

STAFF REPORT EVALUATION

REPORT TITLE: INTERIM TECHNICAL REPORT ON DIABLO CANYON UNIT 1
INDEPENDENT VERIFICATION PROGRAM AUXILIARY BUILDING
REVISION 0

IDVP DESIGNATION: P105-4-839-006

ORIGINATOR: Robert L. Cloud Associates, Inc.

SUBMITTED BY: Teledyne Engineering Services

6/27/83

INTRODUCTION:

The sixth Interim Technical Report (ITR6) for the Diablo Canyon Independent Design Verification Program (IDVP) has been reviewed by the staff and its consultants, Brookhaven National Laboratory (BNL). This report was also selected as a vehicle for a staff review of the IDVP process and the activities of R. L. Cloud Associates (RLCA) in particular. In this connection an audit at the RLCA offices was conducted on October 27 and 28, 1982 in Berkeley, California.

ITR 6 summarizes the independent analysis and verification of the Auxiliary Building at the Diablo Canyon Nuclear Power Plant (DCNPP). The report contains the methodology, analytical models, results, results comparisons, findings, recommendations and conclusions of the IDVP with respect to the Auxiliary Building which was chosen as the initial IDVP building sample. The Auxiliary Building includes the Fuel Handling Building and the Control Room. The models, results and findings were based on the information provided to the IDVP by PG&E in their reports entitled:

- (1) "Auxiliary Structure-Revised Dynamic Seismic Analysis, Diablo Canyon Nuclear Power Plant, Unit No.1", John A. Blume Associates, January 1971,
- (2) "Seismic Evaluation for Postulated 7.5M Hosgri Earthquake", USNRC Docket Nos. 50-275 and 50-323,
- (3) "Auxiliary Building Dynamic Seismic Analysis for the 7.5M Hosgri Earthquake, Diablo Canyon Nuclear Power Plant", URS/Blume, October 1979.

The IDVP has issued 16 EIO's as a result of the evaluation. A copy of the EIO package is included as Attachment A to this NRC staff evaluation.

Summary of Report:

The Auxiliary Building was chosen as the initial structures sample for the following reasons:

The building contains the largest amount of safe shutdown piping, equipment and components.

M/35

The building itself supports the Fuel Handling Building and the Control Room.

The building is structurally complex with both concrete shear walls and steel framing.

There is a controversy regarding masses in the seismic model of the building.

The Auxiliary Building is a reinforced concrete structure with maximum plan dimensions of 230 by 500 feet in roughly the shape of the letter T with a structural steel superstructure over the fuel handling portion. The concrete portion of the structure varies from 43 to 107 feet high and is designed as a shear wall building with a mat foundation on bedrock. The building has floor slabs at elevations 85 feet, 100 feet, 115 feet and 140 feet. The building is essentially symmetric with respect to column line 18 which runs in the east-west direction. The finished grade of the plant varies from elevation of 85 feet at the west side to an elevation of 115 feet on the east side. The building is founded on the underlying rock at elevations 52 feet, 85 feet and 97 feet. The fuel handling portion of the building is a steel structure supported at elevation 140. The structural steel superstructure is composed of braced frames in the longitudinal N-S direction and moment-resisting frames in the transverse, E-W direction. The fuel handling portion has plan dimensions of 58 by 366 feet and is 48 feet high.

The structure was analyzed on three different occasions, in 1971, 1977 and 1979 using the same model properties although the physical configuration of the building had been changed during this time.

The IDVP scope of verification was as follows:

Review the URS/Blume horizontal models for the seismic analyses of the auxiliary and fuel handling buildings.

Calculate and compare the building properties for the horizontal models.

Calculate and compare natural frequencies and modes of vibration for the horizontal models.

Six-mass lumped parameter models were used by RLCA to represent the auxiliary building in the N-S and E-W directions. The model parameters were changed as appropriate to represent the building properties in each direction. Consistent with the IDVP approach for the initial sample, the RLCA models were of the same configuration as the original URS/Blume models; masses were concentrated at floor locations in the 2 dimensional models with different values for the shear areas and moments of inertia. The RLCA model node points and locations were the same as those of the original model. Significant changes made to the steel structure of the

Fuel Handling Building since the original model was developed (included as part of the Auxiliary Building model) were reflected in the RLCA model.

A portion of the building is embedded in rock from elevation 85 feet to the base at elevation 52 feet. This portion of the building was considered an integral part of the ground and, thus the model is started at elevation 85 feet. A portion of the structure, however, is founded at elevation 110 feet. Soil springs were used to model the soil/rock between elevation 110 feet and the base of the model at elevation 85 feet. In addition, a horizontal soil spring was used to model the restraint of the soil acting on the east exterior walls from elevation 115 feet to elevation 85 feet.

Values of the lumped masses were calculated by distributing the mass of all equipment weighing more than 10 kips to the adjacent nodes based upon the relative position of the equipment to the nodes. Lighter equipment was handled by assuming an average weight of 70 pounds per square foot acting on all floors. EOI 985 was issued for a discrepancy of 35% in the mass calculation at elevation 140 feet between the values used by PG&E and the values calculated by URS/Blume. No documentation of a resolution was found in the PG&E file. RLCA calculated masses agree with the ones used by PG&E within 9%.

Shear areas and moments of inertia of the vertical walls were computed and used to represent the member stiffnesses. In each case the walls parallel to the direction of motion were used to calculate these properties. The shear area was taken as 5/6 of the computed shear area between the two nodes of interest to account for the shear stress distribution on the walls. The moment of inertia was taken as the sum of the wall moments of inertia, about their own neutral axis (I_o) plus the sum of the products of the individual wall areas times the square of the distance of the wall neutral axis to the neutral axis of all walls (Ad^2) between the two nodes of interest. The moments of inertia in the ITR 6 were significantly larger than the ones used in the URS/Blume analysis because the (Ad^2) term was not included in the latter.

Mode shapes and frequencies were calculated and summarized in ITR 6. Except for the Fuel Handling Building the calculated frequencies generally agreed with the URS/Blume results.

The IDVP expressed the following concerns based on the analyses reported in ITR 6.

The methodology used to calculate the bending moments of inertia in the design analysis was different than that used in the independent analysis. The resulting bending moments of inertia differ by more than 15%. The effect of this difference on important building periods is from 6% to 15%.

Differences in the key properties calculations (fuel handling

building stiffness, torsional rigidity of member 2, and centers of mass) and discrepancies between field and analyzed conditions suggest that design control measures were inadequate.

Differences in the calculated values for soil springs were reported which have not been reconciled. Sensitivity studies indicate that the effects of variation of this parameter on important building periods is from 6% to 12%.

Evaluation:

Prior to completion of the initial building sample PG&E determined that a reevaluation of the auxiliary building and fuel handling building as well as all of the civil structures at DCNPP would be performed under their internal technical program (ITP). As a result of this decision the verification effort by RLCA on the initial building sample was essentially truncated with ITR 6 being prepared to report progress to date and to preserve the review material as background for a more comprehensive review of the ITP evaluations.

In accord with the program plan RLCA performed the following major steps for the initial sample.

Develop mathematical models which approximate the actual configuration of the building.

Construct subsidiary models of the fuel handling building to establish properties in the main models.

Calculate mode shapes and frequencies.

In developing the structural model RLCA used a lumped mass model to represent the structure and considered the soil-structure interaction and embedment effects.

In the area of soil-structure interaction RLCA took the values for the founding rock to be the values reported in the FSAR in accord with the IDVP program for the initial sample. The most important parameter for the soil-structure interaction is the shear wave velocity which was reported to have an average value of 3600 ft/sec. Based on this value RLCA employed a fixed base model. The staff concurs in this approach.

A portion of the auxiliary building extends down to elevation 52 feet and is totally embedded into the foundation rock between elevations 52 feet and 85 feet. For this portion of the building reinforced concrete was poured directly against the foundation rock. Both URS/Blume and RLCA assumed this portion of the building as an integral part of the ground and therefore their fixed base seismic model started at elevation 85 feet. The staff finds this a reasonable approach.

Portions of the auxiliary building foundation are supported on material, at elevation 100 feet, that has a reported shear wave velocity of less than 3500 ft/sec. Equivalent soil springs derived from an elastic half space theory were chosen by both URS/Blume and RLCA to represent this portion of the foundation. The staff concurs that use of soil springs to represent this area of the foundation is an adequate approach.

The finished grade around the auxiliary building varies from an elevation of 115 feet on the east side to an elevation of 85 feet on the west side. Therefore, the portion of the east wall below elevation 115 feet is embedded in soil. Soil springs derived from the elastic half-space theory were used by RLCA to account for the embedment effect. The use of soil springs to account for embedment effects in this instance is an approximation that the staff would not consider appropriate for actual design purposes. For design purposes the staff believes that at a minimum, parametric studies varying the values of the soil springs would be necessary. In addition, a vertical side wall soil spring was calculated for the embedment effect using a relationship derived from the analytic solution for a rigid circular footing acting on the horizontal surface of a half space. The use of a horizontal soil spring formulation to represent the soil spring for the building pushing on a vertical wall does not appear appropriate.

As noted above, for purposes of the initial sample, the soil/rock properties which were used in the RLCA evaluation were taken directly from the URS/Blume model consistent with the original program plan. In response to inquiries by the NRC staff, representatives of RLCA indicate that the collection processing and application of the measured soil data will be included in their evaluation of the ITP for structures. The staff concurs in this step.

The procedure employed in ITR 6 for computation of the moment of inertia of the auxiliary building is not consistent with the modeling assumptions used. The procedure would be valid only if the walls have shear interconnections. This does not appear to be the case with the auxiliary building. However, the change in the moments of inertia due to the above inconsistency is small enough so that one would not expect changes in the ITR 6 results if these additional calculations were made. Indeed a review of the computer outputs for the ITR 6 comparisons adequately demonstrated this lack of sensitivity of results to the moment of inertia changes.

The seismic model employed in ITR 6 is composed of lumped masses connected by weightless beams, some of which were considered elastic and others rigid. The elastic beams represent the flexibility of the structure and the rigid beams are used to represent the offset of the center of mass and the center of rigidity of the structure. The masses of the walls and columns that support the floors are distributed to the masses which represent the floors and equipment above and below the walls. The use of this technique for concentrating the masses and representing the building structural properties is consistent with

recognized and acceptable engineering practice. Implicit in the use of this technique, however, is the assumption that the floor slabs are rigid as compared to the walls; a simplification of actual conditions. Further exploration of this matter in the context of ITR 6 Rev. 0 was felt to be unwarranted by RLCA in light of the ITP commitment to review all structures. The NRC staff agrees that further expansion of ITR 6 at this time is unwarranted. Conformation that such simplification provides adequate results and adjustment of the models as necessary will be prerequisites to accepting such models for final verification.

APPENDIX A

PROGRAM RESOLUTION REPORT

File No. 920

File Revision No. 5

1. Resolution of an: Open Item; Class _____ Error
2. Independent Design Verification Program Resolution is as:
 - a. Closed Item
 - b. Deviation
 - c. Open Item with future action by PG&E: Task _____
3. Date Reported to PG&E 820722
4. Scheduled for TES Semimonthly Report No. August
5. Resolution based on the following documentation:

Some of the Auxiliary Building floor response spectra in the N-S direction contained in the Hosgri Report differ from those in the October 1979 Blume Report.

Based on the PG&E presentation (July 14-16, 1982) of their internal technical program the auxiliary building is being completely reanalyzed.

6. Program Resolution is:

This EOI is combined with EOI 1097 as an Error A or B. EOI 920 is therefore closed.

7. Potential Program Resolution Report signed by Edward Denison (RLCA) on 820721
Type Name/Organization Date
8. Signature: [Signature] 820722 (Approved/Program Manager)

1. Classification

Revision No. 1 Error Class (A, B, C or D) Deviation Closed Item

2. Documentation Reviewed

P105-4-510-002 RLCA independent calculations of the Auxiliary Building properties

P105-4-441-006 URS/Blume 1971 Auxiliary Building Report

P105-4-610-050 Bettinger letter to Rocca 1/25/82 - The Auxiliary Building properties in the 1971, 1977 and 1979 Blume Reports are identical.

3. Reported to PGandE

Transmittal Date February 27, 1982

4. Final Resolution

The RLCA weight for the Auxiliary Building (independently calculated) elevation 140 feet is within 9% of the number used by URS/Blume. EOI 985 is therefore closed.

Edward Denison 2/27/82

Project Engineer/Date
To Indicate RLCA Final Resolution

PROGRAM RESOLUTION REPORT

File No. 986

File Revision No. 5

1. Resolution of an: Open Item: Class _____ Error
2. Independent Design Verification Program Resolution is as:
 - a. Closed Item
 - b. Deviation
 - c. Open Item with future action by PG&E: Task _____
3. Date Reported to PG&E 820722
4. Scheduled for TES Semimonthly Report No. August
5. Resolution based on the following documentation:

Since the final vertical control room spectra are higher than the preliminary spectra, a detailed review of equipment qualification will be necessary in the overall reverification program to ensure that the equipment was conservatively qualified.

Based on the PGandE presentation (July 14-16, 1982) of their internal technical program auxiliary building is being completely reanalyzed.

6. Program Resolution is:

This EOI is combined with EOI 1097 as an Error Class A or B. EOI 986 is therefore closed.

7. Potential Program Resolution Report signed by Edward Denison (RLCA) on 820721
Type Name/Organization Date
8. Signature: *E. P. Denison* 820722 (Approved/Program Manager)

1. Classification

 Error Class (A, B, C or D) Deviation Closed Item

2. Documentation Reviewed

Design Verification Program--Seismic Service Related
Contracts Prior to June 1978--Revision 1, Phase 1.

This program incorporated the 2/3/82 NRC Meeting Minutes.
A sample of the Auxiliary Building members will be
analyzed by RLCA.

3. Reported to PGandE

Transmittal Date 3/9/82

4. Description: From the 11/12/81 Preliminary Report

Because of the reported controversy of weights in the DDE model,
a detailed review of the seismic analysis of the Auxiliary
Building and its qualification should be performed in the over-
all reverification program.

5. Final Resolution

This item is being addressd in the current program.
EOI 987 is therefore closed.

Edward Denison 3/9/82

Project Engineer/Date
To Indicate RLCA Final Resolution

PROGRAM RESOLUTION REPORT

File No. 990

File Revision No. 5

1. Resolution of an: Open Item: Class _____ Error
2. Independent Design Verification Program Resolution is as:
 - a. Closed Item
 - b. Deviation
 - c. Open Item with future action by PG&E: Task _____
3. Date Reported to PG&E 820723
4. Scheduled for TES Semimonthly Report No. August
5. Resolution based on the following documentation:

EOI 990, Rev 0 and Rev. 1: Preliminary Report, Seismic Reverification Report, Seismic Reverification Program- November 12, 1981 Section 3.3.5.4 Fuel-Handling Building Crane: Some checks need to be made in the overall reverification program to check the applicability of design information transmitted.

P105-4-842-005 PG&E's 15th Semimonthly Report-Open Item 32. Models and assumptions used in the analyses for the seismic qualification of the Fuel Handling Building steel superstructure may have resulted in designs which do not satisfy all of the applicable criteria.

Based on the PG&E presentation (July 14-16, 1982) of their internal technical program the Auxiliary Building and Fuel Handling Building are being completely reanalyzed.

6. Program Resolution is:

This EOI is combined with EOI 1092 as an Error Class A. EOI 990 is therefore closed.

7. Potential Program Resolution Report signed by Edward Denison/RLCA on 820721
Type Name/Organization Date
8. Signature: 28 Page 820723 (Approved/Program Manager)

PROGRAM RESOLUTION REPORT

File No. 991

File Revision No. 5

1. Resolution of an: Open Item: Class _____ Error _____
2. Independent Design Verification Program Resolution is as:
 - a. Closed Item
 - b. Deviation
 - c. Open Item with future action by PG&E: Task _____
3. Date Reported to PG&E 820723
4. Scheduled for TES Semimonthly Report No. August
5. Resolution based on the following documentation:

EOI 991, Rev. 0

Preliminary Report, Seismic Reverification Report, Seismic Reverification Program-November 12, 1981 Section 3.3.5.4.3 Qualification of Fuel-Handling Building Crane: In the scope of the overall reverification program some checks will be made to insure that these modifications were done.

P105-4-842-005 PG&E's Semimonthly Report-Open Item 32. Models and assumptions used in the analyses for the seismic qualification of the Fuel Handling Building steel superstructure may have resulted in designs which do not satisfy all of the applicable criteria.

Based on the PG&E presentation (July 14-16, 1982) of their internal technical program the Auxiliary Building and Fuel Handling Building are being completely reanalyzed.

6. Program Resolution is:

This EOI is combined with EOI 1092 as an Error Class A. EOI 991 is therefore closed.

7. Potential Program Resolution Report signed by Edward Denison/RLCA on 820721
Type Name/Organization Date
8. Signature: RP Long 820723 (Approved/Program Manager)

PROGRAM RESOLUTION REPORT

File No. 1027

File Revision No. 5

1. Resolution of an: Open Item: Class _____ Error _____
2. Independent Design Verification Program Resolution is as:
 - a. Closed Item
 - b. Deviation
 - c. Open Item with future action by PG&E: Task _____
3. Date Reported to PG&E 820723
4. Scheduled for TES Semimonthly Report No. August
5. Resolution based on the following documentation:

EOI 1027 Rev. 0: Figure 4-166 in the Hosgri Report shows modification to the Fuel Handling Crane Support structure. This figure indicates slotted bolt holes to permit lateral movement. PG&E Drawing 451598 Revision 1 does not show the slotted bolt holes in details 2,4,and 6.

Based on the PG&E presentation (July 14-16, 1982) of their internal technical program the auxiliary building and fuel handling building are being completely reanalyzed.

6. Program Resolution is:

This EOI is combined with EOI 1092 as an Error Class A. EOI 1027 is therefore closed.

7. Potential Program Resolution Report signed by Edward Denison on 820721
Type Name/Organization Date
8. Signature: 2 E Denison 820723 (Approved/Program Manager)

PROGRAM RESOLUTION REPORT

File No. 1028

File Revision No. 5

1. Resolution of an: Open Item: Class _____ Error
2. Independent Design Verification Program Resolution is as:
 - a. Closed Item
 - b. Deviation
 - c. Open Item with future action by PG&E: Task 70112
3. Date Reported to PG&E 820713
4. Scheduled for TES Semimonthly Report No. August
5. Resolution based on the following documentation:

EOI 1028, Revision 0: The URS/Blume Auxiliary Building Report-October 1979 page 14 appears to specify a methodology for calculating A_H that differs from the Hosgri Report. In the 1979 Blume Report, an additional co-directional response is to be combined with A_H on the SRSS basis. (A_H = maximum horizontal acceleration).

P105-4-200-010 C-17 Revision 1 Controlled Hosgri Spectra.

6. Program Resolution is:

DCM C-17 Revision 1 clearly defines methods for combining responses, however, the application of these methods is not specified.

PG&E to define the applicable method for combining responses for each building and all piping, equipment and components. PG&E should cite the studies referred to that demonstrate the acceptability of 2-D absolute sum versus 3-D SRSS method for combining directional responses.

Open Item with future action by PG&E.

7. Potential Program Resolution Report signed by Edward Denison/BLCA on 820702
Date
8. Signature: W. L. [Signature] 820712 (Approved/Program Manager)

PROGRAM RESOLUTION REPORT

File No. 1029

File Revision No. 2

1. Resolution of an: Open Item: Class _____ Error
2. Independent Design Verification Program Resolution is as:
 - a. Closed Item
 - b. Deviation
 - c. Open Item with future action by PG&E: Task _____
3. Date Reported to PG&E 820722
4. Scheduled for TES Semimonthly Report No. August
5. Resolution based on the following documentation:

Discrepancies that differ by more than 15% are found between the dynamic model properties independently calculated by RLCA and used by URS/Blume.

Based on the PG&E presentation (July 14-16, 1982) of their internal technical program auxiliary building is being completely reanalyzed.

6. Program Resolution is:

This EOI is combined with EOI 1097 as an Error Class A or B. EOI 1029 is therefore closed.

7. Potential Program Resolution
Report signed by Edward Denison (RLCA) on 820721
Type Name/Organization Date
8. Signature: *E. Denison* 820721 (Approved/Program Manager)

PROGRAM RESOLUTION REPORT

File No. 1070

File Revision No. 2

1. Resolution of an: Open Item: Class _____ Error
2. Independent Design Verification Program Resolution is as:
 - a. Closed Item
 - b. Deviation
 - c. Open Item with future action by PG&E: Task _____
3. Date Reported to PG&E 820722
4. Scheduled for TES Semimonthly Report No. August
5. Resolution based on the following documentation:

The horizontal soil spring independently calculated by RLCA differs from the URS/Blume soil spring by 50%.

Based on the PGandE presentation (July 14-16, 1982) of their internal technical program the auxiliary building is being completely reanalyzed.

6. Program Resolution is:

This EOI is combined with EOI 1097 as an Error Class A or B.
EOI 1070 is therefore closed.

7. Potential Program Resolution
Report signed by Edward Denison (RLCA) on 820721
Type Name/Organization Date
8. Signature: *W.E. Gray* 820722 (Approved/Program Manager)

PROGRAM RESOLUTION REPORT

File No. 1079

File Revision No. 5

1. Resolution of an: Open Item: Class _____ Error _____
2. Independent Design Verification Program Resolution is as:
 - a. Closed Item
 - b. Deviation
 - c. Open Item with future action by PG&E: Task _____
3. Date Reported to PG&E 820723
4. Scheduled for TES Semimonthly Report No. August
5. Resolution based on the following documentation:

EOI 1079, REVS. 0 and 1.

PG&E drawing 451597 Revision 3 shows that for the fuel handling building structure steel, a lower steel cross member exists between column lines 175 and 184 for the West Elevation. RLCA field inspection shows a roll up door at this location and no crossmember. PG&E drawing 439506 Revision 5 reflects this as-built condition.

The structural drawings showing the fuel handling building are not consistent.

Based on the PG&E presentation (July 14-16, 1982) of their internal technical program the auxiliary building and fuel handling building are being completely reanalyzed.

6. Program Resolution is:

This EOI is combined with EOI 1092 as an Error Class A. EOI 1079 is therefore closed.

7. Potential Program Resolution Report signed by Edward Denison on 820721
Type Name/Organization Date
8. Signature: W.C. Payne 820721 (Approved/Program Manager)

PROGRAM RESOLUTION REPORT

File No. 1091

File Revision No. 5

1. Resolution of an: Open Item: Class Error
2. Independent Design Verification Program Resolution is as:
 - a. Closed Item
 - b. Deviation
 - c. Open Item with future action by PG&E: Task
3. Date Reported to PG&E 820810
4. Scheduled for TES Semimonthly Report No. August
5. Resolution based on the following documentation:

File No. 1091, Rev. 4

PGandE drawing 439506 Revision 5 shows structural cross bracing as L6x6x $\frac{1}{2}$ (typical) and diagonal bracing as 2L3x3x $\frac{3}{8}$ between column lines 9⁷ and 20³.

PGandE drawing 443470 Revision 2 shows structural cross bracing as L6x6x $\frac{1}{2}$ (typical) and diagonal bracing as L6x6x $\frac{1}{2}$ between column lines 20³ and 26³.

P105-4-591.5-117 RLCA field notes confirm the bracing as noted above.

P105-4-441-022 PGandE Fuel Handling Building Analysis - 1971 computer run has all the diagonal bracing as 2L3x3x $\frac{3}{8}$.

6. Program Resolution is:

The field configuration matches the drawings.

The analysis does not match the field configuration.

This EOI is combined with EOI 1092 as an Error Class A.

7. Potential Program Resolution Report signed by Edward Denison (RLCA) on 820729
8. Signature: *W. P. Long* 820810 (Approved/Program Manager)

ERROR REPORT

File No. 1092

Class: A
A, B, C or D

File Revision No. 6

PG&E Task No. 70204

- 1. Dates: Reported to Program Review Committee N/A
 Program Review Committee Action N/A
 Reported to PG&E and Originator 820810
- 2. Scheduled for TES Semimonthly Report No. August
- 3. Structure(s), system(s), or component(s) involved:

Fuel Handling Building

- 4. Description of Error:

Figures 4-165, 4-166 contained in Chapter 4 of the Hosgri Report do not agree with Figures 4-165 (E-52), 4-165 (E-53) and 4-166 (E-54) contained in Appendix E of the Hosgri Report. The RLCA field inspection does not show the added cross bracing in Figure 4-166 of Appendix E.

- 5. Significance of Error:

Based on the PG&E presentation (July 14-16, 1982) of their internal technical program the Auxiliary Building and Fuel Handling Building are being completely reanalyzed.

- 6. Recommendation:

This EOI is combined with 990, 991, 1027, 1079, and 1091.
Class A Error.
(1091 added to list from REV. 5)

- 7. Potential Error Report signed by Edward Denison (RLCA) on 820721
 Type Name/Organization Date
- 8. Signatures: N/A NE Gory 8/20/82
 For Program Review Committee Approved/Program Manager

PROGRAM RESOLUTION REPORT

File No. 1093

File Revision No. 5

1. Resolution of an: Open Item: Class _____ Error
2. Independent Design Verification Program Resolution is as:
 - a. Closed Item
 - b. Deviation
 - c. Open Item with future action by PG&E: Task _____
3. Date Reported to PG&E 820722
4. Scheduled for TES Semimonthly Report No. August
5. Resolution based on the following documentation:

EOI 1093 Rev. 0 Auxiliary Building - Unit I, Hosgri Response Spectra is not available for the following areas: Fan Room Elevation 163-175 ft., L and 13 lines; and Ventilation Room elevation 140-165 ft., V and 6⁺ lines.

Based on the PGandE presentation (July 14-16, 1982) of their internal technical program the auxiliary building and fuel handling building are being completely reanalyzed.

6. Program Resolution is:

This EOI is combined with EOI 1097 as an Error Class A or B. EOI 1093 is therefore closed.

7. Potential Program Resolution Report signed by Edward Denison (RLCA) on 820721
Type Name/Organization Date
8. Signature: *NE Denison* 820722 (Approved/Program Manager)

PROGRAM RESOLUTION REPORT

File No. 1095

File Revision No. 2

1. Resolution of an: Open Item: Class _____ Error _____
2. Independent Design Verification Program Resolution is as:
 - a. Closed Item
 - b. Deviation
 - c. Open Item with future action by PG&E: Task _____
3. Date Reported to PG&E 821116
4. Scheduled for TES Semimonthly Report No. December
5. Resolution based on the following documentation:

The auxiliary building time history obtained from URS/Blume may not conservatively envelope the Hosgri design spectra at certain frequencies. This concern gives rise to the potential that the floor response spectra obtained from the input time history may not be conservative at all frequencies.

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6. Program Resolution is:

TES concurrence with RLCA, Revision 1.

Open Item with future action by PGandE.

Provide all licensing criteria and/or correspondence related to the fit of the input time histories to the design spectra and procedures used to "smooth" resultant floor response spectra. If this is not available, delineate the criteria used to accept these time history fits and the resultant spectra.

7. Potential Program Resolution
Report signed by E. Denison (RLCA) on 821102
Type Name/Organization Date
8. Signature: *[Handwritten Signature]* 821116 (Approved/Program Manager)

ERROR REPORT

File No. 1097

Class: A or B
A, B, C or D

File Revision No. 5

PG&E Task No. _____

- 1. Dates: Reported to Program Review Committee _____ N/A
- Program Review Committee Action _____ N/A
- Reported to PG&E and Originator _____ 830627
- 2. Scheduled for TES Semimonthly Report No. July
- 3. Structure(s), system(s), or component(s) involved: _____

Auxiliary Building

4. Description of Error:

Hosgri Response Spectra is not available for the Fan/Machine Room above elevation 163'6". This area is located at the intersection of column lines H and 18 and contains Fan E-27.

5. Significance of Error:

Based on the PGandE presentation (July 14-16, 1982), of their internal technical program the Auxiliary Building is being completely reanalyzed.

6. Recommendation:

This EOI is combined with 920, 986, 1029, 1070, and 1093 as an Error Class A or B.

Revision 5 of this File issued to include EOI 1132 which as been combined with this File.

7. Potential Error Report signed by N/A on _____

8. Signatures: N/A Type Name/Organization Date

For Program Review Committee 26 [Signature] 8/10/82
Approved/Program Manager