NOV 12 1982

Docket Nos.: 50-329
and 50-330

APPLICANT: Consumers Power Company

FACILITY: Midland Plant, Units 1 and 2

SUBJECT: SUMMARY OF MEETING HELD WITH CONSUMERS POWER ON OCTOBER 21, 1982 - SEISMIC EQUIPMENT QUALIFICATION

On October 21, 1982, the NRC staff met in Bethesda, Maryland with Consumers Power Company, Bechtel, Babcock & Wilcox, and NUTECH to discuss the Midland program for seismic/dynamic qualification of mechanical and electrical equipment. This subject relates to Section 3.10 of the Midland SER. A list of meeting attendees is attached as Enclosure 1. Enclosure 2 is a compilation of the handouts and visual aids used in the course of the meeting.

SUMMARY

Consumers Power led a presentation regarding the program description, their understanding of the criteria, the schedule, and the program as it applies to specific pieces of equipment (see Enclosure 2). The initial documentation review has been completed for all of the NSSS systems and for 70% of the balance of plant equipment. Actual completion of the qualification is 20% and 30%, respectively. The scheduled submittal and subsequent on-site audit have slipped by approximately six months in comparison with the dates estimated at the March 17, 1982 meeting.

The staff stated that exemptions would have to be requested and approved for any equipment not qualified by the time the Midland Plant is ready to establish operations at greater than 5% power.

The staff requested that Consumers Power personnel conduct the final review of the records supporting the equipment qualification prior to the on-site audit. This would be an overview of the work performed by Bechtel and Babcock and Wilcox.

The staff provided clarification of what is intended in requiring 85% completion prior to scheduling the on-site audit. The guideline is based upon 85% of the actual qualification (by type) being completed and a representative sample being installed.

OFFICE ▶							
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The applicability of the site specific response spectra (SSRS) to the seismic equipment qualification program was discussed. The applicant's position has been that the "FSAR commitments" will be the basis for the qualification and that the SSRS are addressed in the seismic margin evaluation, which is a separate program. There appeared to be lack of agreement on use of the SSRS. The personnel involved in the margin review were not present at the meeting. The staff agreed to provide clarification to Consumers Power in the near future.

Ronald W. Hernan, Project Manager
Licensing Branch No. 4
Division of Licensing

Enclosures:
As Stated

cc: See next page

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ENCLOSURE 1

LIST OF ATTENDEES

NRC

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A. Lee
R. Herman

CONSUMERS POWER COMPANY

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D. Sowers
J. Zabritski

BECHTEL

W. Caldwell - Johnson
B. McConnel
A. Tocci
D. Nims
D. Lewis

BABCOCK & WILCOX

P. Mamola
C. Reynolds
R. Howard
F. Levandoski

NUTECH

P. DiBenedetto

ENCLOSURE 2

CONSUMERS POWER COMPANY
MIDLAND UNITS 1 & 2
AGENDA FOR
SEISMIC QUALIFICATION OF EQUIPMENT

I. INTRODUCTION
- MEETING PURPOSE

II. PROGRAM DESCRIPTION
- ORGANIZATION
- PROGRAM BASIS
- REVIEW OF ORIGINAL DOCUMENTATION
- REQUALIFICATION ACTIVITIES
- NRC SUBMITTAL

III. SEISMIC CRITERIA
- FSAR & SRP 3.10
- SINGLE AXIS, SINGLE FREQUENCY TESTING
- OPERABILITY OF ACTIVE EQUIPMENT

IV. DISCUSSION OF SPECIFIC EQUIPMENT ITEMS
- NI/RPS & ECCAS MODULES
- CONTROL ROOM CABINET MODIFICATIONS

V. CONCLUSION
- PROJECTED SCHEDULE

I. INTRODUCTION

- MEETING PURPOSE

  - PROVIDE NRC STAFF WITH UPDATE OF MIDLAND SEISMIC QUALIFICATION OF EQUIPMENT PROGRAM

  - DESCRIBE TECHNICAL APPROACH FOR OPERABILITY VERIFICATION OF ACTIVE EQUIPMENT (PUMPS, MOTORS, VALVES)

  - DESCRIBE TECHNICAL APPROACH FOR QUALIFICATION OF SPECIFIC EQUIPMENT ITEMS

  - OBTAIN NRC STAFF FEEDBACK AND CONCURRENCE ON METHODOLOGY

II. PROGRAM DESCRIPTION

- PROGRAM ORGANIZATION

  - PROGRAM PARTICIPANTS:

    - CPCo - OWNER/MANAGER
    - BECHTEL - ARCHITECT/ENGINEER
    - BABCOCK & WILCOX - NSSS SUPPLIER
    - NUTECH - CONSULTANT

  - EQUIVALENT FULL TIME PERSONNEL DEDICATED TO MIDLAND SQRT EFFORT (OCT. 82):

• CPCo	- 2
• BECHTEL	- 33
• BABCOCK & WILCOX	- 6
• NUTECH	- 30
TOTAL	71

  - EFFORT BEGAN AUGUST, 1981

PROGRAM DESCRIPTION - 2

- PROGRAM BASIS
  - MIDLAND SEISMIC EVALUATION PROGRAM BASED ON FSAR COMMITMENTS
  - SITE SPECIFIC SPECTRA ARE ADDRESSED IN A SEPARATE PROGRAM (SEISMIC MARGIN EVALUATION)
  - EQUIPMENT QUALIFICATION WILL BE EVALUATED AGAINST CURRENT SEISMIC CRITERIA
  - SEISMIC EVALUATIONS PERFORMED FOR ALL SAFETY RELATED EQUIPMENT
  - EQUIPMENT MAINTENANCE AND SURVEILLANCE PROGRAM COVERED BY ENVIRONMENTAL QUALIFICATION REPORT
  - DOCUMENTATION COMPILED AND CENTRAL FILE ESTABLISHED
  - 85% OF EQUIPMENT WILL BE QUALIFIED BY AUDIT
  - ALL EQUIPMENT QUALIFIED OR JUSTIFICATION FOR INTERIM OPERATION PROVIDED BY FUEL LOAD

PROGRAM DESCRIPTION-3

- REVIEW OF ORIGINAL DOCUMENTATION

  - SCOPE OF REVIEW

    - BOP EQUIPMENT:

      EQUIPMENT ITEMS - 5900
      EQUIPMENT TYPES - 600

    - NSSS EQUIPMENT:

      EQUIPMENT ITEMS - 700
      EQUIPMENT TYPES - 40

  - STATUS OF DOCUMENTATION REVIEW

    - BOP EQUIPMENT - 70% REVIEWED
      - 30% COMPLETE

    - NSSS EQUIPMENT - 100% REVIEWED
      - 20% COMPLETE

PROGRAM DESCRIPTION-4

- REQUALIFICATION ACTIVITIES

  - DOCUMENTATION SEARCH BEING PERFORMED TO OBTAIN EXISTING SEISMIC QUALIFICATION DATA

  - VENDOR INTERACTION TO OBTAIN SEISMIC QUALIFICATION DATA

  - ADDITIONAL ANALYSIS BEING PERFORMED TO CURRENT SEISMIC CRITERIA

  - IN-SITU TESTING BEING PERFORMED TO SUPPLEMENT ANALYSIS

  - RETEST PLANS BEING DEVELOPED TO QUALIFY EQUIPMENT TO CURRENT SEISMIC CRITERIA

PROGRAM DESCRIPTION-5

- NRC SUBMITTAL

  - SHORT FORMS TO BE SUBMITTED WHEN EQUIPMENT IS:

    - 85% QUALIFIED BASED ON EQUIPMENT TYPES WITH COMPLETE DOCUMENTATION

    - 85% INSTALLED BASED ON EQUIPMENT ITEMS NUMBERS

  - EXAMPLE ATTACHED

MASTER LISTING OF SEISMIC AND DYNAMIC QUALIFICATION SUMMARY AND STATUS OF EQUIPMENT IMPORTANT TO SAFETY

PLANT NAME: MIDLAND UNITS 1 & 2 DOCKET NO: 50-329, 50-330 UTILITY: CONSUMERS POWER COMPANY A/E: BECHTEL NSSS: BABCOCK & WILCOX

SUPPLIER: A/E[ ] NSSS[ ] OTHER[ ] SAFETY SYSTEM: FUNCTION:

EQUIPMENT						LOCATION		LOADS CONSIDERED				QUAL METHOD			LOWEST RESONANCE FREQUENCY			STATUS		APPPLICABLE CODES & STANDARDS	REQUIRED RESPONSE SPECTRA REF.
SQRI ID	TYPE AND DISCRIPTION	MANUFACTURER AND MODEL NUMBER	QUAN	OWNER I.D. NUMBER	TEST OR ANALYSIS REPORT NUMBER	BLDG AND ELEV	MOUNT	SEIS	OBTY HNEARM	REQ INP (ZPA) (G'S)	ANALY	TEST REQ	TEST DIR	F/B (HZ)	S/S (HZ)	V (HZ)	QUAL	INST		

PROGRAM DESCRIPTION - 7

- NRC SUBMITTAL (CONTINUED)

  - QUALIFICATION STATUS:

    A - QUALIFICATION TO CURRENT NRC REQUIREMENTS DOCUMENTATION IS COMPLETE

    B - QUALIFICATION TO FSAR COMMITMENTS AND ASSOCIATED DOCUMENTATION IS COMPLETE BUT EQUIPMENT IS NOT QUALIFIED TO CURRENT NRC REQUIREMENTS

    C - QUALIFICATION TESTING IS FINISHED, BUT ASSOCIATED DOCUMENTATION IS NOT YET SUBMITTED OR STILL IN REVIEW

    D - QUALIFICATION PLAN/PROCEDURE IS DOCUMENTED, BUT TESTING HAS NOT YET BEGUN

    E - EQUIPMENT TO BE QUALIFIED

    F - EQUIPMENT IS DEEMED NOT QUALIFIABLE AND WILL BE REPLACED WITH QUALIFIED EQUIPMENT

PROGRAM DESCRIPTION - 8

- NRC SUBMITTAL (CONTINUED)

  - INSTALLATION STATUS:

    A - INSTALLATION IS COMPLETED: EQUIPMENT READY FOR SERVICE

    B - EQUIPMENT MOUNTING/HOOKUP IS COMPLETED, BUT SIGNIFICANT PARTS OF THE EQUIPMENT ARE NOT YET INSTALLED

    C - EQUIPMENT IS LOCATED AT ITS INTENDED SERVICE LOCATION, BUT MOUNTING AND/OR HOOKUP IS NOT COMPLETED

    D - EQUIPMENT IS NOT INSTALLED AND IS NOT AVAILABLE FOR INSPECTION

MASTER LISTING OF SEISMIC AND DYNAMIC QUALIFICATION SUMMARY AND STATUS OF EQUIPMENT IMPORTANT TO SAFETY

PLANT NAME: MIDLAND UNITS 1 & 2 DOCKET NO: 50-329, 50-330 UTILITY: CONSUMERS POWER COMPANY A/E: BECHTEL NSSS: BABCOCK & WILCOX

SUPPLIER: A/E[ ] NSSS[ ] OTHER[ ] SAFETY SYSTEM: N/: MISCELLANEOUS CABLE AND ELECTRICAL PENETRATIONS FUNCTION: SUPP SYSTS

EQUIPMENT						LOCATION		LOADS CONSIDERED			QUAL METHOD			LOWEST RESONANCE FREQUENCY			STATUS		APPPLICABLE CODES & STANDARDS	REQUIRED RESPONSE SPECTRA REF.
SORT ID BOP-E	TYPE AND DESCRIPTION	MANUFACTURER AND MODEL NUMBER	QUAN	OWNER I.D. NUMBER	TEST OR ANALYSIS REPORT NUMBER	BLDG AND ELEV	MOUNT	SEIS	OD TY IN EA RM	REQ INP (ZPA) (G'S)	ANALY	TEST Q	TEST DIR	F/B (HZ)	S/S (HZ)	V (HZ)	QUAL	INST		
008	ELECT PENETRATION	AMPHENOL LOW V 12 IPS EPA	1	2Z-118	E20-163-5	R2 626	SM	Y	N	.15	S	SF	SD	26	26	26	C		B	G-6,REV.6 NSO5-1 EWO5-1 VVALL-1
008	ELECT PENETRATION	AMPHENOL LOW V 12 IPS EPA	1	2Z-119	E20-163-5	R2 626	SM	Y	N	.15	S	SF	SD	26	26	26	C		B	G-6,REV.6 NSO5-1 EWO5-1 VVALL-1
008	ELECT PENETRATION	AMPHENOL LOW V 12 IPS EPA	1	2Z-121	E20-163-5	R2 626	SM	Y	N	.15	S	SF	SD	26	26	26	C		B	G-6,REV.6 NSO5-1 EWO5-1 VVALL-1
008	ELECT PENETRATION	AMPHENOL LOW V 12 IPS EPA	1	2Z-122	E20-163-5	R2 626	SM	Y	N	.15	S	SF	SD	26	26	26	C		B	G-6,REV.6 NSO5-1 EWO5-1 VVALL-1
008	ELECT PENETRATION	AMPHENOL LOW V 12 IPS EPA	1	2Z-123	E20-163-5	R2 626	SM	Y	N	.15	S	SF	SD	26	26	26	C		B	G-6,REV.6 NSO5-1 EWO5-1 VVALL-1
008	ELECT PENETRATION	AMPHENOL LOW V 12 IPS EPA	1	2Z-124	E20-163-5	R2 626	SM	Y	N	.15	S	SF	SD	26	26	26	C		B	G-6,REV.6 NSO5-1 EWO5-1 VVALL-1
008	ELECT PENETRATION	AMPHENOL LOW V 12 IPS EPA	1	2Z-125	E20-163-5	R2 626	SM	Y	N	.15	S	SF	SD	26	26	26	C		B	G-6,REV.6 NSO5-1 EWO5-1 VVALL-1
008	ELECT PENETRATION	AMPHENOL LOW V 12 IPS EPA	1	2Z-126	E20-163-5	R2 626	SM	Y	N	.15	S	SF	SD	26	26	26	C		B	G-6,REV.6 NSO5-1 EWO5-1 VVALL-1
008	ELECT PENETRATION	AMPHENOL	1	2Z-130	E20-163-5	R2 593	SM	Y	N	.15	S	SF	SD	26	26	26	C		B	G-6,REV.6 NSO5-1 EWO5-1 VVALL-1
008	ELECT PENETRATION	AMPHENOL LOW V 12 IPS EPA	1	2Z-131	E20-163-5	R2 593	SM	Y	N	.15	S	SF	SD	26	26	26	C		B	G-6,REV.6 NSO5-1 EWO5-1 VVALL-1
008	ELECT PENETRATION	AMPHENOL LOW V 12 IPS EPA	1	2Z-132	E20-163-5	R2 593	SM	Y	N	.15	S	SF	SD	26	26	26	C		B	G-6,REV.6 NSO5-1 EWO5-1

III. SEISMIC CRITERIA

- REVISED FSAR SECTION 3.10
  - APPLICABLE TO ELECTRICAL AND MECHANICAL EQUIPMENT
  - SUBSECTION 3.9.2.2 DELETED AND INCORPORATED INTO SECTION 3.10
  - ADDRESSES RECOMMENDATIONS OF USNRC STANDARD REVIEW PLAN 3.10
  - SUBSECTION 3.10.4 BEING REPLACED BY SHORT FORM SUBMITTAL
  - TO BE IN FSAR REVISION 47, FORECAST DEC. 82

SEISMIC CRITERIA - 2

- SRP PLAN 3.10 - MIDLAND APPLICABILITY/EXCEPTIONS

  - MIDLAND CP APPLICATION DOCKETED 1/13/69, SUBSECTION II.2 APPLIES

  - JUSTIFICATION PROVIDED FOR SINGLE FREQUENCY, SINGLE AXIS TESTING

  - DEFLECTION AND BEARING LIFE ANALYSIS USED TO DEMONSTRATE OPERABILITY OF SOME ACTIVE EQUIPMENT

SEISMIC CRITERIA - 3

- MIDLAND SPECIFIC CRITERIA (PREVIOUSLY DISCUSSED DURING 3/17/82 MEETING)

  - DESIGN RESPONSE SPECTRA (FSAR SECTION 3.7.1.1)

  - 1% EQUIPMENT DAMPING, HIGHER VALUES ONLY BY JUSTIFICATION (FSAR SECTION 3.7.3.15.1)

  - EQUIPMENT MAY COMBINE SPATIAL COMPONENTS BY ABSOLUTE SUM OF VERTICAL AND WORST CASE HORIZONTAL LOADS (FSAR APP.3A, R.G. 1.92)

  - BOP EQUIVALENT STATIC ANALYSIS MAY USE 1.5 X RESPONSE SPECTRUM ACCELERATION CORRESPONDING TO LOWEST NATURAL FREQUENCY (FSAR SECTION 3.7.3.5.1)

  - NSSS EQUIVALENT STATIC ANALYSIS MAY USE 1.0 X RRS PEAK FOR EQUIPMENT WITH ONE RESONANCE BELOW 33 Hz (FSAR SECTION 3.7.3.5.2)

  - SOME NSSS EQUIPMENT OUTSIDE OF PRIMARY SYSTEM COMBINES MODAL RESPONSES BY SRSS (FSAR APP.3A, R.G. 1.92)

SEISMIC CRITERIA - 4

- BOP EQUIPMENT QUALIFIED USING SINGLE FREQUENCY AND/OR SINGLE AXIS TESTING
  - RESPONDS TO SER SECTION 3.10 CONCERN
  - IN CONFORMANCE WITH INTENT OF IEEE-344-1975
  - LIMITED APPLICATION FOR THE FOLLOWING CATAGORIES:
    - SINGLE AXIS, MULTI-FREQUENCY
    - MULTI-AXIS, SINGLE FREQUENCY
    - SINGLE AXIS, SINGLE FREQUENCY

SEISMIC CRITERIA - 5

- SINGLE AXIS, MULTI-FREQUENCY TESTING

  - CROSS COUPLING ACCOUNTED FOR BY OFF-DIRECTION MONITORING AND/OR MARGIN

  - MULTIMODE EFFECTS ARE ACCOUNTED FOR USING A MULTI-FREQUENCY WAVEFORM

  - 5 OBE PLUS 1 SSE

  - MINIMUM DURATION OF 20 SECONDS PER EVENT

  - TYPICAL EXAMPLE APPLICATIONS:

    1. BATTERY CHARGERS - TEST INPUT $>$ 7 X REQUIRED INPUT

    2. KVA INVERTERS - TEST INPUT $>$ 3.5 X REQUIRED INPUT

SEISMIC CRITERIA - 6

- MULTI AXIS, SINGLE FREQUENCY TESTING

  - CROSS COUPLING ACCOUNTED FOR USING BIAXIAL TESTING

  - MULTIMODE EFFECTS ACCOUNTED FOR BY:

    1. EQUIPMENT TESTED AT ALL IDENTIFIED RESONANCES AND AT 1/2 OCTAVE FREQUENCY BANDS

    2. NO CLOSELY SPACED MODES IDENTIFIED

    3. TRS ACCELERATION $\geq$ 1.5 RRS ACCELERATION

  - CUMULATIVE DURATION OF SINGLE FREQUENCY TESTS $\geq$ 5 OBE'S PLUS 1 SSE (20 SECONDS PER EVENT)

  - TYPICAL EXAMPLE APPLICATIONS:

    1. DISTRIBUTION CENTERS - 16 TEST FREQUENCIES, TEST INPUT $>$ 10 X REQUIRED INPUT

    2. CHILLER CONTROL PANELS - 16 TEST FREQUENCIES, TEST INPUT $>$ 1.6 X REQUIRED INPUT

SEISMIC CRITERIA - 7

- SINGLE AXIS, SINGLE FREQUENCY TESTING

  - CROSS COUPLING CONSIDERED BY OFF-DIRECTION MONITORING AND/OR MARGIN

  - MULTIMODE EFFECTS ACCOUNTED FOR BY:

    1. EQUIPMENT TESTED AT ALL IDENTIFIED RESONANCES AND AT 1/2 OCTAVE FREQUENCY BANDS

    2. NO CLOSELY SPACED MODES IDENTIFIED

    3. TRS ACCELERATION $\geq$ 1.5 RRS ACCELERATION

  - CUMULATIVE DURATION OF SINGLE FREQUENCY TEST $\geq$ 5 OBE's PLUS 1 SSE (20 SECONDS PER EVENT)

  - TYPICAL EXAMPLE APPLICATIONS:

    1. HYDROGEN RECOMBINER - 12 TEST FREQUENCIES, TEST INPUT $>$ 4 X REQUIRED INPUT

    2. N-2ES CONTROL SYSTEMS RACKS - 35 TEST FREQUENCIES, TEST INPUT $>$ 2.5 X REQUIRED INPUT

SEISMIC CRITERIA - 8

- EQUIPMENT OPERABILITY METHODOLOGY

  - QUALIFICATION OF MOTOR ACTUATED VALVE ASSEMBLIES:

    - ACTUATORS HAVE BEEN DYNAMICALLY TESTED TO DEMONSTRATE OPERABILITY WITH RATED TORQUE/ THRUST APPLIED DURING TEST

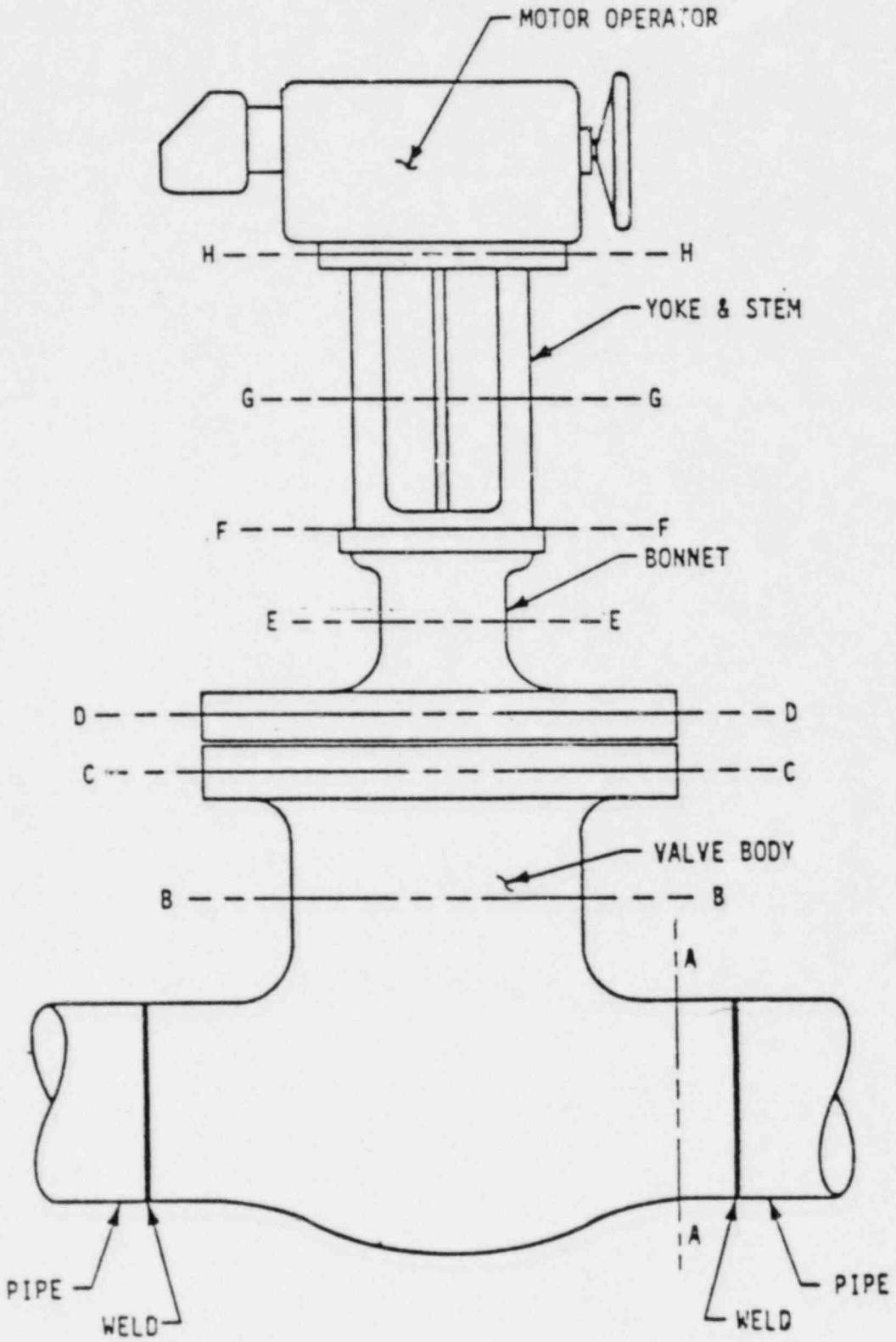
    - VALVE ASSEMBLY VERIFIED CONSERVATIVELY AS RIGID BY ANALYSIS

    - STATIC DEFLECTION ANALYSIS OR STATIC LOAD TEST PERFORMED TO VERIFY ASSEMBLY OPERABILITY

      1) ACCELERATION DUE TO SEISMIC AND DYNAMIC LOADS APPLIED AT ACTUATOR C.G.

      2) MAXIMUM DEFLECTIONS COMPARED WITH CRITICAL CLEARANCES

    - ASME CODE SECTION III STRESS ANALYSIS OR EQUIVALENT PERFORMED TO DEMONSTRATE STRUCTURAL INTEGRITY - LOADS CONSIDERED INCLUDE PRESSURE, TEMPERATURE, SEISMIC AND DYNAMIC LOADS



Typical Valve Assembly

SEISMIC CRITERIA - 10

- EQUIPMENT OPERABILITY METHODOLOGY (CONTINUED)
  - QUALIFICATION OF PUMPS
    - ASME CODE STRESS ANALYSIS PERFORMED
      - LOADS CONSIDERED INCLUDE NOZZLE, PRESSURE, TEMPERATURE, SEISMIC
    - CRITICAL SPEED/NATURAL FREQUENCY COMPARED AGAINST CUTOFF FREQUENCY
    - ROTOR DEFLECTION ANALYSIS PERFORMED TO VERIFY OPERABILITY
      1) LOADS CONSIDERED INCLUDE OPERATING PLUS SEISMIC
      2) MAXIMUM DEFLECTIONS COMPARED TO CRITICAL CLEARANCES
      3) MAXIMUM STRESSES COMPARED TO ALLOWABLES
    - FLANGE, BASEPLATE, AND BEARING LIFE ANALYSIS CONSIDERED

SEISMIC CRITERIA - 11

- EQUIPMENT OPERABILITY METHODOLOGY (CONTINUED)
  - QUALIFICATION OF MOTORS
    - STRESS ANALYSIS PERFORMED - LOADS CONSIDERED INCLUDE OPERATING PLUS SEISMIC
    - CRITICAL SPEED/NATURAL FREQUENCY ANALYSIS PERFORMED
    - ROTOR DEFLECTION ANALYSIS PERFORMED TO VERIFY OPERABILITY
      1) LOADS CONSIDERED INCLUDE OPERATING PLUS SEISMIC
      2) MAXIMUM DEFLECTIONS COMPARED TO CRITICAL CLEARANCES
      3) MAXIMUM STRESSES COMPARED TO ALLOWABLES
    - BEARING LIFE, MOTOR MOUNTING AND CONDUIT BOX MOUNTING ANALYSES CONSIDERED
  - PUMP/MOTOR INTERACTION ADDRESSED
    1) ALIGNMENT
    2) OPERATING LOADS

IV DISCUSSION OF SPECIFIC EQUIPMENT ITEMS

- QUALIFICATION OF NI/RPS AND ECCAS MODULES

  - SINGLE FREQUENCY, SINGLE AXIS TESTING HAS BEEN PERFORMED ON MODULES

    1) CONSTANT 1G SINUSOIDAL INPUT FROM 7-40 Hz
    2) BELOW 7 Hz, G LOADING LIMITED BY TEST EQUIPMENT
    3) TEST DURATION OF 15 MINUTES LINEAR FREQUENCY SWEEP FROM 1-40 Hz
    4) TESTING PERFORMED IN 3 INDEPENDENT DIRECTIONS
    5) TEST FIXTURES SIMULATED FIELD MOUNTING AND ELECTRICAL INTERCONNECTIONS
    6) OPERABILITY WAS MONITORED BEFORE, DURING, AND AFTER TESTING

  - JUSTIFICATION FOR ACCEPTABILITY OF THE TEST

    1) TEST AS PERFORMED EXCEEDS IEEE 344-1971
    2) MULTI-AXIS EFFECTS ADDRESSED IN OPERABILITY EVALUATION
    3) TEST ACCELERATION LEVELS EXCEED FLOOR RRS ZPA LEVELS
    4) DURATION OF TEST MEETS IEEE 344-1975 REQUIREMENTS
    5) ADDITIONAL ITEMS TO BE ADDRESSED AS FOLLOWS TO INSURE ACCEPTABILITY OF TEST TO IEEE 344-1975 CRITERIA

DISCUSSION OF SPECIFIC EQUIPMENT ITEMS - 2

- QUALIFICATION OF NI/RPS & ECCAS MODULES -(CONTINUED)

  - CONCERNS OF TEST TO BE RESOLVED

    1) IN-SITU TESTING OF MODULE CABINETS TO VERIFY THAT NATURAL FREQUENCIES ARE ABOVE 10 HZ AND CROSS COUPLING IS INSIGNIFICANT

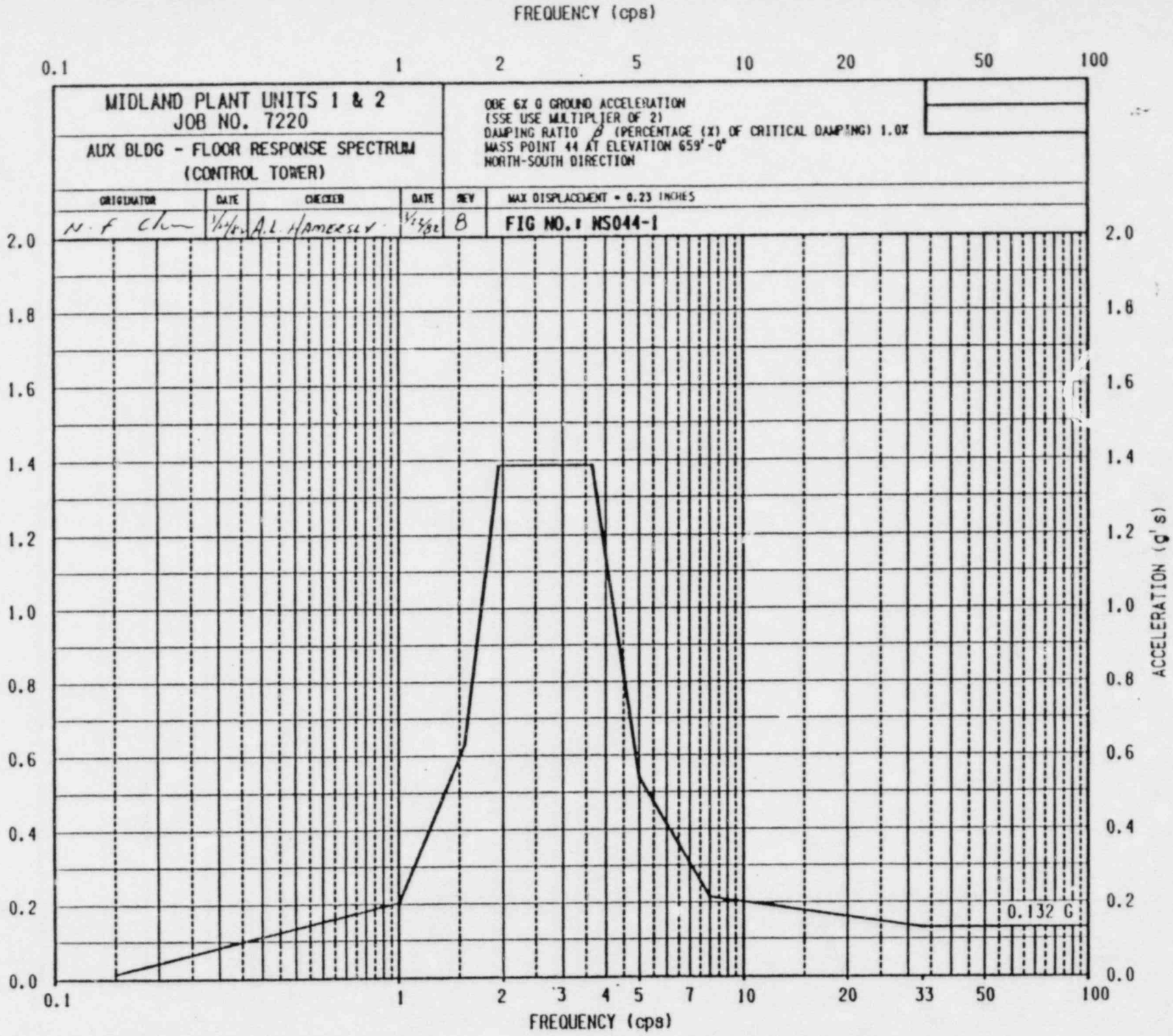
    2) JUSTIFICATION FOR USE OF "B" FACTOR IN OPERABILITY EVALUATION TO BE VERIFIED

    3) SIMILARITY BETWEEN EQUIPMENT TESTED AND EQUIPMENT IN FIELD TO BE VERIFIED

    4) SIMILARITY OF TEST MOUNTING DETAILS VS FIELD MOUNTING TO BE VERIFIED

  - RETESTING TO IEEE 344-1975 TO BE PERFORMED FOR MODULES FOR WHICH ABOVE CONCERNS CAN NOT BE RESOLVED

DISCUSSION OF SPECIFIC EQUIPMENT - 3



DISCUSSION OF SPECIFIC EQUIPMENT - 4

- CONTROL PANEL MODIFICATIONS

  - TYPES OF MODIFICATIONS

  - RESOLUTION OF MODIFICATIONS

  - IMPACT OF MODIFICATIONS

DISCUSSION OF SPECIFIC EQUIPMENT - 5

- TYPES OF MODIFICATIONS

1) INSTRUMENT RELOCATIONS

2) STRUCTURAL CHANGES HAVE BEEN AVOIDED

3) PROXIMITY CHANGES

DISCUSSION OF SPECIFIC EQUIPMENT - 6

- RESOLUTION OF MODIFICATIONS

1) REANALYSIS OF PANEL STRUCTURES

2) REVIEW INSTRUMENT LOCATIONS

3) MODIFY STRUCTURES FOR PROXIMITY

MIDLAND UNITS 1 & 2
10/21/82

DISCUSSION OF SPECIFIC EQUIPMENT - 7

- IMPACT OF MODIFICATIONS

1) LATE KNOWLEDGE OF DYNAMIC BEHAVIOR OF PANELS

2) REANALYSIS OF PANEL STRUCTURE IS ALREADY PLANNED AS PART OF SEISMIC REANALYSIS EFFORT

3) MAJORITY OF INSTRUMENTS HAVE BEEN GENERICALLY QUALIFIED AND WILL BE ADEQUATE IN NEW LOCATIONS

CONCLUSION

PROJECTED PROGRAM SCHEDULE

- SHORT FORM SUBMITTAL DATE

  - DIFFICULT TO ACCURATELY ASSESS BASED ON:

    1) BOP EQUIPMENT TYPES CONTAIN CONTIGENCY DUE TO:

       - NEW EQUIPMENT
       - FIELD MODIFICATIONS

    2) LARGE REQUALIFICATION EFFORT UNDERWAY:

       - ANALYSIS AND TESTING
       - CONTROL PANEL MODIFICATIONS
       - VALVE OPERABILITY PROGRAM

  - ASSESSMENT: LATE 1ST QUARTER, 1983

- NRC AUDIT DATE

  - 3 TO 4 WEEKS AFTER SHORT FORM SUBMITTAL

MEETING SUMMARY DISTRIBUTION

Docket No(s): 50-329/330
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