Arizona Public Service Company

June 27, 1984
ANPP-29844-WFQ/TJB

U. S. Nuclear Regulatory Commission
Region V
Creekside Oaks Office Park
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596-5368

Attention: Mr. T. W. Bishop, Director
Division of Resident
Reactor Projects and Engineering Programs

Subject: Request for Additional Information
NRC IE Inspection Reports 50-528/84-11 and 50-528/84-10
File: 84-019-026; D.4.33.2

Reference: (1) Letter from T. W. Bishop to E. E. Van Brunt, Jr., dated May 25, 1984.
(2) Letter from T. W. Bishop to E. E. Van Brunt, Jr., dated May 25, 1984.

This letter refers to the request for additional information as identified in the referenced letters received by APS on May 29, 1984. Attached, please find the responses to the Region V Staff review of the subject reports.

Very truly yours,

EEVanBrunt/TJB

E. E. Van Brunt, Jr.
APS Vice President
Nuclear Production
ANPP Project Director

EEVBJr/TJB/clg

attachments

cc: See Page Two

IE-34

cc: Richard DeYoung, Director
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Region V Staff Review of APS Response to Inspection Report 50-528/84-11

Requested Clarifications

1. Regarding Question B, the response states that a summary and evaluation of the results of the walkdown of loose structural bolts are scheduled to be completed by April 20, 1984. Please provide the summary and evaluation.

RESPONSE

During September, October, and November 1983, the USNRC Construction Assessment Team (CAT) conducted inspections which disclosed nonconforming conditions with respect to high strength bolted connections. Included as part of our response to Action Item II.B.1 of the referenced letter was a commitment to perform a reinspection of accessible critical friction type connections in order to provide and evaluate additional data.

Walkdown requirements were established and the program was conducted during March 1984. The scope of 259 connections per unit represents 100% of the connections which require friction type connections in order to transmit horizontal, as well as vertical, loads.

The connections represent three key categories:

1. Structural steel framing (179 connections per unit).

2. Main steamline structural steel supports (48 connections per unit).

3. Safety injection tank upper keyways (32 connections per unit).

Only the connections in the first category have been completely installed. The connections in the second and third categories are reported in part herein. The 100% reinspection of the subject connections reported herein covers 617 of the 777 connections identified as critical connections.

	Unit 1	Unit 2	Unit 3	Total
Structural Steel Framing				
Number of Bolts	1140	1079	1013	3232
(Number of Connections)	(179)	(179)	(179)	(537)
Main Steamline Structural Steel Support*				
Number of Bolts	500	240	0	740
(Number of Connections)	(48)	(32)	(0)	(80)
Safety Injection Tank Upper Keyways**				
Number of Bolts	0	0	0	0
(Number of Connections)	(0)	(0)	(0)	(0)
Total Number of Bolts	1640	1319	1013	3972
Total Number of Connections	(227)	(211)	(179)	(617)

*These structures are currently not completed by Construction in Unit 2 and Unit 3.

**Inspection walkdown is currently incomplete for this evaluation. The results of the walkdown will be documented in DER 84-34.

Three thousand six hundred twenty-seven of the 3,972 bolts (91%) reinspected in categories one and two experienced zero rotation or rotations up to 30 degrees when subjected to the job inspection torque. Eighty-five bolts (2%) were not torque-inspected due to inaccessibility or other prohibitive condition. The remaining 260 bolts (8%) experienced rotation greater than 30 degrees and were reworked as a result of the reinspection process.

I. Structural Steel Framing

The difference in quantities of bolts among units are a result of approved substitutions of welded joints for bolted joints.

The results of the walkdown for 179 structural steel framing connections in each unit are as follows:

SUMMARY OF 3232 STRUCTURAL STEEL FRAMING BOLTS

Amount of Rotation Resulting from Application of Job Inspection Torque

Greater Than	-	0	1/48	1/24	1/12	1/6	1/3	
Less than or equal to	0	1/48	1/24	1/12	1/6	1/3	-	Inspection Not Performed
Number of bolts	2492	131	111	160	97	87	71	83
Percent of Total	77%	4%	3%	5%	3%	3%	2%	2%

The conditions which prohibit inspection of the 83 connectors are as follows: 73 connectors no longer have sufficient space on either side for the torquing tools or do not have a hardened washer under an accessible side; nine connectors no longer have sufficient space to hold the "back side" to prevent both parts from turning simultaneously; one connector had a plain nut instead of a high strength nut. The connector which had a plain nut was determined to be not safety significant however, the nut was replaced via NCR CC4690.

The number of bolts in the framing connections varies from two to 14 (2 columns of 7 rows). The majority of the framing connections have bolt lengths up to and including four diameters. The required nut rotation from the snug tight condition for these fasteners is 1/3 turn. Since there are variations in the conditions of faying surfaces, differences between the calibration bolts and the already installed bolts, and statistical and torque equipment variations, it will be assumed that rotations 1/12 turn or less have negligible effect upon the friction type behavior of the bolt. Based upon the above assumption, the following table shows the number of bolts in a connection reworked by tightening.

SUMMARY OF 537 STRUCTURAL STEEL FRAMING CONNECTIONS
(179 per Unit)

Number of Total Bolts in the Connection	Number of Bolts which Rotated Greater than 1/12 turn															
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
0*	70															70
2	15	3	3													21
3	44	5	0	1												50
4	6	0	0	0	0											6
5	19	2	1	1	0	1										24
6	43	4	6	2	0	1	1									57
7	101	12	0	3	3	1	1	7								128
8	81	10	1	2	1	0	0	0	1							96
9	25	1	1	2	2	0	1	2	0	0						34
10	23	1	3	1	2	0	1	0	0	0	0					31
12	2	0	0	0	0	0	0	0	0	0	0	0	0			2
14	13	3	1	1	0	0	0	0	0	0	0	0	0	0	0	18
TOTAL	442	41	16	13	8	3	4	9	1	0	0	0	0	0	0	537
Percentage of Total	82%	8%	3%	2%	1%	1%	1%	2%	-	-	-	-	-	-	-	100%

*Welded Joint

Of the 25 connections (5%) in which more than one half of the connectors rotated greater than 1/12 turn, 19 were found in Unit 2. Eight of these connections were the same four joints occurring in two of the units. If left uncorrected, the postulated slippage within the slotted holes of these connections under severe loading conditions would not have presented a significant safety condition since small horizontal deflections and redistribution of loads are acceptable.

II. Main Steamline Structural Steel Support

The main steamline structural steel support connections were reinspected in Unit 1 and part of Unit 2. The structures were affected by a Design Change Package (DCP ZC-147) which has not yet been completed in Unit 2 and Unit 3.

The results of the walkdown for 48 main steamline structural steel support connections in Unit 1 and 32 connections in Unit 3 are as follows:

SUMMARY OF 740 MAIN STEAMLINE STRUCTURAL STEEL SUPPORT BOLTS

Rotation Resulting from Application of Job Inspection Torque

Greater than	-	0	1/48	1/48	1/12	1/6	1/3	
Less than or equal to	-	1/38	1/24	1/12	1/6	1/3	-	Inspection Not Performed
Number of bolts	618	44	46	25	4	1	0	2
Percent of Total	84%	6%	6%	3%	1%	-	-	-

The number of bolts in these connections varies from 6 to 18. Using the same guidelines as mentioned for structural steel framing connections, the following table shows the number of bolts in a connection reworked by tightening:

SUMMARY OF 80 MAIN STEAMLINE STRUCTURAL STEEL SUPPORT CONNECTIONS

(48 in Unit 1; 32 in Unit 2)

Number of Bolts which Rotated Greater than 1/12 Turn

Number of Bolts in the Connection	0	1	More than 1	Total
6	44	4	0	48
12	15	1	0	16
16	14	0	0	14
18	2	0	0	2
TOTAL	75	5	0	80
Percentage of total	94%	6%	-	100%

One incompletely tightened bolt within these 6-bolt and 12-bolt connections does not affect the design or integrity of these structures, therefore, all work completed to date is acceptable. The QC inspection reports, which include bolt torquing, will cover the remaining work and will be part of the DCP Construction Inspection Planning package.

III. Safety Injection Tank Upper Keyways

The 32 brackets (per unit) which restrain the upper keys on the safety injection tanks use 192 1-3/8 inch diameter A490 bolts. The data for these bolts is only partially complete and is not included with this report. Preliminary information indicates that these bolts were not completely torqued and will require rework. These bolts will be reported in the Final Report for DER 84-34. Final disposition of the associated NCR's will also be included in the Final Report for the DER.

All of the installed critical high strength friction type bolted connections which are accessible have been walked down and subjected to the special reinspection with the exception of the safety injection tank upper keyways.

The accessible bolts were tightened as required, using the job inspection torque in accordance with the AISC/ASTM specification and Bechtel Specification 13-CM-320. The inaccessible bolts shall be evaluated based upon the results for the accessible bolts of the same number.

All Nonconformance Reports shall be dispositioned based on the results of testing and inspections.

2. Regarding Question C, the response states an evaluation of the sampled concrete expansion anchors concluded that the number of defects is acceptable. Please describe the evaluation process.

RESPONSE

During September, October, and November 1983, the USNRC Construction Assessment Team (CAT) conducted inspections which disclosed nonconforming conditions with respect to installation and testing of wedge-type concrete expansion anchors. Included as part of our response to Action Item II.B.2 of the inspection report was a commitment to perform a reinspection of wedge-type concrete expansion anchor installations in order to provide and evaluate additional data.

Walkdown requirements were established and the program was conducted during March 1984. The random sampling of Quality Class Q installations consisted of a minimum of 500 anchors from Unit 1, 500 anchors from Unit 2, and 100 anchors from Unit 3. The results of 1178 anchor inspections, which are summarized in Tables 1 and 2, demonstrate with a 95% confidence level, that 5.7% of the installed anchors do not conform to the inspection/acceptance criteria.

This sampling method and statistical evaluation are consistent with guidelines established in Appendix A of USNRC IE Bulletin No. 79-02, Revision 2, dated November 8, 1979, which is entitled "Pipe Support Base Plate Design Using Concrete Expansion Anchor Bolts".

Wedge-type concrete expansion anchors are not permitted to be used for Project Quality Class Q piping supports and hanger connections. The statistical sampling is representative of Project Quality Class Q installations other than piping supports and hanger connections. As can be seen in the tabulated results, the sample includes anchors of various sizes from different elevations in six of the major buildings in the units.

The acceptance criteria consists of observation and/or measurement of five parameters which contribute to the overall load-carrying capacity of the anchor:

- Embedment depth
- Distance from a free edge of concrete
- Center-to-center spacing of closely installed groups

- Thread engagement
- Torque

In order to determine the depth of embedment, the walkdown teams recorded the embossed letter stamp on the end of the stud. For those few instances where the length designator was unidentifiable, it was recorded as being unmarked, and the inspection criteria for torque was used to assess its acceptability.

Paragraph 7.4 of Specification 13-CM-307 describes the use of the Capacity Reduction Curve Attachment C for anchors which must be installed closer than the minimum spacing given in Attachment A of the specification. Anchors are considered to be nonconforming if the center-to-center spacing is found to be less than 50% of the specified value (i.e., beyond the cutoff point of the capacity reduction curve).

Lack of thread engagement was recorded when the end of the stud was less than flush with the exposed surface of the nut.

Wedge-type concrete expansion anchors experience a significant loss of initial installation torque over a short period of time. This loss does not affect the structural integrity nor the capacity of the anchor. In order to acknowledge the occurrence of this phenonmenon, inspection torque values used during the reinspection were smaller than the initial installation torque values. An installation is considered acceptable if:

a) The inspection torque can be slowly applied without causing any nut rotation; or

b) The minimum initial installation torque value can be slowly reapplied without causing more than 1-1/2 nut rotations.

Calculations which justify the lower, more realistic, inspection torque values have been originated, checked, and reviewed by Bechtel Civil/ Structural Staff. The torque test acceptance criteria of 1-1/2 turns is given in Revision 1 of Bechtel Civil Design Guide C-2.40 for Concrete Expansion Anchors.

The majority of the nonconforming anchors lie just outside the acceptance criteria. One inspected anchor, which was found with the nut missing, was included as a nonconformance. The other fifty-three (53) nonconforming conditions may cause reductions in the anchor's ultimate capacity but it should be noted that forty (40) of these anchors exhibited adequate load carrying capacity by satisfying the torque test criteria. It should also be noted that Field Change Requests (FCR's) and Nonconformance Reports (NCR's) have not been researched to see if any of these nonconforming conditions were already documented and dispositioned.

Based upon the results of the statistical sampling and engineering evaluation of the nonconforming conditions, the installations of concrete expansion anchors to date are satisfactory, have no effect on safety, and no further reinspection is required. Clarifications to the specification, work plan procedures, and QA/QC surveillance programs will improve the inspection, testing, and documentation of subsequent installations.

All nonconformances disclosed during the walkdown are documented on NCR's for final disposition.

TABLE 1

STATISTICAL SAMPLE OF
CONCRETE EXPANSION ANCHORS

Sorted By Building	Unit 1	Unit 2	Unit 3	Unit 4
Auxiliary Building	133	148	47	328
Containment Building	131	126	7	264
Fuel Building	0	50	4	54
Diesel Generator Building	55	45	7	107
Control Building	145	114	37	296
Main Steam Support Structure	56	73	0	129
Total	520	556	102	1178

Sorted by Size	Unit 1	Unit 2	Unit 3	Total
1/4	3	0	0	3
3/8	278	315	87	680
1/2	154	127	4	285
5/8	76	114	11	201
3/4	9	0	0	9
7/8	0	0	0	0
1	0	0	0	0
Total	520	556	102	1178

TABLE 2

SUMMARY OF NONCONFORMING INSTALLATIONS

Inspection Parameter	Number of Nonconformances	Notes
Lack of minimum embedment	25	1
Lack of minimum edge distance	8	1
Lack of minimum thread engagement	5	
Lack of minimum spacing	3	
Do not pass torque inspection	14	1
Total	54	

Note for Table 2

1. One anchor which exhibited both insufficient embedment and edge distance is counted as one nonconformance in the total.

3. Again regarding Question C, the response states that craft training is not required due to the confidence level, verified by walkdowns, that less than 5.7% of the installed anchors do not conform to all specifications.

   This error rate is presumably that which was achieved after QC inspection and it can be assumed that the craft error rate was higher. Since Criterion II of 10 CFR 50 requires the QA program shall provide for training of personnel performing safety related activities to assure proficiency is maintained, and since ANSI N45.2, paragraph 3 states that attainment of quality objectives is accomplished by those who have been assigned responsibility for performing work, it would appear that craft training would enhance the attainment of quality objectives. Please provide further discussion regarding craft training.

RESPONSE

Craft training was conducted on April 10, 1984 in a Quality Talk session. This session specifically addressed expansion anchor installation providing a positive reinforcement for all craft. The conclusion by engineering that craft training was not required was based on an engineering estimate of the crafts performance. The Quality Talk Agenda is attached for your review.

REGION V STAFF REVIEW OF APS RESPONSE TO REPORT 50-528/84-10

Subject

Violation A - Unqualified QC

Requested Clarification

1. The APS response to Violation A, states the root problem was identified as being related to QC within the welding discipline, but did not explain how this conclusion was reached.

2. Since the licensee's response states that one other instance was found of an acceptance inspection of mechanical work by three different uncertified QC inspectors, and since the 1982 Torrey Pines Technology audit identified an additional example of instrumentation QC inspectors accepting weld repair work for which they were not certified, it appears that depth of the uncertified QC inspector problem needs to be fully understood.

   Please explain the basis for the conclusion that the root problem was related to QC within the welding discipline and provide further explanation or assurance that other QC disciplines are not involved.

3. Since the APS response states that the Project Quality Control Engineer directed the QC inspector to perform inspections for which he wasn't qualified, what management actions have been taken to preclude a repeated improper direction?

Reponse

1. Results of the investigation into the extent of the problem identified one more instance involving three (3) QCEs working off-shifts, performing mechanical inspections for which they were not certified. As in the case of the original problem, these QC engineers were directed to perform the inspections as an expedient use of manpower. The off-shift was not staffed with a mechanical QCE and when the work occurred, the welding QCE's normally assigned to the shift were directed to cover the work. For other discipline work (Civil and Electrical), the off-shifts were staffed with the appropriately certified inspectors. Therefore, the root cause was determined to be related to welding QC in that (1) incomplete QC staffing and (2) improper direction of the PQCE.

2. The 1982 Torrey Pines Technology Audit findings were similar in nature but are unrelated to this item of noncompliance.

TPT PFR-14 noted that electrical inspectors accepted welding or rework tags when they were not qualified to inspect welds. The NRC concluded that unqualified inspectors were used to inspect welds. This description is not an accurate portrayal of the situation. In actuality, the inspection of weld quality performed using a rework tag was not documented. To understand this situation, the following sequence of events should be reviewed:

a. An instrument installation was completed.

b. The Welding QCE inspected the welds for weld quality and noted his acceptance on the Instrument Installation CIP.

c. The Instrument QCE inspected the weld for configuration, bolting, location, etc., and found improper configuration which involved welding.

d. The Instrument QCE completed a rework tag to rework the configuration to meet drawing requirements. This was a mistake, since tags cannot be used for work involved in welding.

e. The rework was performed. The Instrument QCE inspected the rework (for configuration) and stamped the tag and CIP. He may have called a Welding QCE to inspect weld quality but, if so, this is not documented. Therefore, there is not a documented inspection of weld quality. The Instrument QCE simply inspected the configuration for which he had the original problem.

f. It should be noted that to prevent a recurrence of this situation, the welding inspection (WPP.QCI 302) was changed to the last inspection, thereby, eliminating the possibility of rework after weld quality inspection.

It can be concluded that the combination of a procedural error and an installation error resulted in a lack of inspection rather than an inspection by an unqualified inspector. These findings were thoroughly documented, investigated and resolved. (Ref: CAR No. C82-37-D and C82-38-D).

The BCI Project Quality Control Engineer is interviewing personally each QCE from all disciplines. The interviews are to determine if, in the past, the QCE had made inspections in areas for which he or she was not certified. The records of the interviews are maintained by the PQCE and are available for review. The results of the review, to date, show that other than those inspectors currently identified, no QCE has accepted work for which they were not certified.

As an additional action, BPC Quality Control is reviewing 250 randomly selected, completed Quality records from each discipline-excluding Mechanical, which has been completely reviewed. The review will compare the stamping on QCE's certification to the task being accepted. The review is expected to be completed by July 31, 1984.

3. The BCI Project Quality Control Engineer who issued the direction to permit the uncertified inspections is no longer employed at the Palo Verde jobsite. The current Project Quality Control Engineer issued Quality Control Directive No. 2 on February 29, 1984, providing instructions to the Quality Control Engineers on the requirements of the Quality Control Certification Program. This directive also instructed all Lead Quality Control Engineers to provide training on this subject. This training has been accomplished and is documented in each Quality Control Engineers' training record. The Directive was followed up with a Quality Control program revision adding the certification requirements to WPP.QCI 2.24 through the issuance of PCN NO. 11 on March 12, 1984.

Subject

Violation B - Improper HVAC Supports

Requested Clarification

1. The APS response states that no further action will be taken regarding support 301-35T-221 since a referenced drawing permits a gap. Please provide a brief explanation of the technical basis for acceptance in this case.

2. The APS response addresses actions to upgrade the Bechtel surveillance of Waldinger, but does not address the adequacy of the APS/Bechtel QA audit programs. The Bechtel full-scale audit of Waldinger Company conducted June 6-13, 1983 resulted in several findings and corrective action requests. However, a review of the quality element checklist used for the audit shows that the attributes primarily checked were records and procedures, and very little hardware examination.

   Per the cover letter of the above Bechtel audit (reference File No. Q.2183-TWC-S-16, dated June 17, 1983), a previous Bechtel Quality Assurance finding (QAF 82-TWC-S-22-A, dated 8/11/82) required reinspection of all quality class HVAC supports.

   Please clarify whether the reinspection of Unit 2 HVAC supports had been completed and please provide your assessment of the Bechtel and APS QA audit programs in regards to identifying the cited hardware deficiencies.

Response

1. Upon a request from the NRC for explanation of the technical justification used for acceptance of the gap discovered in support 301-35T-221, Bechtel Engineering reviewed the connection and found that The Waldinger Corporation (TWC) was incorrectly interpreting the drawing detail. The gap criteria could only be applied to a welded connection and not a bolted connection. The problem with TWC incorrectly implementing Bechtel design documents has previously been identified as part of Deficiency Evaluation Report (DER) 84-13.

   Accordingly, TWC and Bechtel Engineering have reviewed the violation and we amend our initial response as follows:

   Corrective Steps Taken and Results Achieved

   The specific nonconforming condition for hanger 301-35T-221 has been documented on Waldinger Deficiency Report No. 573F/II. Additionally, the same hanger was inspected and the connection detail was found acceptable in Units 1 and 3.

As a result of the generic problem, Bechtel has taken the following actions:

1. Bechtel Engineering reviewed and established a revised design baseline for allowable alternate configurations of HVAC supports based on input by TWC.

2. Bechtel Engineering has completed a system walkdown in Unit 1 and is currently performing a system walkdown in Units 2 and 3 to identify and document Quality Class Q HVAC supports which deviate from the revised design baseline.

3. Supports that deviate from the revised design baseline will be resolved as follows:

   a. A Bechtel FCR is prepared for each support deviating from the revised baseline.

   b. The FCR is disposition to either "use as is" or "rework" based on the results of Engineering calculations.

   c. If dispositioned as "rework", the reworked support is recertified under TWC's quality program following the completion of the rework.

Actions Taken to Prevent Recurrence

TWC QA program procedures were reviewed, as required, to incorporate the revised design baseline. TWC is providing indoctrination and training for the revised procedural requirements and revised design baseline and, in the interim, no quality class Q support will be installed until the revised program is in place.

To provide for a full engineering review of subcontractor technical responses, additional emphasis has been placed with the responsible Assistant Project Engineer to assure that the appropriate review is obtained.

Date When Full Compliance Will Be Achieved

The subject support will be reworked by July 2, 1984. The final report for DER 84-13 is scheduled for December 14, 1984, with an interim report, addressing Unit 1, to be issued by September 19, 1984.

2. The following is in response to the NRC request for assessment of the Bechtel and APS QA Audit Programs, and the status of the Unit 2 HVAC reinspection per the disposition of QAF 82-TWC-S-22-A.

   o A review of the Bechtel Quality Assurance Program relative to identification of subcontractor hardware deficiencies was made and assessment of QA Audit/Surveillance records show the following:

     A total of 141 QA Audits were performed from 1980 to present and one hundred and eleven (111) audit findings were documented on CARs. Twenty-six (26) findings were written against hardware deficiencies and eighty-five (85) identified programmatic deficiencies.

     A total of 693 QA surveillances of subcontractor work were performed from 1982 to present. Four hundred and forty-one (441) surveillances were hardware-related as opposed to two hundred and fifty-two (252) for programmatic areas. Ninety-eight (98) surveillances resulted in subcontractor taking on the spot correction for seventy-two (72) hardware-related problems. Surveillance problems of significant nature resulted in twenty (20) CARs, of which eight (8) relate to corrective actions for hardware deficiencies.

   Quality Assurance is revising their Waldinger (HVAC) audit checklist to include more elements focusing on configuration control and hardware installations. This will be accomplished by July 6, 1984. As each subcontractor comes due for an audit, the audit checklist is reviewed to determine the adequacy of the checklist for configuration and hardware control. In addition, BCI QA is currently in the process of scheduling more "team audits" to utilize technical specialists as well as coordinating surveillances/audits with Field Quality Control inspectors to place increased emphasis on installation activities.

   o The recent reorganization within APS Quality Assurance created an Audit/Monitoring Department. The department is subdivided into three groups: audits, monitoring and test monitoring. The audit group will continue to perform programmatic audits to ensure overall controls are in place and properly documented. The monitoring group has been tasked with verifying in-process implementation of the various programs. This group will provide for verification of hardware installations on a random sample basis.

     It is expected that the programmatic coverage provided by the audit group, coupled with the recently implemented in-process monitoring by the monitoring group and QC inspections, will provide an increased confidence level of all field installations and practices.

   o The reinspection of Unit 2 HVAC supports, as committed to in QAF 82-TWC-S-22A, involves heat number tracibility verification only, and is approximately seventy percent (70%) complete.

Subject

Deviation - Use of Unqualified Duct Sealant

Requested Clarification

1. "The APS response describes corrective action which addresses the area of sealant environmental qualification and use. Since the APS response also states the sealant was used by craft in unauthorized places, please clarify what assurances there are that other unauthorized work using the sealant was not performed".

2. "The APS response states that Waldinger is conducting a review of the usage of sealant in duct systems. The response does not provide a basis for assuring that the sealant was the only material which was not environmentally qualified. Please provide further explanation on the adequacy of controls for environmental qualification of materials in HVAC systems".

Response

1. The Waldinger quality program provides for procedures that control work and verifications. In a review of why the procedures failed to control the use of the cited sealant, it was identified that one Waldinger employee directed, without procedural authority, the use of the unapproved sealant. This was determined through direct interviews with all levels of Waldinger Management at the site, supervisors and available craft personnel. The results of the interviews were as follows:

   a) All management and supervisory personnel were aware of the approved uses for sealants.

   b) Craft personnel were aware of the approved uses of sealants.

   c) Craft personnel stated that they were directed by the identified Waldinger employee to utilize the sealant in the subject case. This occurred prior to the pressure decay test of the Control Room Essential Duct System. There were no other cases identified by the craft where similar direction was given.

   To determine the extent of the use of unauthorized sealants, Waldinger has implemented procedure FQCP 10.2 - 4.8 to reinspect the Quality Class Q duct and document the use of sealant. Unauthorized sealant types identified will be removed or environmentally qualified and Bechtel approval obtained for usage.

Waldinger has reviewed work and storage areas and removed sealants to a central location under the direct control of the Waldinger Project Engineer and surveyed by Waldinger Quality Control. Additionally, Waldinger will provide indoctrination and training to craft, Engineers, and Quality Control Inspectors regarding the correct usage of approved sealant.

2. TWC and Bechtel have performed a review of materials and items procured by the 13-MM-598 contract to determine what environmental qualifications are required with the following results:

   a) Quality Class Q I&C equipment and automatic dampers have been environmentally qualified, and the results submitted to Bechtel Engineering.

   b) Quality Class Q Joy Vaneaxial fan motors have been environmentally qualified, and the results submitted to Bechtel Engineering.

   c) The only other materials/items identified which require environmental qualification are:

      - Duct flexible connection and duct gaskets. Environmental qualification has been completed for these items, and results submitted to Bechtel Engineering.

      - Sealants for duct: Environmental qualifications will be completed as a result of above-referenced corrective action (See Item 1).

QUALITY TALK

QUALITY LINE Ext. 4141

April 10, 1984

GOALS

Experts tell us that in order to accomplish what we want in life we must set goals, then develop a plan to achieve them. For example, the fisherman who first decides what kind of fish he wants to catch then figures the best location, depth, water temperature, time of day, weather conditions, bait and fishing technique will usually catch more fish than one who just drowns a worm and waits for something to happen.

So it is with Quality. The person who knows what he is supposed to do, has the necessary skills, knowledge, tools, materials, instructions, and the attitude of "I will do it right the first time" will do a better quality job than one who just tries to get by with minimum effort.

One of the Quality Talk groups reported a very good discussion on goals/objectives. The group leader suggested that each of us ask ourselves these questions.

1. What are your aims, goals and objectives?
2. How do you propose to acquire the knowledge, skills, and human relations needed to reach your goals/objectives?
3. What can you do to improve communications with those you work with?

QUALITY PROBLEMS

We have had requests to include more specific quality problems in the Quality Talk. The intent here will be to inform everyone of what some of the problems are so that we can avoid similar problems in the future.

1. When Laborers were removing guard posts from the ground, a post was dragged and dropped on a wrapped pipe. Polkien coating was torn and damaged down to the pipe surface. (Solution: when working around other people's equipment be careful not to cause any damage.)

2. Craft performed work (grinding) on guide brackets prior to an NCR disposition. An NCR hold tag was on the bracket at the time of grinding. (Solution: do not violate tagging procedures.)

3. The upper and lower oil reservoir filler, drain pipe and site guage were installed with a "never sieze/N-5000" type compound as a thread lubricant. (Solution: make sure that all the materials are correct for the job.)

QUALITY LEADER

We have received a lot of requests for information on concrete expansion anchors. If your group does not use them, then disregard this page. If you need to cover this information it may be best to have an Engineer knowledgeable of anchor bolt requirements present this. This page does not cover all anchor bolt problems. If you have any other questions, ask and we will get an answer.

HILTI KWIK BOLT EXPANSION ANCHORS

1. Hilti Kwik bolts used to support permanent plant equipment or components shall only be installed as shown on Engineering approved documents (drawings, FCR's, NCR's DCP's, Specs, etc.).

2. Kwik bolts installed as construction aids need not be removed unless an interference exists.

3. Holes for Kwik bolts shall be the same diameter as the Kwik bolt and a minimum of one bolt diameter beyond the minimum embedment.

4. Holes should be drilled using Hilti Carbide bits incapable of cutting rebar. If rebar is encountered every effort shall be made to relocate the hole to avoid the rebar. If rebar cannot be avoided contact the responsible AFE for direction.

5. When checking the minmum spacing between Kwik bolts be sure to survey the area for previously installed bolts.

6. Kwik bolts may be installed next to embedded items (i.e. embed plates, angles, unistrut) if the wedges are located beyond the depth of the embed.

7. Kwik bolts installed next to lined sleeves or if the wedges are not located beyond the embed should be located at least one diameter spacing from the embed.

8. Engineering approval is required to install a Kwik bolt through an embedded item.

9. QC is now responsible to inspect 100% of all "Q" Class Kwik bolt installations. There are no QC inspection hold points other than not covering up the completed installation prior to QC verification.

10. All Kwik bolts should be torqued at the time of installation to the specification requirements.

11. More specific information (i.e. spacing, embedment length, torque value, etc.) should be obtained from the responsible AFE.

12. Abandoned holes must be dry packed before they are covered by an attachment.

13. The Kwik bolt length indicating symbol shall not be damaged such that the symbol is no longer identifiable.

14. Leveling nuts shall not be used with Kwik bolts.

15. Minimum spacing between different diameter Kwik bolts shall be half the minimum spacing of the smaller diameter plus half the minimum spacing of the larger.