

OYSTER CREEK FDSAR

AMENDMENT #79

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history of one foot of the rack. That is, the time history of each foot is added algebraically at each time point and divided by four to obtain the input foot history. Figures 8.3-8.7 show the total floor load (sum of 4 supports) and each support time history used.

Structural damping, based on the lowest calculated pool floor natural frequency is incorporated into the model by modification of the structural stiffness matrix. 4% damping is used for slab analysis involving OBE events, and 7% damping is used for slab analysis involving SSE events. For the Oyster Creek slab, these damping parameters are based on the lowest frequency 28cps obtained from the ANSYS analysis.

8.4 Results and Discussions

A survey of the floor slab critical loadings suggests that we must consider the following loadings:

D = dead load

T_0 = thermal loading due to slab temperature gradient

E' = SSE seismic load

E = OBE seismic load

The critical load combinations that must be considered for the floor slab are:

- a) $1.4D + 1.9E$
- b) $.75 \times (1.4D + 1.4T_0)$
- c) $.75 (1.4D \pm 1.4T_0 \pm 1.9E)$
- d) $D \pm T_0 \pm E'$

The thermal gradient across the floor slab induces compressive stress on the water side and tensile stress on the air side of the floor slab. For the purpose of computing the T_0 loading, we use a temperature drop of 60°F across the slab and conservatively assume that all floor curvature is suppressed.

Then the thermal moment due to a temperature gradient $\Delta T = 60^\circ\text{F}$ through the concrete is

$$M_T = \frac{\alpha_c E_c^* \Delta T H^2}{12 (1 - \nu_c)} \quad \text{in-}\#/ \text{in}$$

where H is the thickness of the floor slab and E_c^* is the effective Young's Modulus of an equivalent homogeneous slab (after accounting for reinforcement). Using values appropriate to the Oyster Creek pool floor slab, we obtain

$$M_T = 104.47 \text{ KIP-in/in}$$

To obtain the moments and shear force distribution in the floor slab under dead loading, the following ANSYS static analyses were carried out using the discretized model of Figs. 8.2(a) and 8.2(b).

Dead Load Case 1: Gravitational loading including concrete and reinforcement, virtual mass of 40' of water, and weight of the north, east, and west walls applied to the nearly rigid edge beams.

Dead Load Case 2: Concentrated loads applied at appropriate node points to simulate the dead weight of fully loaded racks applied to the pool floor through the rack feet. Also included in load case was a slab pressure loading of 161 psi applied to elements 17 and 26 to simulate an additional stored cask. The points of load application are shown in Fig. 8.2b.

To obtain the mode-frequency characteristics of the floor slab, nine master degrees of freedom are chosen at the points of concentrated load application and a frequency analysis performed on a slightly different slab model (clamped south wall, zero

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF NEW YORK

NEW YORK STATE ENERGY RESEARCH AND
DEVELOPMENT AUTHORITY,

Plaintiff,

- against -

NUCLEAR FUEL SERVICES, INC., GETTY OIL
COMPANY, COMMONWEALTH EDISON COMPANY,
GENERAL PUBLIC UTILITIES CORPORATION,
GENERAL PUBLIC UTILITIES SERVICE
CORPORATION, JERSEY CENTRAL POWER &
LIGHT COMPANY AND WISCONSIN ELECTRIC
POWER COMPANY,

Defendants.

PARTIAL SETTLEMENT
AGREEMENT, STIPULATION
AND ORDER

Civil Action No.

CIV-82-0426E

It is hereby stipulated and agreed, by and among GPU Service Corporation ("GPU Service"), Jersey Central Power & Light Company ("JCP&L"), the New York State Energy Research and Development Authority (the "Authority"), and their respective attorneys herein, as follows:

1. Subject to satisfaction of the contingencies (the "Contingencies") described in paragraphs 2(a) and 2(b) and the provisions of paragraph 2(c) of this Partial Settlement Agreement, Stipulation and Order, JCP&L shall commence the removal of 224 spent nuclear fuel assemblies owned by JCP&L (the "JCP&L Material") from the Western New York Nuclear Service Center in West Valley, New York (the "Center") as soon as practicable, but not later than October 1, 1984, and shall thereafter complete the removal of all of the JCP&L

Material from the Center as soon as practicable, but not later than May 31, 1985.

2(a). The commencement of removal of the JCP&L Material from the Center by JCP&L in accordance with paragraph 1 hereof is subject to the following contingencies:

(i) the maintenance of all legally required regulatory authorizations for at least two shipping casks for the shipment of radioactive material (other than spent fuel) to be removed from the Oyster Creek Nuclear Station spent fuel storage pool during the period from December 1, 1983 to July 31, 1984; provided, however, that the foregoing contingency shall be deemed satisfied to the extent such material can legally be stored at the Oyster Creek Nuclear Station outside the existing spent fuel storage pool without construction of a new spent fuel storage pool or new dry storage facility;

(ii) the availability of one or more locations licensed or otherwise legally authorized for disposal or storage of the radioactive materials (other than spent fuel) to be removed from the Oyster Creek Nuclear

Station spent fuel storage pool and the acceptance by the owner or operator of such location (unless the owner or operator is GPU Service or JCP&L or a corporation or other entity owned or controlled by, or under common ownership or control with, GPU Service or JCP&L) of such material during the period from December 1, 1983 to July 31, 1984;

(iii) receipt of any license or other approval legally required for transportation, if any, of radioactive material, other than spent nuclear fuel, to be removed from the Oyster Creek Nuclear Station spent fuel storage pool during the period from December 1, 1983 to July 31, 1984;

(iv) receipt from the staff of the United States Nuclear Regulatory Commission ("NRC") of a statement, on or before March 31, 1984, that the design of the borated steel "poison" racks is licensable as part of its review of License Change Request No. 111, NRC Docket No. 50-219/Provisional Operating License DPR-16 (the "License Change Request") for the Oyster Creek Nuclear Station;

(v) receipt of NRC approval of the License Change Request on or before June 30, 1984;

(vi) the maintenance of any legally required regulatory authorizations for use of one or more shipping casks for commencing the transportation of the JCP&L Material from the Center; and

(vii) receipt of any license or other approval legally required for transportation of the JCP&L Material from the Center to Oyster Creek.

2(b). Completion of the removal of the JCP&L Material from the Center by JCP&L in accordance with Paragraph 1 hereof is subject to the following contingencies:

(i) the maintenance of any legally required regulatory authorizations for use of one or more shipping casks for transportation of the JCP&L Material from the Center; and

(ii) the maintenance of any license or other approval legally required for transportation of the JCP&L Material from the Center to Oyster Creek.

2(c). The commencement and completion of removal of the JCP&L Material in accordance with Paragraph 1 is also subject to the absence or non-occurrence of acts of God and nature; acts or omissions to act by government civil or military authorities; riots, fire, floods, strikes, lockouts, epidemics; and unusually severe weather, which materially affect such commencement or completion.

3(a). GPU Service and JCP&L represent and warrant that other than the Contingencies, they know of no event, occurrence, condition or other reason that would delay or prevent the commencement of removal and completion of removal of the JCP&L Material from the Center in accordance with paragraph 1 and do not know of any event, occurrence, condition or other reason that would prevent the timely satisfaction of any of the Contingencies, except a certain ordinance adopted by Lacey Township, New Jersey, and a statute (No. 218) adopted by the State of New Jersey on September 15, 1983, both relating to the transportation of spent nuclear fuel, but JCP&L will timely use its best efforts to eliminate the impact of such ordinance and statute on the removal of the JCP&L Material from the Center including bringing one or more actions in federal court challenging the validity of such ordinance and statute, if necessary;

3(b). GPU Service and JCP&L agree and covenant that:

(i) they will promptly and diligently undertake to timely satisfy (by themselves or through their agents or contractors) all the Contingencies so as to allow the commencement of removal and completion of removal of the JCP&L Material from the Center in accordance with paragraph 1;

(ii) they will promptly notify the Authority and the Court, in writing, of any event, occurrence, condition, or other reason which may or will prevent the satisfaction of any or all of the Contingencies or their ability to commence and complete the removal of the JCP&L Material from the Center in accordance with paragraph 1 and describe, in detail, the nature of the event, occurrence, condition or reason, the actions they will take to achieve the satisfaction of the affected contingency or otherwise comply with the obligations contained in paragraph 1, and the effect the event, occurrence, condition or reason will or may have upon the obligations contained in paragraph 1; and

(iii) they will provide the Authority and the Court, no less frequently than quarterly, with a

written report regarding their progress in satisfying the Contingencies and any other matter relating to their ability to commence and complete removal of the JCP&L Material from the Center in accordance with Paragraph 1.

4(a). The Authority agrees and covenants that, to the extent reasonably practicable, and consistent with its other obligations with respect to the Center, it will do nothing to impede, delay or prevent GPU Service or JCP&L from fulfilling their obligations hereunder, and that it will cooperate with GPU Service and JCP&L in good faith in connection with the removal of the JCP&L Material from the Center.

4(b). The Authority represents and warrants that other than the Contingencies and the ordinance of Lacey Township and the New Jersey statute identified in paragraph 3(a), it knows of no event, condition, occurrence or other reason that would delay or prevent the commencement of removal of the JCP&L Material from the Center in accordance with Paragraph 1 or the completion of such removal by March 31, 1985.

5(a). In the event all of the JCP&L Material is removed from the Center by March 31, 1985, the Authority will not assert in this or any other action (i) that JCP&L or GPU Service trespassed upon the Center as a result of, or otherwise ignored, the Authority's April 25, 1983 demand that the JCP&L Material be promptly removed from the Center; or (ii) that JCP&L or GPU Service bear any liability to the Authority for any damages for any delay of or interference with the West Valley Demonstration Project ("Project") caused by the presence of all or any portion of the JCP&L Material at the Center.

5(b). In the event DOE notifies the Authority in writing that JCP&L Material may remain in the Fuel Receiving Facility at the Center until a specified date later than March 31, 1985 without delay of or interference with the Project, then the provisions of paragraph 5(a) regarding the Authority's agreement not to assert certain matters against GPU Service or JCP&L in certain events shall apply, provided that all the JCP&L Material is removed from the Center by the earlier of the date specified by DOE in such notification or May 31, 1985.

5(c). Nothing in paragraphs 5(a) and 5(b) is intended to constitute a waiver by JCP&L or GPU Service of any of

their defenses to any of the claims which may be asserted by the Authority thereunder.

6. GPU Service and JCP&L shall use their best efforts to obtain the concurrent use of two TN-9 truck casks for shipments of the JCP&L Material from the Center. In the event, despite such best efforts, the use of two TN-9 truck casks cannot be arranged, GPU Service and JCP&L will use their best efforts to obtain the concurrent use of one TN-9 truck cask and two NLI 1/2 truck casks (or two other casks of equal capacity) for shipments of the JCP&L Material from the Center.

7. The Court shall have continuing jurisdiction to enforce the provisions of this Partial Settlement Agreement, Stipulation and Order until all of the JCP&L Material is removed from the Center and any payments to the Authority required under paragraph 9 are made. In the event (a) any of the Contingencies will not be timely satisfied or, for any other reason, JCP&L will be unable to remove the JCP&L Material from the Center in accordance with paragraph 1, or (b) the Authority reasonably determines that the Contingencies may not be timely satisfied or, for any other reason, JCP&L may be unable to remove the JCP&L Material from the Center in accordance with paragraph 1,

the Authority may make application to the Court for further or different relief with respect to the removal of the JCP&L Material from the Center. This Partial Settlement Agreement, Stipulation and Order shall not be or become effective until it is approved as an Order of the Court.

8. Except as expressly provided herein to the contrary, all of the Authority's, JCP&L's and GPU Service's claims and defenses asserted in this action are preserved. Nothing herein is intended to diminish or otherwise affect in any way any claims the Authority has asserted or may assert against Commonwealth Edison Company, Wisconsin Electric Power Corporation, Nuclear Fuel Services, Inc. or Getty Oil Company. Nothing herein is intended to diminish or otherwise affect in any way any claims JCP&L or GPU Service has asserted or may assert against Nuclear Fuel Services, Inc. or Getty Oil Company.

9(a). In the event each of the Contingencies is satisfied and JCP&L fails to complete the removal of all the JCP&L Material from the Center by May 31, 1985, JCP&L shall pay to the Authority a charge for JCP&L's storage of such Material computed as follows: the sum of one-twelfth of the Annual Storage Charge plus an incentive storage charge of \$1.25 per KgU in the JCP&L Material or \$30,000, whichever is greater, for each month

thereafter (pro-rated for any partial month)', until all of the JCP&L Material has been removed from the Center. The foregoing shall be in addition to any damages or other sums to which the Authority may otherwise be entitled in this action except for charges for storage of the JCP&L Material at the Center. The term "Annual Storage Charge" shall mean the annual rate for storage of the JCP&L Material at the Center (expressed in dollars per KgU in the material) applicable in the calendar year 1985, as may be agreed between the Authority and JCP&L or GPU Service or as may be determined in this action.

9(b). The provisions of paragraph 9(a) shall not be applicable if the failure to remove all of the JCP&L Material from the Center resulted solely from (i) acts or omissions of independent suppliers or contractors beyond JCP&L's and GPU Service's reasonable control which could not have been foreseen and prevented by JCP&L and GPU Service or (ii) other causes beyond JCP&L's and GPU Service's reasonable control which could not have been foreseen and prevented. In any hearing or trial regarding the provisions of this paragraph, JCP&L and GPU Service shall have the burden of proof. Nothing in this paragraph 9(b) is intended to constitute a waiver by the Authority

of any claims it may have for payment of charges for JCP&L's storage of the JCP&L Material at the Center.

9(c). Nothing in paragraph 9(a) or 9(b) is intended to create any license or other authorization to store the JCP&L Material at the Center or extend or otherwise affect a license or other authorization for such storage otherwise created by this agreement, if any.

9(d). JCP&L shall reimburse the Authority for a proportionate share (in relation to the amount of the JCP&L Material as compared with the other spent fuel located at the Center) of the reasonable costs incurred by the United States Department of Energy ("DOE"), or its contractors, in preparing for the removal of spent fuel from the Center and the reasonable costs incurred by DOE, or its contractors, in connection with the loading of the JCP&L Material into shipping casks at the Center. Within 30 days of receipt of Authority invoices for such costs, together with invoices evidencing DOE's or its contractors' charges to the Authority for the foregoing services, JCP&L shall either pay the invoiced amount in full or pay to the Authority the amount JCP&L contends is the "reasonable" charge for the DOE services and provide a detailed statement to the Authority of the basis

of any claim by JCP&L that all or ^{specified} portions of the DOE charges are not reasonable. The Authority has authorized and continues to authorize its agent, DOE, to provide such information to GPU Service and JCP&L as may be necessary to determine the reasonableness of the foregoing charges. The Court shall have jurisdiction to hear evidence regarding any dispute as to the reasonableness of the DOE charges and enter judgment thereon. JFZ

9(e) As between the Authority and JCP&L and GPU Service, JCP&L and GPU Service shall be solely responsible for all costs incurred in connection with the satisfaction of the Contingencies, any other costs incurred in connection with the removal and transportation of the JCP&L Material from the Center and any other costs incurred in connection with the JCP&L Material once it is removed from the Center.

Dated: October 4, 1985

Jersey Central Power
& Light Company

By: Log Kuhl

Dated: October 3, 1983

GPU Service Corporation

By: David H. Chu

Dated: October 12, 1983

New York State Energy
Research and Development
Authority

By: William D. Catter

Dated: Sept. 30, 1983

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Dated: Sept. 30, 1983

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SO ORDERED:

John T. Ell
U.S.D.J.

Buffalo, N.Y.

October 14, 1983