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To: R. Herr from BK 2/2

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UNITED STATES NUCLEAR REGULATORY COMMISSION
OFFICE OF INVESTIGATIONS FIELD OFFICE
REGION IV

A14-6

ASSISTANCE TO INSPECTION REPORT
(Supplemental)

January 31, 1983

SUBJECT: COMANCHE PEAK
ALLEGED DEFECTIVE PIPE HANGERS

REPORT NUMBER: A4-83-001 (Supplemental)

1. On January 27, 1983, this reporter accompanied Les Gilbert, Region IV Engineering Inspector, to the Comanche Peak site to identify the location of the one pipe and three hangers previously identified by an alleger, [redacted], [redacted] Gilbert stated an inspection report would be prepared addressing these technical allegations. [redacted] was also interviewed at this time concerning the areas containing the alleged defects he had previously identified to TUGCO and to this reporter. [redacted] stated a TUGCO representative had recently taken him back to the hangers in question after they had been acid etched. [redacted] stated that after he inspected the welds, he still believed the gaps are excessive on all three hangers. [redacted] further stated that after looking at the pipe, he still believed the stainless steel pipe had been improperly welded.

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H. B. Griffin, Investigator
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APPROVED BY: R. K. Herr

R. K. Herr, Director
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cc: J. Collins, RIV ✓
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SSER AH-6, etc./CP3

SSER

1. Allegation Group: Mechanical and Piping Category No. 31 - Hanger Welding Problems

2. Allegation number: AH-6, AP-18, AP-19, AP-20, AP-21, AP-22, AQW-73

3. Characterization: It is alleged that there ~~are~~ WERE improper fit-up gaps on hangers, improper QC inspections were performed, QA procedures were not followed, and improper welding was performed. If these allegations are true, the quality of the installations is indeterminant. , AND IMPROPER SKEWED WELD JOINT INSPECTIONS.

4. Assessment of safety significance: The NRC Technical Review Team (TRT) independently reviewed Region IV (RIV) inspection reports 50-445-83-07 and 50-445/84-05 concerning various allegations of hanger fit-up gap and other welding fabrication and QC inspection problems. These allegations are delineated below:

AH-6

This allegation concerned fit-up gap violations on three specific hangers. This allegation had been addressed initially by RIV inspection report number 50-445/83-07. The TRT reviewed this report and made the following observations. Supports number SW-1-012-010-A33R and CC-1-087-004-A33A had been inspected by RIV inspection personnel in detail and found to have had no violations or deviations. The TRT reviewed support number SW-1-012-010-A33R and saw no apparent physical evidence that suggested a fit-up gap problem between support items Nos. 18 and 19. The hanger package (HP) was reviewed for this hanger and contained the proper multiple weld data cards (MWDC), QC hanger inspection reports (HIR) and various other related documents.

The NRC TRT also reviewed support SW-1-102-106-Y33K which was cited as a violation in the RIV IR 83-07. This support contained a 6"x6"x 1/2" structure tube brace welded to a floor mounted base plate at the 800' elevation in the SW yard tunnel. During the RIV inspection in January 1983 the inspectors found a fit-up gap violation of this connection which subsequently, was reported as a violation. TUEC responded to the violation on April 15, 1983 by (1) initiating an NCR to correct the hanger, (2) performing an engineering evaluation of the existing weld condition, and (3) reinstructing construction personnel in the necessity for rigid compliance with design and procedural requirements.

The NRC TRT reviewed the support SW-1-102-106-Y33K in the yard tunnel. The support was painted and showed no physical signs of rework. The weld along the obtuse edge of the tube/plate connection was built up. A review of the HP for this support contained the MWDC and weld filler metal log (WFML) for the rework operation identified in the TUEC response letter. The TRT reviewed NCR M-5123S dated February 8, 1983, and determined THAT IT was the engineering mechanism to initiate the rework. Brown and Root Inspection Report (BRIR) number N5 SW-1-YD-012 contained evidence of a fit-up gap inspection of the reworked piece that exceeded the limit of 5/32". To compensate for this the leg size was increased by the amount of the gap in excess of 1/16". This increased leg size was verified by the TRT through inspection. Additional documentation supporting the NCR was reviewed and found to be in order.

The TRT reviewed the hanger calculation package to verify TUEC Pipe Support Engineering's (PSE) response that the weld in question would carry the design loads. PSE evaluated the weld design by reducing the weld line model along the sides of the tube by an appropriate amount to account for the excessive gap and corner radius of the tube. No credit was taken for the obtuse weld itself. The resultant weld line model had a factor of safety of 3.9375 on the ASME III Subsection NF code allowable stress. The TRT reviewed the stress calculations for the skewed joint and found them to meet the appropriate codes and standards. The joint was initially

a very low stress joint. The reduction in effective weld length due to the fit-up gap was shown to have no safety significance for this support from a design/engineering standpoint. The documents submitted by PSE to address this concern were reviewed by the TRT and the results of the engineering response were substantiated.

In response to the violation, Brown and Root management issued interoffice memo IM # 25,408 which reemphasizes the mandatory compliance with design and/or procedural requirements and reporting of non-conforming conditions. The NRC TRT reviewed the letter and found it to be responsive to the violation. However, the TRT was not convinced that a QC problem did not exist for similar highly skewed support structures. The TRT interviewed Brown and Root (B&R) Level III inspection personnel, PSE management and the B&R Project Manager and his staff. All individuals interviewed said the current procedures, which do not require a QC hold point for fit-up gap inspection before welding, were adequate for the construction.

The B&R Level III examiner said that QC is required to perform a random sampling of fit-up gaps and that this is routinely performed. The TRT asked all persons interviewed if fit-up of skewed joints on component supports is a problem warranting a revision to the procedure. All persons interviewed replied negative. The Brown

and Root QC inspectors agreed that in must cases a joint with an excessive fit-up gap can be suspected after welding by a qualified inspector. The Brown and Root Project Manager and his staff said the individual who made the weld on the particular hanger (SW-1-102-106-Y33K) was the alleger. This statement was verified in a telephone conversation between the TRT and the Region IV inspector for IR 83-07.

The TRT inspected the HPs for two of the supports identified in the IR and two similar HPs of supports located in the same general area. The documentation reviewed was complete and provided a fabrication tracking history of the support which could be verified on the support drawing. No further evidence of excessive fit-up gap was found.

AP-18 Through AP-22

These allegations were addressed initially by RIV IR 50-445/84-05. Some of the allegations are similar in nature to AH-6 for fit-up gaps. The TRT discussed the report with one of the RIV inspectors. The inspector reiterated the results of the inspection that no problems were found and that the allegations could not be substantiated. The report contains evidence of a detailed inspection of each record contained in the HPs for each support inspected. The welds in question on support MS-1-004-007-C72K were ground and etched for the RIV inspector and found

to have no fit-up gap in excess of code/procedure limits. QC and other related documentation supported this. Support MS-1-001-903-C77W was inspected by RIV for faulty welding and was found to have the required documentation for the alleged cutting and welding. The remaining supports involved in the IR MS-1-003-009-C72K, MS-1-002-005-C72K, MS-1-003-010-C72K, and MS-1-003-007-C72K had similar inspections and conclusions.

The TRT reviewed each support HP and verified the existence of the documents identified in the IR. The TRT also reviewed all the documents in the HPs for those supports in the IR whose HP contents were not listed. The TRT made a personal visual inspection of three of the supports on the main steam system. Inaccessibility of these supports made a close up visual review of the allegations of fit-up gap impossible. A review of the MS-1-003-007-C72K verified that the pipe saddle had been cut into four pieces as authorized by CMC 65236. No evidence to substantiate the allegations was found.

AQW-73 (to be added)

5. Conclusion and staff positions:

The TRT is in agreement with the conclusions and findings of the RIV IRs 50-445/83-07 and 84-05. For IR 84-05 no further evidence to support the allegations could be found. The RIV inspector verified that he had

talked to the alleger after the inspection and that he was satisfied with the results. These allegations have neither safety significance nor generic implications. For IR 83-07 TUEC had submitted a response to the violation. The TRT verified both the rework and engineering design response and finds both items correct. Since the alleger was the individual who performed this work, he had knowledge of the procedural violation and failed to report it. This indicates a problem with the individual and not the inspection process. The response by B&R management was acceptable. These allegations have neither safety significance nor generic implications.

6. Actions Required: None

[redacted]

8. Attachments: None

9. Reference documents:

1. TUEC and B&R procedures: CP-EP-2.1, CP-EP-4.0, CP-EP-6.0, CP-EP-4.6, CP-EP-16.1, CP-QAP-4.1, QI-QAP-11.1-28, CP-CPM-6.96, WPS-11032, CP-CPM-9.10, QI-QP-11.16-1, QI-QP-11.21.1, QI-QP-11.14-09, CP-QAP-12.1, CP-QP-18.0

2. Region IV Inspection Reports 50-445/83-07, 50-445/84-05, 50-445/82-14, 50-445/84-08

3. Support Drawings: MS-1-004-007-C72K, MS-1-003-009-C72K, MS-1-003-010-C72K, MS-1-002-005-C72K, MS-1-003-007-C72K, SW-1-102-106-Y33K, SW-1-012-010-A33R, CC-1-087-004-A33A, CI-1-016-043-S35K, CI-1-016-038-S35K

4. Hanger Documentation Packages: MS-1-004-007-C72K, MS-1-003-010-C72K, MS-1-002-005-C72K, MS-1-003-007-C71K, SW-1-102-106-Y33K, SW-1-012-010-A33R, SW-1-012-009-A33R, SW-1-102-725-Y33K, SF-1-022-005-C46R, RC-1-099-001-C86K, CA-1-028-021-C46R, DD-1-109-035-C46R, RC-1-115-020-C66A, RC-1-101-002-C86K, RC-1-115-025-C66K, VD-1-148-001-C46R, SF-X-135-700-A35R, CH-1-005-005-C86R,

5. CMSs and NCRs for the above listed packages.

6. Piping Isometrics BRHL: MS-1-RB-001, MS-1-RB-003, MS-1-RB-004, SW-1-YD-12, SW-1-AB-02.

7. Support calculational package for SW-1-102-106-Y33K.

10. This statement prepared by: _____ _____

Name Date

Reviewed by: _____ _____

Group Leader Date

Approved by: _____ _____

Project Director Date

DO-1-089-700-S65R, CH-1-001-033-A75R, CH-1-017-003-C86R, DD-1-003-086-S35R, CI-1-016-038-S35K, RC-1-115-009-C76S, CT-1-083-013-S25R, MS-1-003-005-C72K, CS-1-112-705-C41R, CS-1-112-712-C41R, CS-1-112-716-C41K, SI-1-027-702-C41R, SI-1-059-702-C41R, SI-1-066-713-C42R, CS-1-240-007-A42R