey Central position concerning the possible problems with the control rod hydraulic penetrations is that the hydrostatic test proved the integrity of the system. We have scheduled a visit to the site on March 18, 1968 for our consultant, Mr. Collins, to review this area in more depth.

F. Problems with Reactor Pressure Vessel

The subject problems; i.e., cracks in control rod drive housing stub tubes and faulty stub tube and in-core instrumentation thimble field welds, are being followed closely by both CO and DRL. The pertinent related details have been documented\* and, therefore, will not be repeated here. As of this writing, GE-JC had decided upon the following courses of corrective action:

1. Replacement of the stub tube field welds
2. Contour grinding of the stub tube shop welds
3. Application of clad overlay to the stub tubes
4. Grinding and replacement, as necessary, of the faulty in-core instrumentation thimble field welds.

The above described work, currently underway, is scheduled to be completed by June 1, 1968. Significant future developments in this subject area will continue to be documented in inspection reports and otherwise, as is appropriate.

G. Preoperational Testing, Initial Fuel Loading and Startup Test Program\*\* - Meeting with Licensee

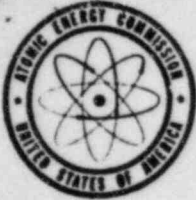
A meeting was held between representatives of JC, GE and CO, at the site on January 30, 1968, for the purpose of discussing outstanding issues resulting from the CO review of these subject areas. The results of the meeting are reflected in the meeting minutes (CO), a copy of which is incorporated as Addendum II to this report.

The results of any additional observations made in these subject areas, including the followup of the unresolved items identified to date, will be discussed in future reports.

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\*Documentation includes the following: Amendment No. 29, Status Report - Reactor Vessel Repair Program, 12/4/67; Memo, Reinmuth to Kornblith, Status of Oyster Creek Vessel Problem, 12/22/67; Letter, Morris to Jersey Central Power & Light Co., Outstanding Issues in Review of Application for Provisional Operating License, 1/9/68; Memo, Price to Commission, Jersey Central Power & Light Co., Oyster Creek Plant, 1/19/68; Inquiry Memo No. 219/68-A, Moseley to O'Reilly, 1/24/68.

\*\*See also Section III of this report.



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

*W. Moseley*  
*P. Carlson*

MAR 22 1968

Docket No. 50-219

Jersey Central Power and Light Company  
Madison Avenue at Punch Bowl Road  
Morristown, New Jersey 07960

Attention: Mr. John E. Logan  
Vice President

Gentlemen:

This refers to your letter, dated February 9, 1968, and an enclosed letter from the General Electric Company, dated February 2, 1968. The letter from General Electric summarizes the current status of the Oyster Creek reactor vessel program. The information provided in these letters is brief and preliminary as to the nature of the stub tube cracks and the defective field welds. It does, however, indicate that repair action consisting of removing the field welds has been initiated by the General Electric Company with the consent of the Jersey Central Power and Light Company.

We have followed the progress of your program on the pressure vessel since first learning of the cracks and weld defects in October 1967. We informed you by letter dated November 7, 1967, that a complete and comprehensive report containing the results of your investigation concerning the nature of the cracks and welds was required for our review. In addition, we informed you by letter dated January 9, 1968, that an evaluation of the safety implications of cracks in the stub tubes and the quality of the field welds was necessary.

We stated that all the information, including the foregoing, would be necessary before our review of the Oyster Creek project in regard to a provisional operating license

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Jersey Central Power &  
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could be completed. The ACRS also has indicated that it would require such information before completing its review.

In your February 9, 1968 letter, you stated that a repair program has been initiated which first involves grinding out the field welds between the stub tubes and the control rod drive housings. Grinding operations would also be performed on the stub tubes and the shop welds which connect the stub tubes to the reactor pressure vessel. The purpose of this action would be to improve the distribution of stresses in the stub tubes which arise from welding operations. The repair program also includes a weld overlay of the stub tube surfaces with 303L weld metal and weld repair of certain instrument thimbles. This would be followed by field welding the stub tubes and control rod drive housings.

We understand that grinding operations are nearing completion and that you will then be ready to begin welding operations to effect repairs. We further understand that you intend first to proceed with the proposed weld overlay and that this work will take three or four weeks.

As discussed between Mr. Harold L. Price, Director of Regulation, and Mr. Louis Roddis on March 15, and again with Mr. Roddis and representatives of General Electric on March 20, we currently have little information with which to make an evaluation. We also understand that it is your intention to submit the detailed report containing your evaluation of the problem and your technical justification for the proposed repair program in the near future, i.e., about March 25.

During discussion concerning submission of the report and its timing, you inquired whether detailed procedures for

Jersey Central Power  
and Light Co.

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the repair work should also be submitted. In view of the special nature and importance of this case we ask that you do submit these procedures.

You have been aware for sometime of the importance of your report on the proposed repair program. We regret that your report has not been available for our consideration prior to the start of your repair program. It should be recognized that either during or upon completion of our review and detailed evaluation, your proposed repair program may be found unacceptable. Furthermore, suspension of work in progress may become necessary while these matters are under review. We therefore wish to make it clear that any of this repair work is performed at your own risk.

Sincerely yours,

(Signed) Marvin H. Mann *fm*

Peter A. Morris, Director  
Division of Reactor Licensing

UNITED STATES GOVERNMENT

# Memorandum

*Handwritten:* [Signature]  
*Handwritten:* To Carlson

DATE: April 5, 1968

TO : Roger S. Boyd, Assistant Director  
for Reactor Projects, DRL  
(THRU) Robert L. Tedesco, Chief, RPB-2, DRL *R*  
FROM : V. Stello *V. Stello*  
Reactor Project Branch 2, DRU.  
SUBJECT: OYSTER CREEK PRESSURE VESSEL REPAIR PROGRAM  
DOCKET NO. 50-219

A meeting was held on April 3, 1968 to discuss the Oyster Creek pressure vessel repair program. Justification of the repair program was presented in Amendment No. 35 and the detailed repair procedures were presented in Amendment No. 36. Jersey Central (JC), General Electric (GE), Combustion Engineering (CE), and MPR Associates were represented at the meeting. A list of attendees is attached.

The meeting covered the areas of concern noted in a telephone conversation between P. A. Morris and L. Roddis on March 29, 1968. The salient aspects of the meeting are presented below.

Defects in other parts of the primary system and in reactor vessel internals, other than the CRD stub tubes and housings, were discussed. Of particular interest was the shroud support flange where a "significant" number of defects were found. The flange was fabricated from 304 stainless steel and installed in the vessel prior to the heat treatment process. Consequently, this material is in the sensitized state. CE stated that the flange was examined prior to shipment and was essentially free of defects. CE also made it clear that the defects found in the field would not have passed inspection in the shop. GE explained that these defects were probably due to minor forging imperfections which opened up during subsequent field welding operations (welding of the shroud to the flange). Both GE and CE stated that these defects were not caused by stress assisted corrosion. However these statements are based on visual observations and are not supported by metallurgical examination. All of the defects have been ground out and no samples were taken but GE stated that they would take a sample if another defect is found. It is interesting to compare the difficulties found in the shroud support flange with those found in the CRD stub tubes and housings. First, both of these components are in the sensitized state. Second, each component was subjected to fabrication stresses during field welding operations, although the magnitude of the stresses may have been different. It is not clear if the cause of the defects noted in each component are related; but equally so it is not clear that they are unrelated. GE does propose to use special precautions to prevent further "stress assisted corrosion" in the stub tubes but does not propose to take such precautions



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April 5, 1968

for the flange. Further, it is not clear that leaks in the flange could be detected during operation or during inspection (it is not proposed to inspect the area). In addition, the consequences of a failure of the flange could be more severe than those resulting from failures of the CRD stub tubes or housing. Therefore, it is obvious that a thorough understanding of the nature and potential problems associated with the defects in the flange (and other areas of the vessel) must be explored in considerably more detail before we complete our review.

Results of the microprobe work as well as X-ray and spectrographic analyses are complete. GE stated that chlorine ions and sulfur were found but the results are masked by the dye penetrant fluid; i.e. the dye penetrant could have introduced the contaminants. They intend to submit the results of these examinations.

GE will "attempt" to provide a complete safety evaluation of consequences of failures in the stub tubes and housings. Specific examples of what should be included in the safety evaluation were noted such as; consequences of leakage, potential for misalignment, integrity during accidents and changes in probability for systematic failure. It was emphasized that the applicant should state his conclusions with regard to safety.

GE and CE stated that the stress analysis shows that the structural integrity of the CRD stub tubes and housings is acceptable. Although the geometry used in the stress analysis did not encompass the specific dimensions that exist in the field, sufficient parametric analyses were conducted to bound all of the dimensions permitted by the procedures. Results of these analyses are reported to be within acceptable limits; specific numbers were not available. We noted the areas where clarification was required. In particular, the original pressure vessel report (Amendment No. 16) contains statements, analyses and results which no longer appear applicable. Crack propagation was discussed at some length. It was not clear that defects which can occur during field welding of the housing to the stub tubes (subsequent to clad overlay) could be detected. It was also not clear as to why the clad overlay is to be performed prior to attaching the housings. (Will this sequence hide defects?)

GE, CE and MPR verbally corroborated some of the data presented in Amendment No. 35. CE indicated that they just received the document and would have to review it further before they would agree with it in total. MPR seemed to have some reservations although they did not specifically identify them. At the conclusion of the meeting J. Bernard seemed to be reluctant to agree to submit statements from these consultants on the record.

Methods used to clean the stub tube surfaces were also discussed. Apparently detailed field instructions will be used to supplement the formal procedures listed in Amendment 36. These field instructions in combination with adequate supervision will assure that a thorough cleaning job is performed.

At the conclusion of the meeting R. Boyd related the following:

1. Noted that the report was not as complete as we expected and some of the information requested in our letters (safety evaluation is an example) was omitted from the report.
2. More information is required in the areas discussed at the meeting.
3. We would not be able to comment further until after the additional information is submitted and reviewed.

Suppl.

DRL Reading

RPB-2 Reading

Orig: V. Stello

F. Schroeder

Assistant Directors, DRL

Branch Chiefs, DRL

Attendees ✓



ATTENDEES - APRIL 3, 1968 MEETING WITH JERSEY CENTRAL

AEC

R. L. Doan, REG  
R. Tedesco, DRL  
V. Stello, DRL  
G. W. Reinmuth, CO  
R. H. Engelken, CO  
L. Porse, DRL  
A. B. Holt, DRS  
A. J. Rizzo  
D. Thompson  
J. G. Keppier, CO  
J. P. O'Reilly, CO  
R. G. DeYoung, DRL  
F. J. Liederbach

GENERAL ELECTRIC

A. M. Hubbard  
S. W. Taggart  
J. Bernard  
E. Lees  
J. B. Graham

JERSEY CENTRAL

G. H. Ritter  
G. F. Trowbridge

MPR ASSOCIATES

I. Harry Mandil  
W. R. Schmidt

CE, INC

R. L. Lumpkin, Jr.  
F. Hill

For Div of Compliance

# Jersey Central Power & Light Company

*in Mosley*  
*R Carlson*

MADISON AVENUE AT PUNCH BOWL ROAD • MORRISTOWN, N. J. 07960 • 539-6111

*HILDRETH*

April 9, 1968

Mr. Harold L. Price  
Director of Regulation  
United States Atomic Energy Commission  
Washington, D. C. 20545



Dear Mr. Price:

In Dr. Morris' letter of March 22 and in subsequent discussions, you and members of your staff have expressed concern over the continuation of the Oyster Creek pressure vessel repair program pending your further review of the information on the program filed with AEC on March 25.

As you know, the General Electric Company has begun and is currently carrying out the first phase of the program consisting of the inspection, preparation and overlay of the exterior surface of the vessel stub tubes, using a 308L stainless steel weld cladding and remaking of the field welds.

You and your staff have recently advised us, however, that our March 25 report does not contain sufficient information to permit you to complete your evaluation of the vessel repair program and that further data and safety analysis will be required. Much of the additional information requested consists of documentation of matters with which your staff is already familiar through numerous informal meetings and discussions. We will respond with supplemental data at the earliest possible date. We are prepared also to make available at any time and at your convenience experts from General Electric and our own consultants to discuss with your staff any aspect of the repair program. Meanwhile, however, the question is not whether sufficient data has been supplied to enable AEC to complete its safety evaluation but whether there is any justification for our bringing to a halt the repair work now in progress.

Before undertaking the present repair work, we, our consultants and the General Electric Company considered whether the work could possibly prevent the undertaking of any alternative repair program which might later be required. We also considered whether this work would be

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Mr. Harold L. Price

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April 9, 1968

inconsistent with further investigation into the cause of the stub tube cracking, taking into account the two stub tubes which are being held in reserve and on which no repair work has been done. We have concluded that this would not be the case. Nothing in our numerous discussions with your staff has suggested a different conclusion.

We can, therefore, think of no justification for discontinuing the present stub tube overlay and field weld work. If, as we believe, we are on the right track, we will save critical weeks in the completion and startup of the Oyster Creek plant. At worst, even if the AEC were ultimately to decide that the Oyster Creek vessel repair program was unsatisfactory, we might find that we and General Electric have expended money and effort to no purpose. We cannot conceive that this expenditure, minute in relation to the cost of the total project, could in any way influence or prejudice AEC's decision on the adequacy of the pressure vessel repair program or on our pending license application.

Because of our conviction that the stub tube repair program presently undertaken is in the right direction, because proceeding with the program would not prevent any alternative solution which might later be required, and because of the importance of completing the Oyster Creek plant at the earliest possible date, we request that no formal action be taken regarding the work in progress without first affording us an appointment to discuss the matter with members of the Commission.

Very truly yours,



Geo. H. Ritter  
Vice President

GHR:ep