

DEC 19 1984

7c
FOIA-85-59
C/607

MEMORANDUM FOR: Vincent Noonan, Project Director
Comanche Peak Technical Review Team

FROM: L. C. Shao, Group Leader
Civil/Mechanical Group
Comanche Peak Technical Review Team

SUBJECT: "COMMENTS ON ACTION ITEMS IDENTIFIED BY [REDACTED]
OF CASE DURING NOVEMBER 7, 1984 MEETING" 7c

REFERENCE: Memorandum from Vince Noonan to Distribution, "Transmittal
of Action Items as Delineated in Transcript of Meeting With
J. Ellis on November 7, 1984," dated December 7, 1984.

We have reviewed the above referenced memorandum and the transcript of the subject meeting with emphasis on the completeness of the action items listed in Enclosure 2 to the memo and clarity of issue characterization. We offer the following comments:

1. Enclosure 2 to the referenced memo may not have listed all issues raised by [REDACTED] of CASE during the November 7, 1984 meeting. Specifically, seven additional issues not included in Enclosure 2 are listed in Attachment I to this memorandum for A. Vietti's information and follow up. We suggest that Attachment I be appended to Enclosure 2 for ease of our future tracking work.
2. We have also marked up Enclosure 2 as Attachment II with names to further clarify task assignments.
3. We have completed a scoping review of [REDACTED] December 4, 1984 letter and attachments (identified as item 19 of Enclosure 2 to the referenced memo). The review resulted in identification of thirteen (13) civil/structure related issues which are listed in Attachment III. We intend to follow up on these issues as well as the ones shown on Attachments I and II. Issues identified in [REDACTED] December 4, 1984 letter which are related to Mechanical and Piping area are being evaluated and will be disposed in a separate memorandum.

In view of the fact that some seventeen (17) issues in the civil/structural area have been identified by CASE during the meetings (see Attachments I and II) and eight (8) additional issues have been raised in the CASE letter dated December 1, 1984 (see Attachment III), the civil/structural staff needs additional support of resources to timely resolve the issues. The additional resources needed are:

1. A full time NRC staff with civil/structural background for approximately 4 staff months.

OFFICE	
SUPPLNAME	8512200016 851203
DATE	PDR FOIA GARDE85-59 PDR

V. Noonan

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DEC 19 1984

2. High priority implementation of a proposed BIL Technical Assistance Program forwarded to C. Poslusny of your office on November 16, 1984 (see Attachment IV).

Your prompt action in providing the requested resources will be appreciated.

Original Signed by
L. C. Shao

L. C. Shao
Civil/Mechanical Group Leader
Comanche Peak Technical Review Team

Enclosure: As stated

cc: R. Wessman
A. Vietti
C. Poslusny
D. Jeng
S. Hou

DISTRIBUTION:
LShao

DISK - DGP10 Job - Shao Noonan

OFFICE	TRT	TRT					
UPNAME	DJeng	LShao					
DATE	12/14/84	12/19/84					

Action Items	Transcript Pages	Responsibility
20. Were Richmond inserts installed in 2500 psi concrete	109 (line 9 thru 15)	L. Shao/D. Jeng
21. In Damage Study Program was a 2 to 1 (rise to run) projectile range considered.	110 (line 23 thru 24)	L. Shao/D. Jeng
22. Why was some concrete that was committed to be retested not. In particular Reactor #2 cavity wall.	86 (line 4-9)	L. Shao/D. Jeng
23. CASE questions validity of Schmidt hammer tests	101 (line 12)	L. Shao/D. Jeng
24. Where was 2500 psi concrete used	93 (line 4 thru 8)	L. Shao/D. Jeng
25. General cracking of concrete	159 (line 20 of page 159 thru line 11 of page 160)	L. Shao/D. Jeng
26. At a doorway between the Containment and Safeguards building no gap exists, the buildings are integrally attached.	134 (line 12 thru 19)	L. Shao/D. Jeng

DO NOT DISCLOSE

Enclosure 2

Action Items	Transcript Pages	Responsibility
1. Review for information discussions on QA/QC failures in areas of: Civil/Structural Miscellaneous Electrical Test Programs	9,90,106 33-35 66	H. Livermore
2. Look at the designed and installed supports for HVAC system ducts in containment. (Specifically, vertical and laterals)	25,76-77	R. Bangart
3. Determine the temperature equipment inside containment is qualified to withstand.	28	R. LaGrange
4. Investigate CSB procedure for reviewing containment integrated leak rate testing	59-64	A. Vietti/CSB
5. Investigate inspections and reports issued by the VIB on CP vendor Bohson Co.	78-79	A. Vietti/VIB
6. NCR E-81-00088, dated 3/25/81 (AE-55) (document provided)	79	J. Calvo
7. Case Exhibit 658 (AE-56) (Locating through PDR)	81	A. Vietti/J. Calvo
8. Check if when CP used 2500 psi concrete strength mix did the analysis reflect 2500 psi or 4000 psi	87,91	L. Shao/D. Jeng*
9. Visit plant site to see what actions the applicant has in progress on the control room ceiling	114	L. Shao/D. Jeng*
10. Check if Gibbs & Hill used a 1.5 factor in all static load calculations (if not why didn't Cygna notice in their review.)	115-119	Action/Information L. Shao/D. Terao/ D. Jeng/P.T. Kuo/F. Rinaldi*

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- 2 -

Action Items	Transcript Pages	Responsibility
11. Check if in containment allowable stresses go beyond yield for cable tray supports. (TU used a generic design with allowable stresses for the auxiliary building contrary to FSAR commitments.) (Cygnia did not address)	119-122	Action/Information * L. Shao/D. Terao/D. Jeng/ * P. I. Kuo/F. Rinaldi
12. Check if when TU attached their cable trays to the support and structural steel, they drilled a hole through the flange of the channel which reduces the section modulus which has not been accounted for in calculations. Check some of the cable tray supports in the field. (Cygnia did not address)	124	Action/Information L. Shao/D. Terao/D. Jeng *
13. Liner Plate	127	L. Shao/ D. Jeng *
14. NCR on a 10 CFR 50.55(e) that TU did not report. (Information transmitted from Gagliardo to L. Shao)	138	L. Shao/D. Jeng/S. Hou * ** A. Vietti
15. Crack in the basemat (AC-44) (documentation provided during meeting)	148-166	L. Shao/D. Jeng *
16. Specific problems with concrete (documentation provided during meeting)	167-169	L. Shao/D. Jeng * * H. Livermore
17. Minimum wall violation for piping (AP-29) (documentation provided at meeting)	171	L. Shao/S. Hou *
18. ANI Reports (documentation provided at meeting)	174	H. Livermore/ L. Shao (if needed)/S. Hou *
19. Package from [REDACTED] received 12/4/84		L. Shao/D. Jeng/S. Hou *

* These names added by Civil/Structural Staff to clarify task assignments.

** Please locate a copy of the NCR Rev. 0 mentioned by Walsh on Page 138 of the Nov 7, 1984 Meeting Transcript, Vol II.

Attachment III

Action Items in the Civil/Structural Area Identified from CASE 12-1-84 Letter

The following is a list of concerns identified from the CASE 12-1-84 Letter and Attachments. The Attachments are pages VII-16 through 23 and XXVII-42 through 48 of CASE's Proposed Findings and Fact and Conclusions of Law (Walsh/Doyle Allegations) pertaining to Richmond inserts. The following NCR's were submitted as supporting information by CASE.

<u>Action Item</u>	<u>Page</u>	<u>Comments</u>
1. Schmidt hammer testing CASE wants to know: 1) Under whose direction tests are conducted 2) Credentials and ability of individuals performing tests 3) Involvement of NRC in testing	3 of letter	New Item. (This item is related to AC-52 discussed in C/S Category No. 3).
2. NCR C-82-00523 Reinforcing Steel missing from the Unit 1 containment wall Elev. 820'-8	Separate Attachment	New Item
3. NCR C-520 Inadequate concrete cover over rebar	XXVII-42	New Item
4. NCR C-669 missing reinforcing steel in Unit 1 reactor cavity	XXVII-42	This NCR was previously addressed in C/S Category No. 6 No action required
5. NCR C-809 6-#10 additional bars omitted from a beam in Auxiliary Building	XXVII-43	This NCR was previously addressed in C/S Category No. 6 No action required.
6. NCR C-810 9-#9 and 2-#4 additional bars omitted around elevator shaft door in Unit 1.	XXVII-43	This NCR was previously assessed in C/S Category No. 6. No action required.

<u>Action Item</u>	<u>Page</u>	<u>Comments</u>
7. NCR C-811 46-#9 bars omitted from wall in excess letdown heat exchange room.	XXVII-43	This NCR was previously addressed in C/S Category No. 6. However, additional information is provided by CASE. C/S category No. 6 may need revision because of the new information.
8. NCR C-1314 & DCA-5080 57-#5 dowels were bent and 10-#5 dowels broken off at concrete.	XXVII-44	New Item
9. Is there a potential tie in between NCR C-669 and NCR C-1314 with the base mat crack in Unit 1?	XXVII-44	New Item
10. CASE states the above examples of omitted rebar are only a sampling of such deletions. They appear to have a general concern that no analyses were performed justifying these omissions.	XXVII-44	New Item
11. CASE lists four allegations made which were investigated in IE Report 79-25: AC-32, AC-33, AC-38 and AC-39.	XXVII-46	These allegations have been addressed in C/S categories 4, 6 and 12.
12. CASE expresses a concern about unauthorized cutting of rebar.	VII-23	Previously addressed in C/S Category 15. No action required.
13. CASE also discusses the omission of shear tie reinforcement at the inter- section of the dome and wall in the Unit 2 containment. They cite this as another example of QA/QC failure.	XXVII-45	New Item
14. In the discussion of the allegation (AC-38) about missing shear tie reinforce- ment in Unit 1, CASE does not accept the conclusion that the allegor was probably referring to the above mentioned incident in Unit 2.	XXVII-47	Previously addressed in C/S Category 6. The assessment may need revision because of CASE concerns.

ROUTING AND TRANSMITTAL SLIP		Date	
		November 16, 1984	
TO: (Name, office symbol, room number, building, Agency/Post)		Initials	Date
1.	Chet Poslusny		
2.	cc: R. Vollmer		
	J. Knight		
3.	V. Noonan		
	G. Lear		
4.	D. Jenn		
	bcc: R. Hinoque		
5.	D. Ross		
	G. Artale		
Action	File	Note and Return	
Approval	For Clearance	Per Conversation	
As Requested	For Correction	Prepare Reply	
Circulate	For Your Information	See Me	
Comment	Investigate	Signature	
Coordination	Justify		

CONFIDENTIAL

REMARKS

SUBJECT: BNL TECHNICAL ASSISTANCE CONTRACT FOR TRT CIVIL/STRUCTURAL STAFF

Per our phone conversation of 11/14/84 I am enclosing the attached for your follow up. If you have questions regarding the subject matter, please contact D. Jenn, or me at X37910.

DO NOT use this form as a RECORD of approvals, concurrences, disposals, clearances, and similar actions

FROM: (Name, org. symbol, Agency/Post)	Room No.—Bldg.
L. Shao, DD/DET/RES <i>[Signature]</i>	Phone No. 443-7909

5041-102

U. S. G. : 1981 O - 265-225 (1-4)

OPTIONAL FORM 41 (Rev. 7-76)
Prescribed by GSA
FPMR (41 CFR) 101-11.206

A Summary of Proposed BNL Technical Assistance Program
Civil/Structural Allegations

INTRODUCTION:

The Civil/Structural staff of Comanche Peak Technical Review Team (TRT) has completed its review of 57 allegations and issued seventeen (17) draft SSERs. As a result of the review, the TUEC was requested to complete five action items identified in the SSERs. In order to assess the adequacy of TUEC's response to the action items, TRT needs independent seismic analysis capability which the present TRT does not possess. Therefore, it is proposed that BNL be contracted to provide TRT the needed seismic analysis capability as well as other general analytical support.

WORK SCOPE:

The tasks to be performed by BNL under the technical assistance contract are:

- have* → a. To review the seismic analysis results pertaining to seismic air gap issue.
- get* b. To review the results of seismic analyses of control room ceiling elements.
- TUEC?* c. To perform independent seismic analysis pertaining to seismic Category II and non-seismic conduits.
- d. To audit the TUEC's damage interaction study program.
- e. To evaluate and dispose of issues resulting from the activities of the above items a through d.
- f. To resolve several analytical concerns raised by Juanita Ellis of CASE.
- g. To provide necessary testimony and analytical support on future ASLB related proceedings.
- h. To resolve new allegations or concerns which require analytical capability.
- i. To assist TRT in evaluating issues related to
- (a) CYGNA #10, 11, and 12
 - (b) steam generator lateral supports,
 - (c) cable tray supports and
 - (d) other Comanche Peak hearing issues which may arise in the future.

EFFORT:

It is expected that several BNL staff efforts would be needed during the next few months. The cost is estimated as \$100,000.00.

SCHEDULE:

The contract should be processed with high priority to support the TRT effort. BNL should make its staff available within the next two weeks.

*Item "i" is added to address CASE issues.

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Attachment III


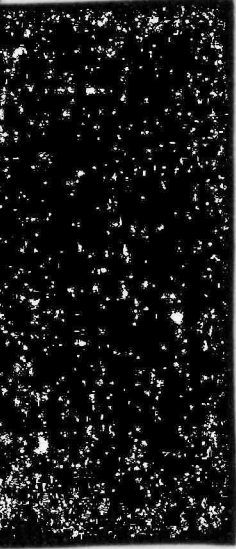
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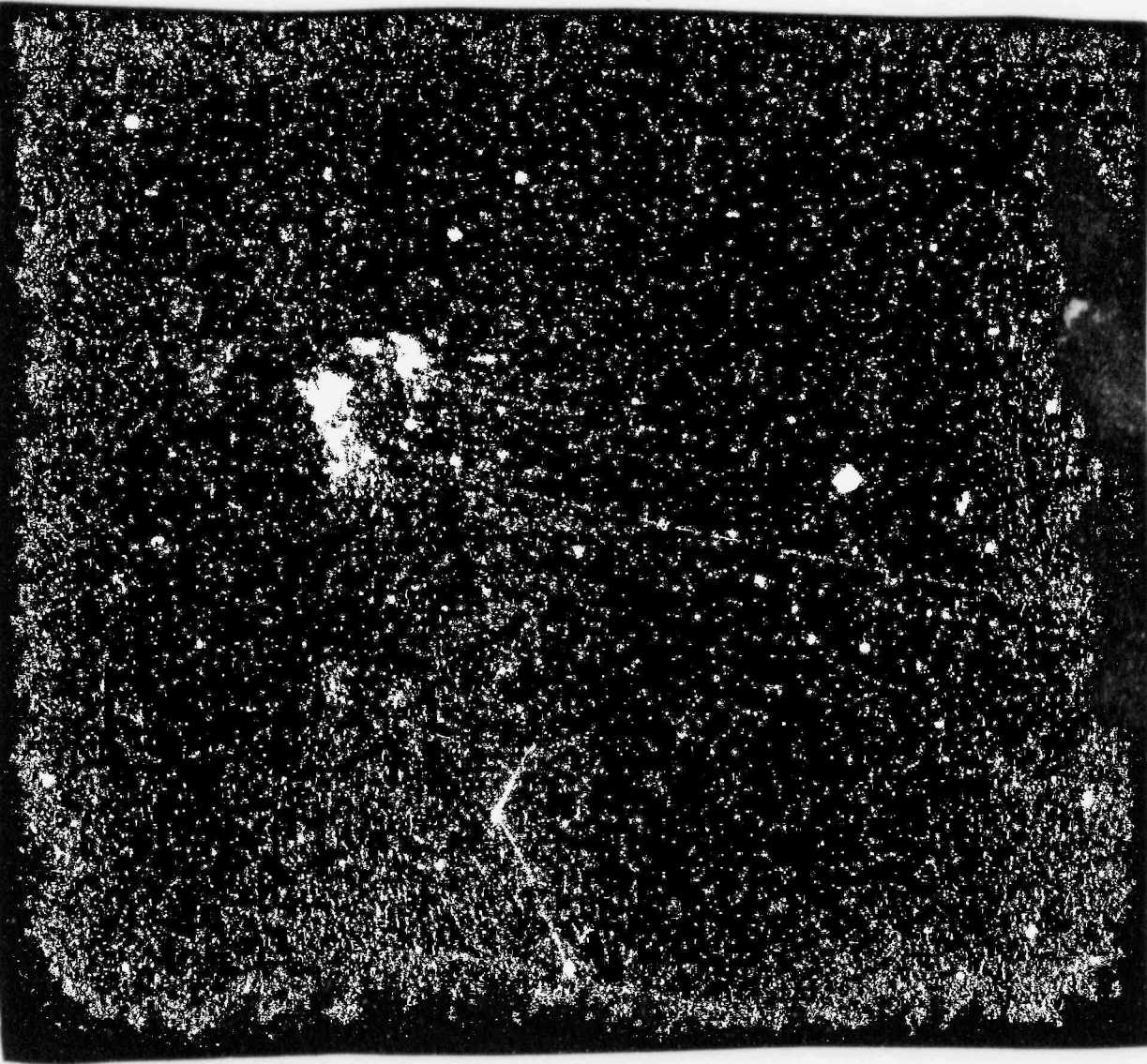
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Summary of Civil/Structural Group
QA/QC Related Findings

Category No.	Category Title	Potential QA/QC Breakdown	Characterization of Violation	TUEC Action Required; if none, the basis for not requiring action on the part of TUEC
1	Inadequate materials used in concrete	Unauthorized quantities of water added to concrete mix without QC approval.		
*3	Poor weather conditions	Concrete was placed in the Unit 1 dome without approval or inspection of QC personnel.		

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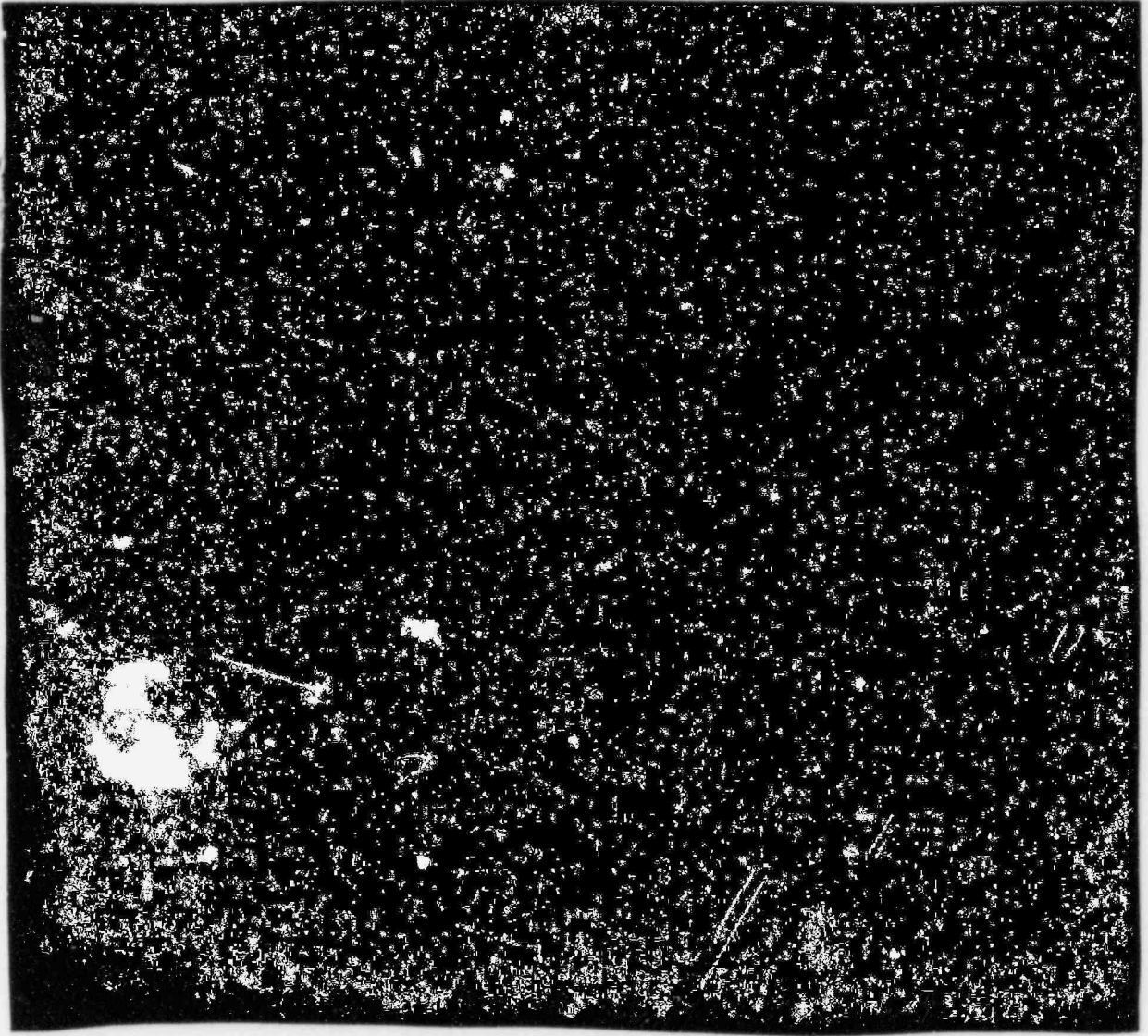
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Category No.	Category Title	Potential QA/QC Breakdown	Characterization of Violation	TUEC Action Required; if none, the basis for not requiring action on the part of TUEC
*4	Concrete voids/ cracking/crumbling	Concrete that was to be retested by QC was not.		
	Inadequate control of the consolidation of concrete.			
5	Miscellaneous Concrete	Grouted plates may have been loaded before the grout had properly gained strength through aging.		

Category No.	Category Title	Potential QA/QC Breakdown	Characterization of Violation	TUEC Action Required; if none, the basis for not requiring action on the part of TUEC
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*6 Rebar improperly installed or omitted Reinforcing steel may have been used prior to proper QC receipt of inspection.

Omitted reinforcing steel was not detected prior to concrete placement.



Category
No.

Category Title

Potential QA/QC Breakdown

Characterization of Violation

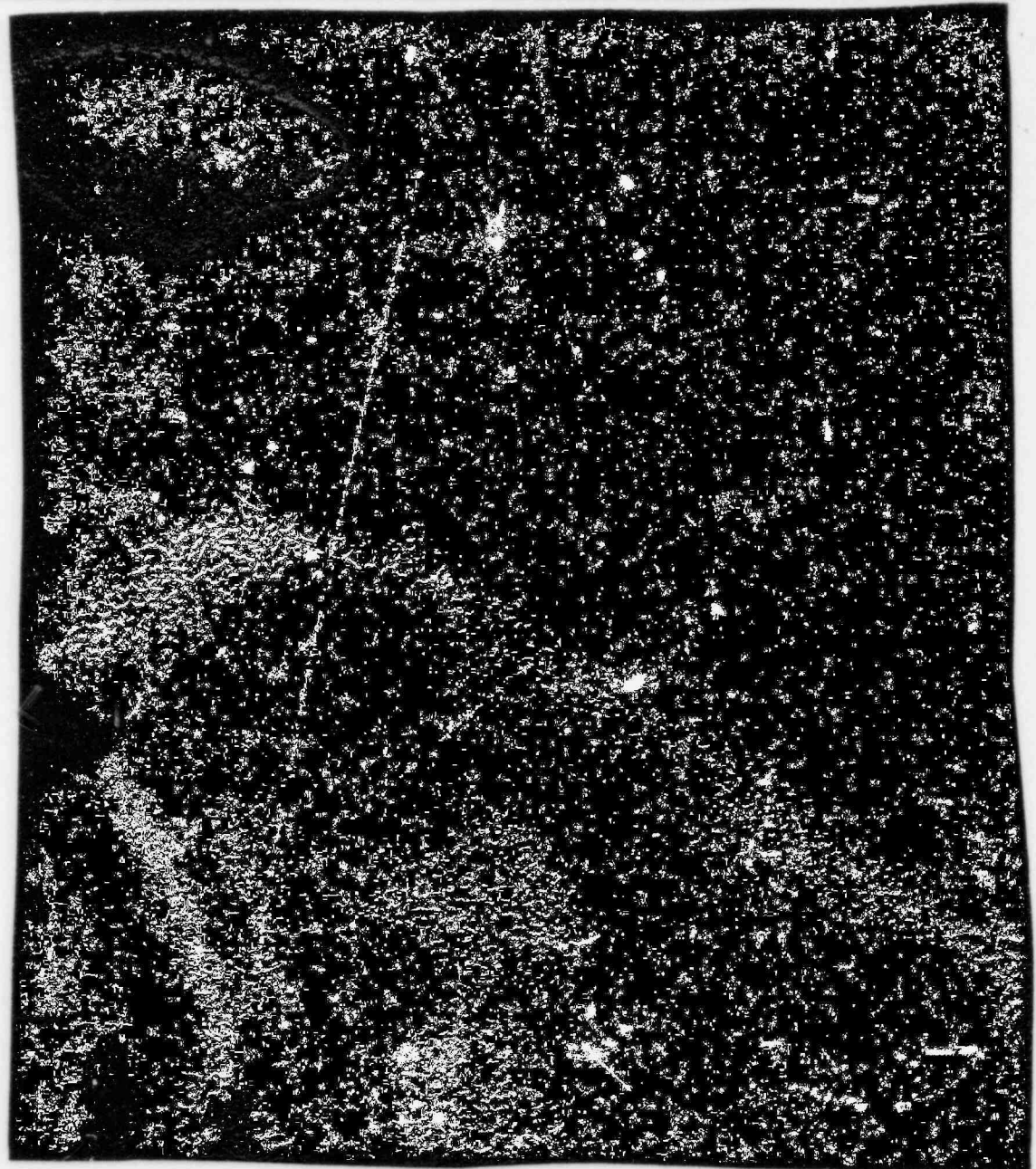
TUEC Action Required; if none,
the basis for not requiring
action on the part of TUEC

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(Cont.)

*7 Uncontrolled repair of concrete Uncontrolled and undocumented repairs.

*8 Falsification of records Concrete test lab reports may have been falsified.



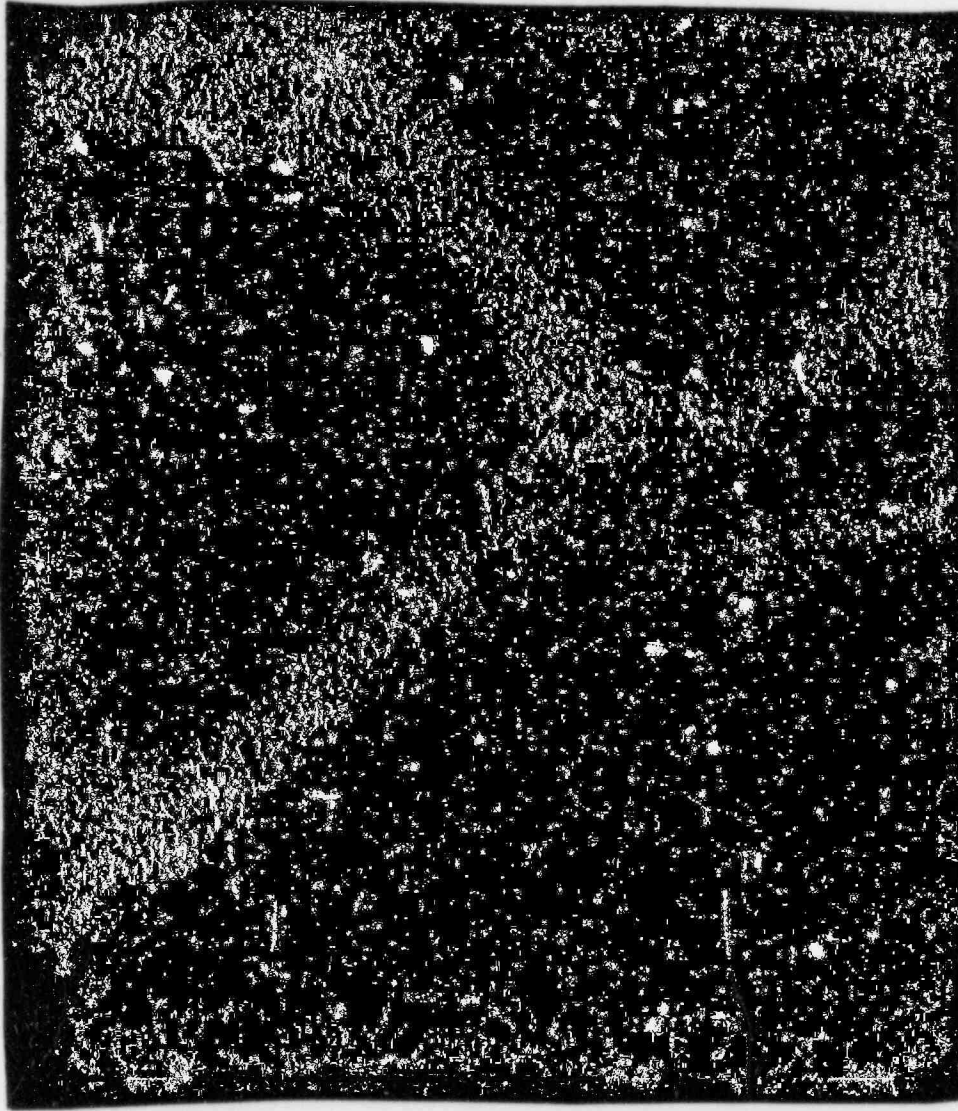
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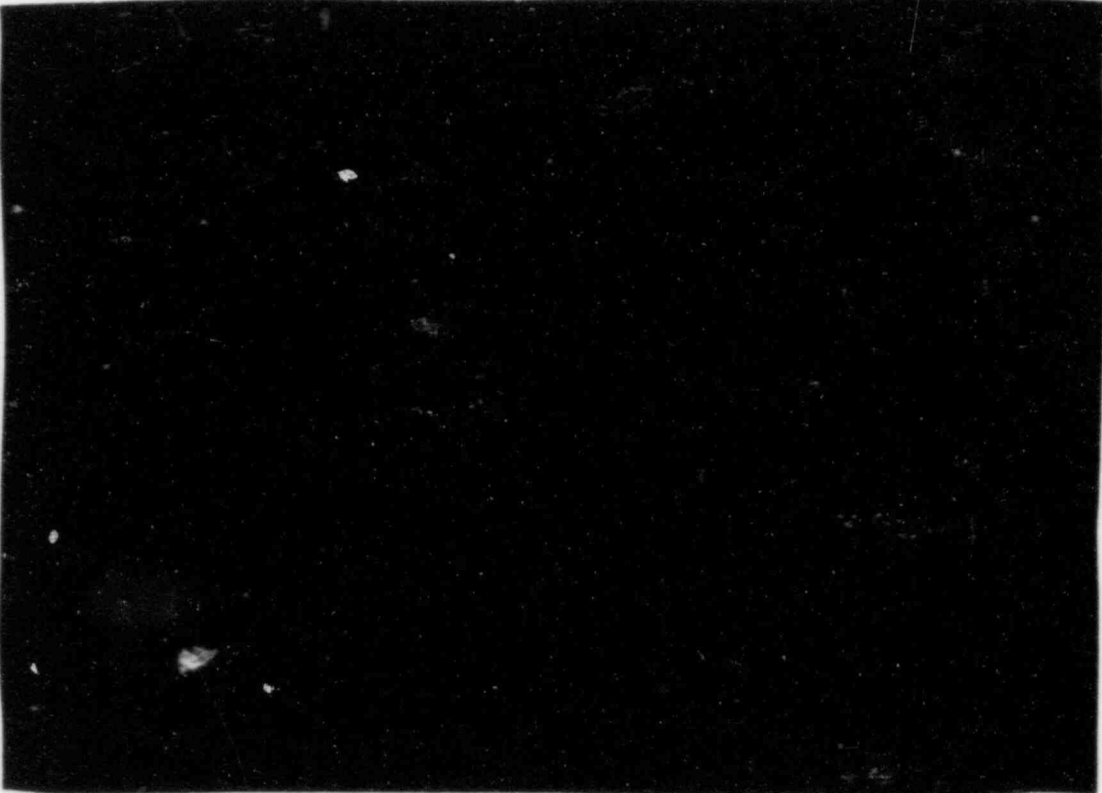
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(Cont.)

*9 Recertification testing

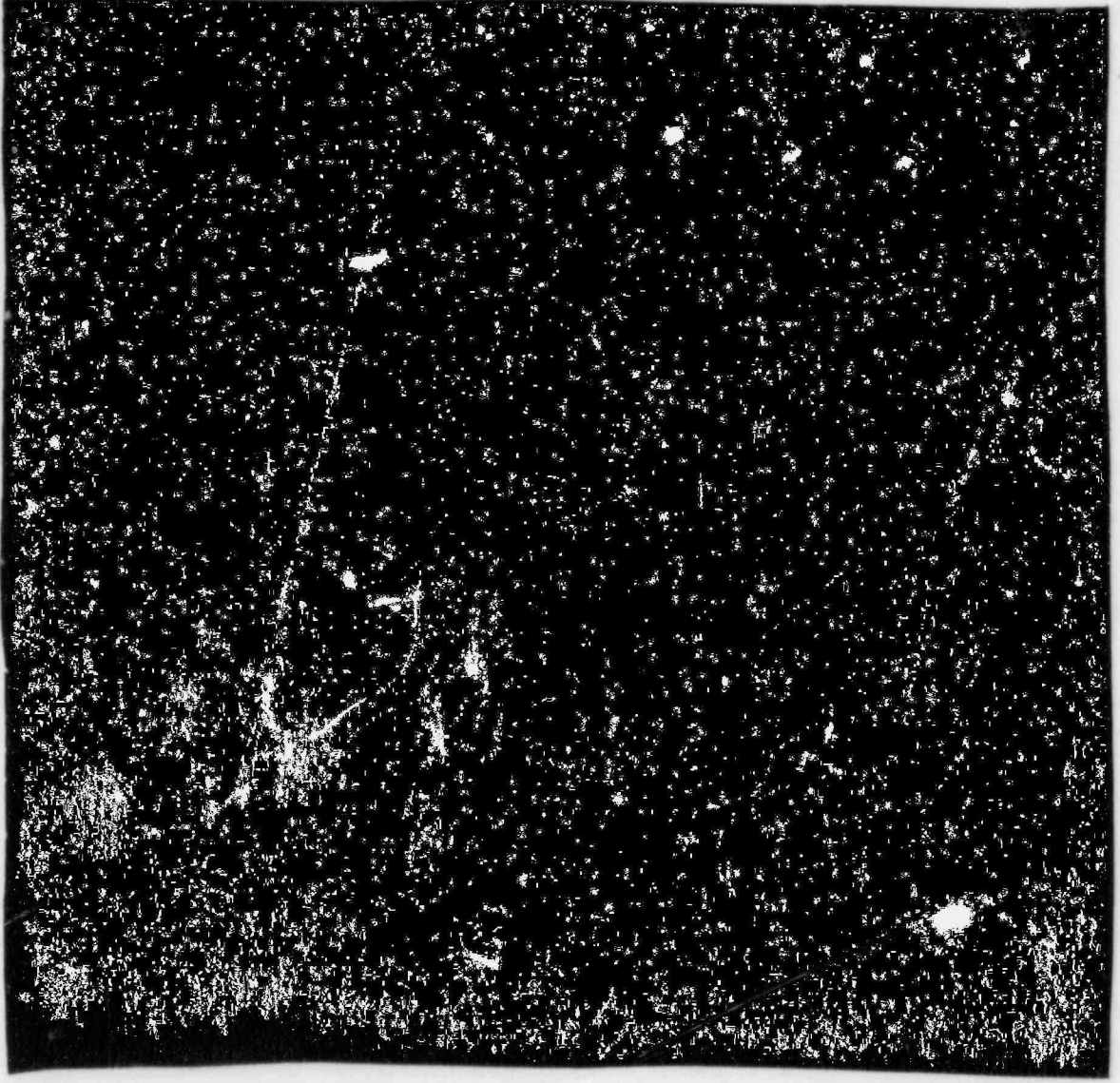
Recertification tests may have been given "open book" which would indicate an ineffective QC control of the inspector certification program.



Category No.	Category Title	Potential QA/QC Breakdown	Characterization of Violation	TUEC Action Required; if none, the basis for not requiring action on the part of TUEC
*10	Improper testing	Concrete compression tests may have been run at a rate faster than allowed.		
		Extra cylinders from acceptable placements may have been switched to other placements.		

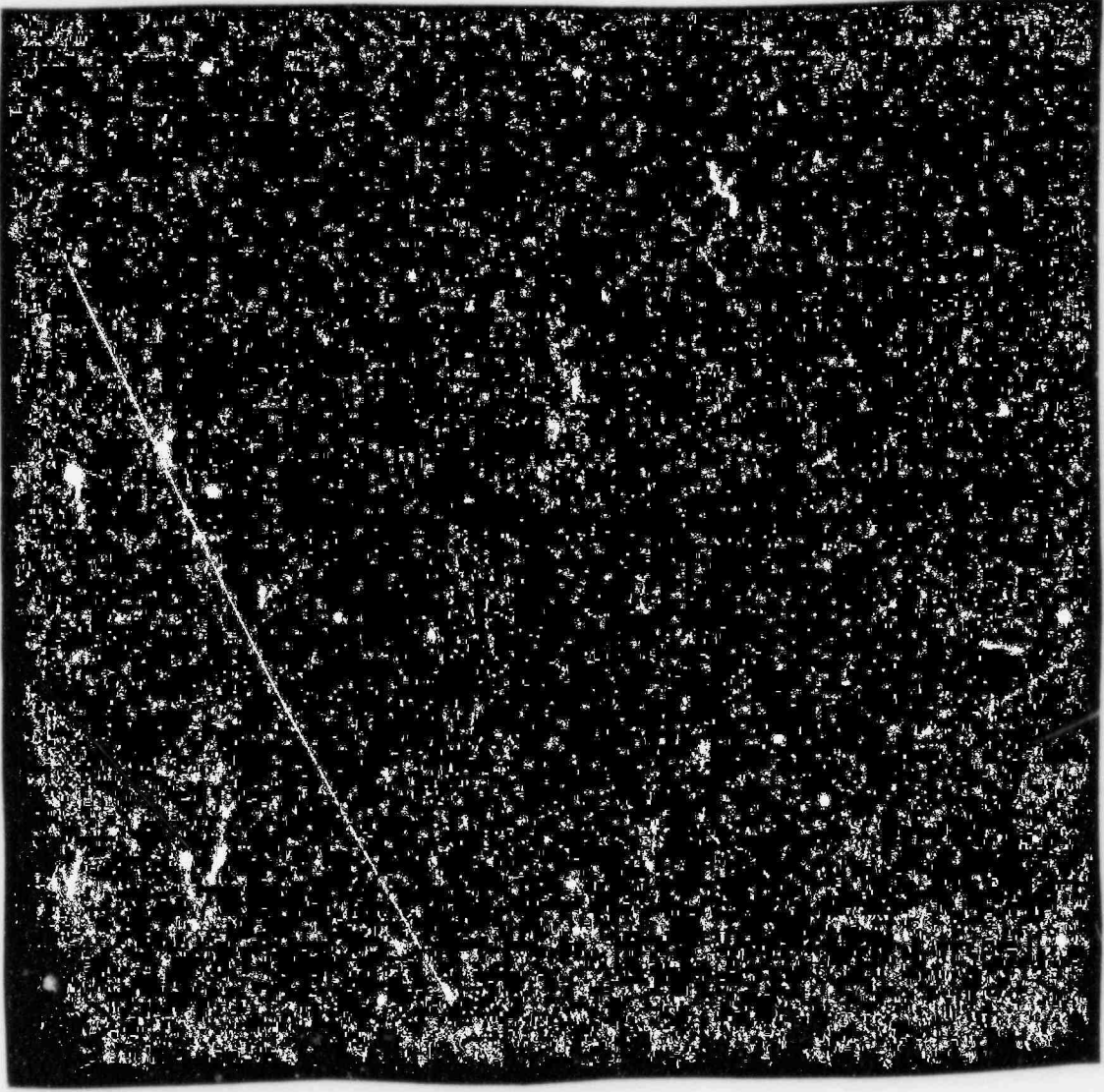
Category No.	Category Title	Potential QA/QC Breakdown	Characterization of Violation	TUEC Action Required; if none, the basis for not requiring action on the part of TUEC
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|----|--|--|--|--|
| 11 | Poor workmanship regarding the use of rotofoam | Inadequate inspections were performed to verify the removal of the rotofoam. | | |
|----|--|--|--|--|



Category No.	Category Title	Potential QA/QC Breakdown	Characterization of Violation	TUEC Action Required; if none, the basis for not requiring action on the part of TUEC
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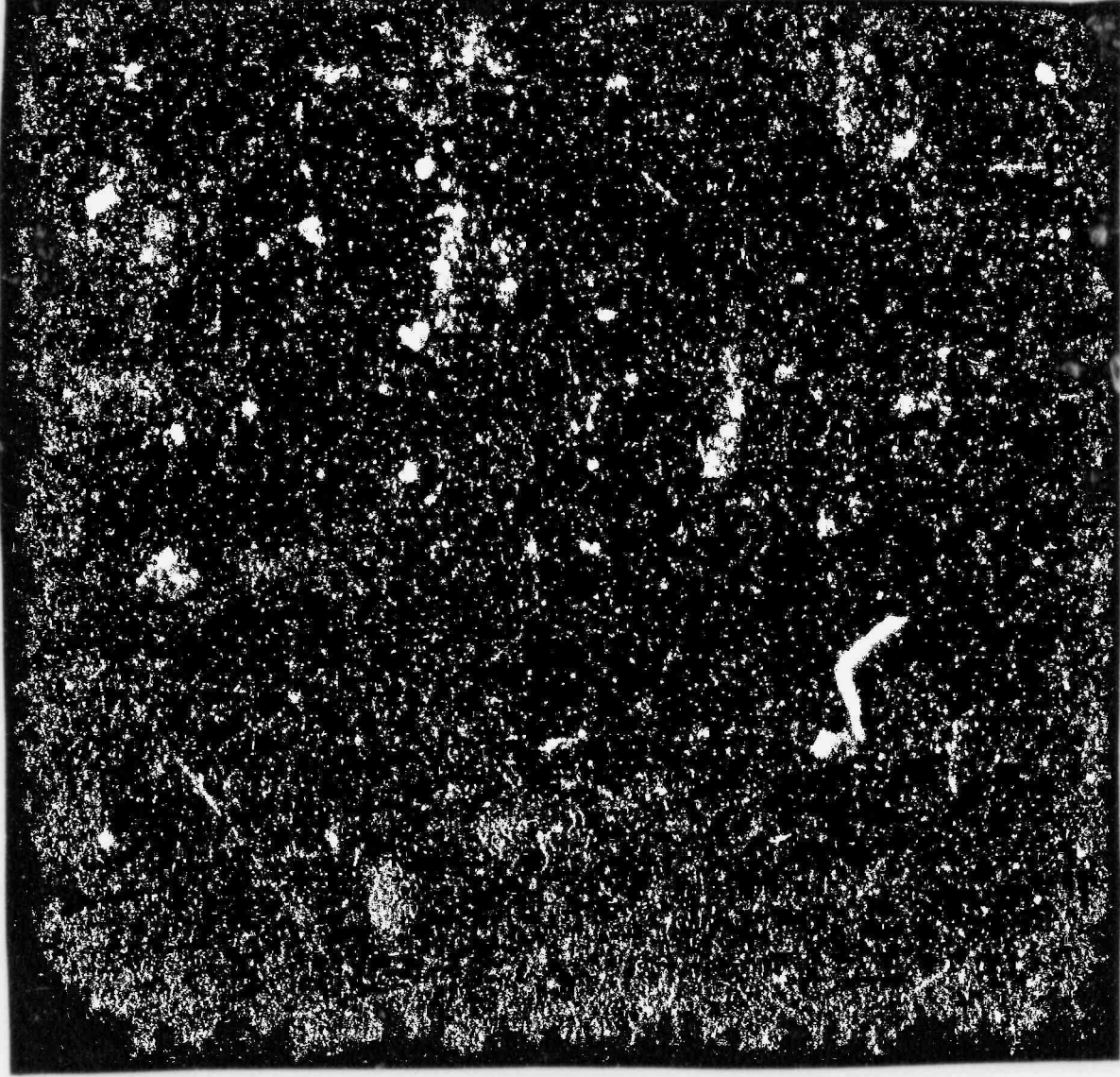
14	Control room area deficiencies	QC did not ensure that applicable provisions of Regulatory Guide 1.29 were fully met.		
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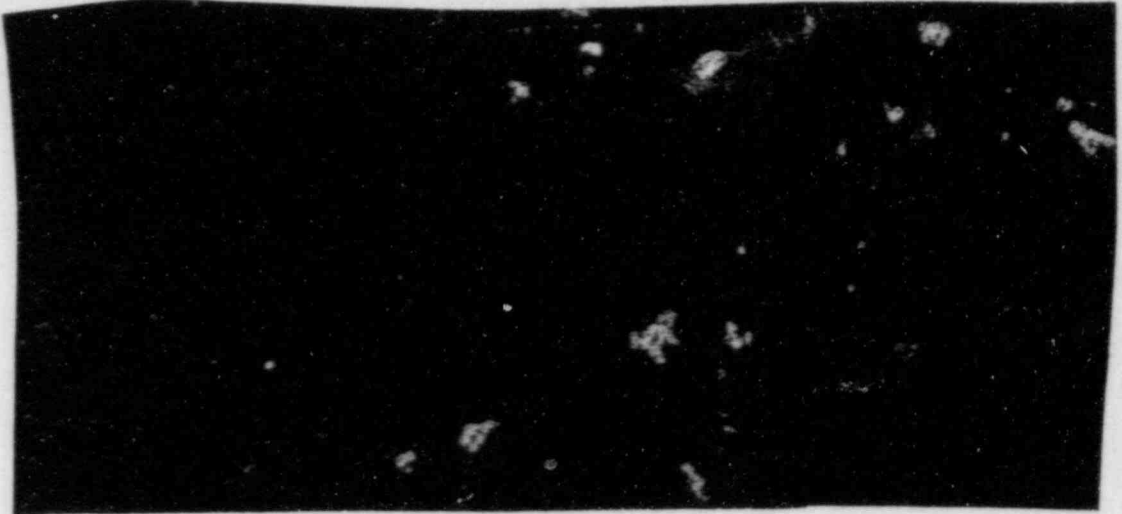


Category No.	Category Title	Potential QA/QC Breakdown	Characterization of Violation	TUEC Action Required, if none, the basis for not requiring action on the part of TUEC
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14 Control room area
(Cont) deficiencies

15 Unauthorized cutting of rebar
There may have been no effective QC program to oversee the issuance and use of diamond core drill bits.



Category No.	Category Title	Potential QA/QC Breakdown	Characterization of Violation	TUEC Action Required; if none, the basis for not requiring action on the part of TUEC
*17	Concrete sampling	If the scales at the batch plant were tampered with as alleged, TUEC may not have had adequate QC control at the batch plant.		

*Copies of these SSERs were provided on January 14, 1985 to Cliff Hale of the QA/QC Group, TRT, for evaluation from the QA/QC perspective.

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TUEC Action Required; if none,
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Characterization of Violation

Potential QA/QC Breakdown

Category Title

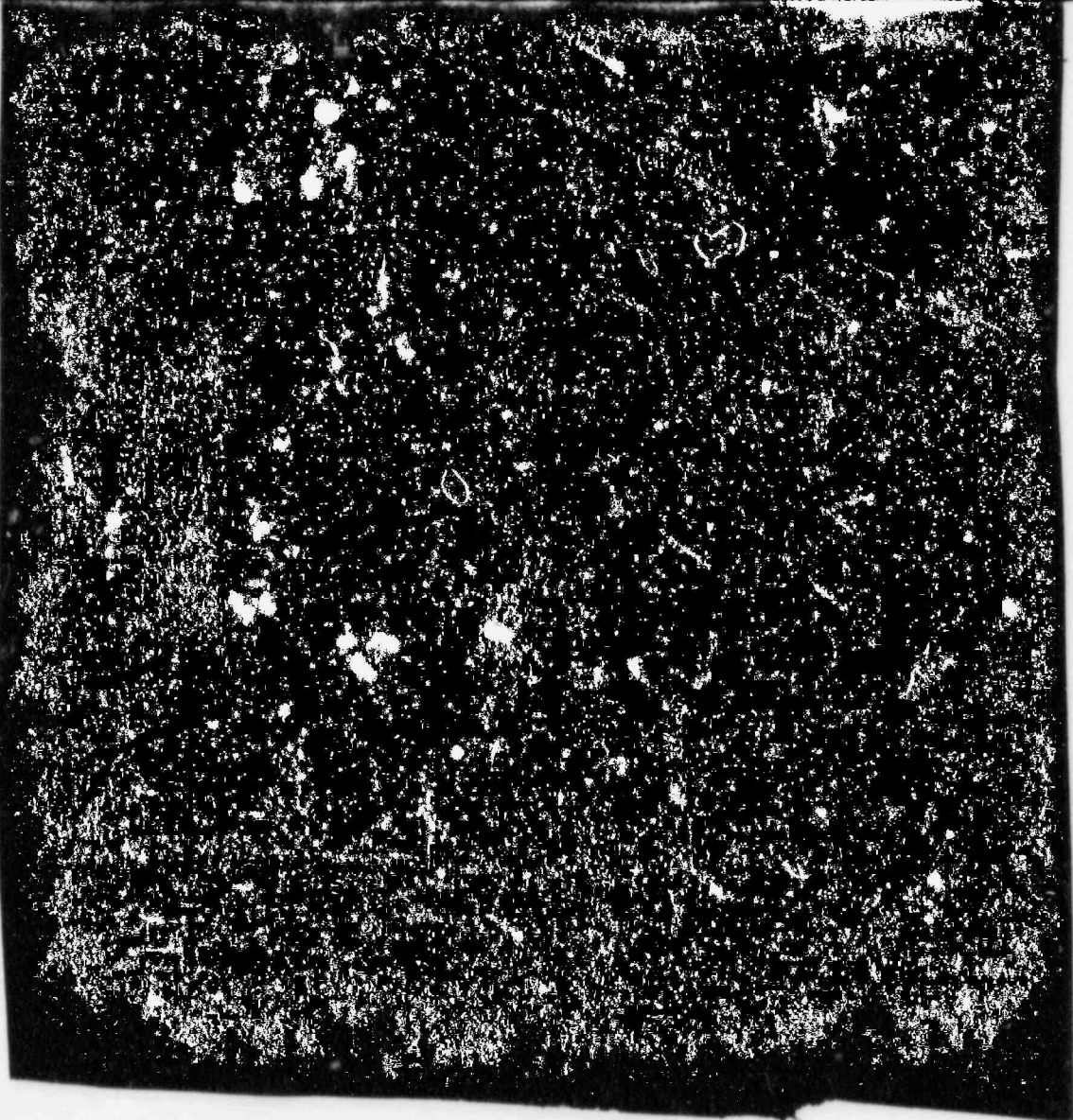
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3 Poor weather conditions
Concrete was placed in the Unit 1 dome without approval or inspection of QC personnel.



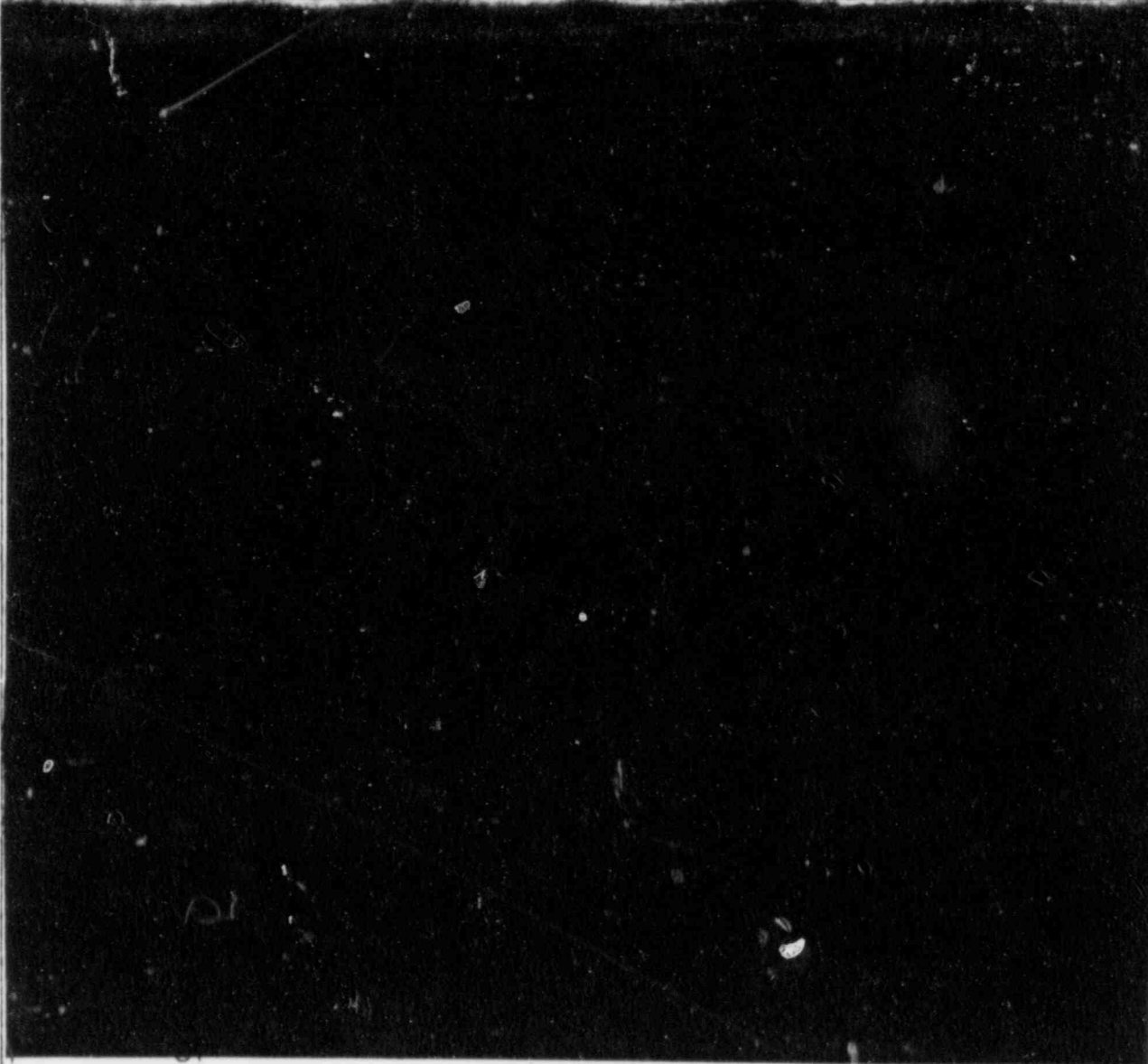
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Category	Category Title	Potential QA/QC Breakdown	Characterization of Violation	TUEC Action Required; if none, the basis for not requiring action on the part of TUEC
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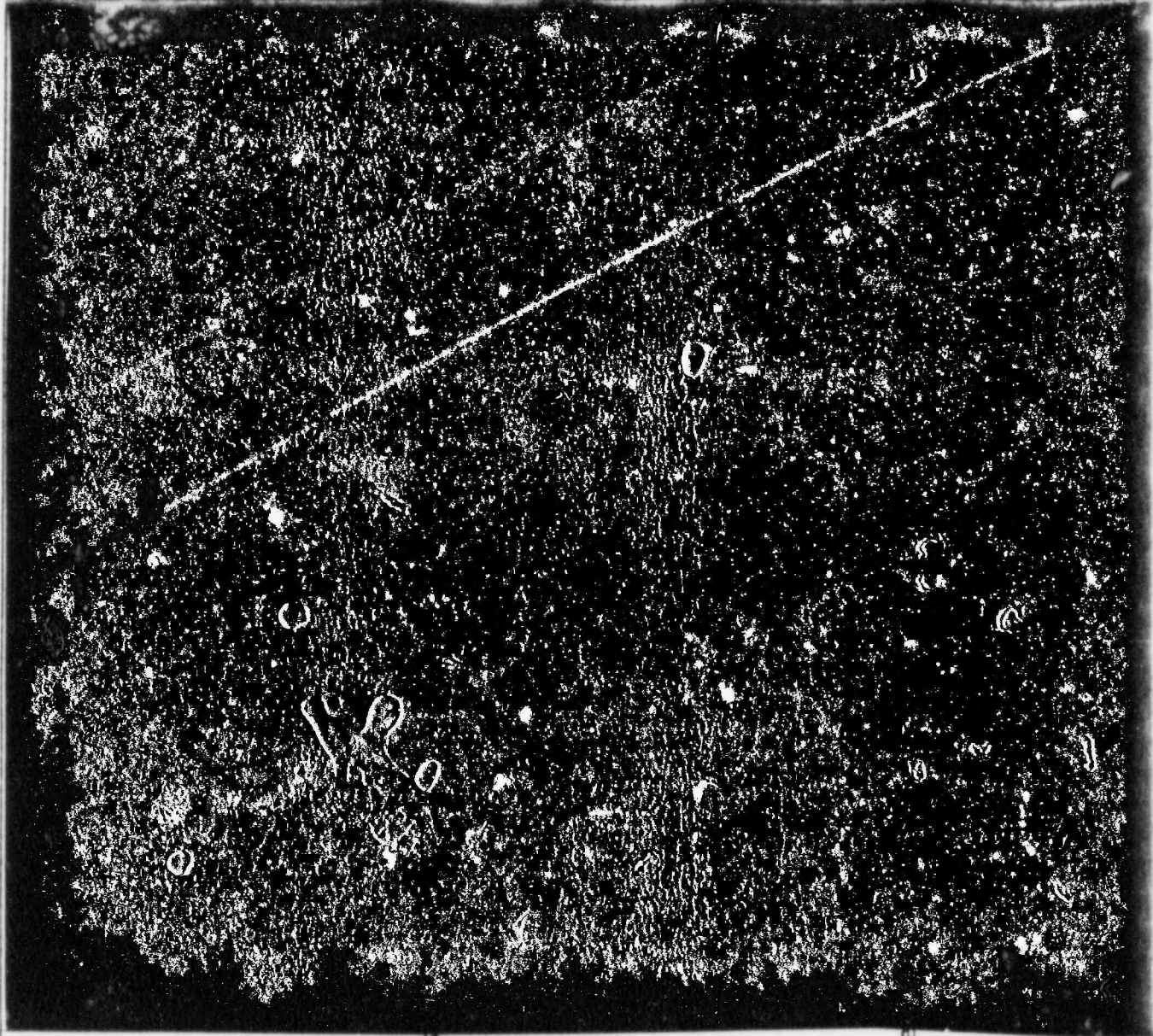
- | | | | | |
|---|---------------------------------------|---|--|--|
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grout had properly gained
strength through aging. | | |

Category	Category Title	Potential QA/QC Breakdown	Characterization of Violation	TUEC Action Required; if none, the basis for not requiring action on the part of TUEC
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- | | | | | |
|---|---------------------------------------|--|--|--|
| 6 | Rebar improperly installed or omitted | <p>Reinforcing steel may have been used prior to proper QC receipt of inspection.</p> <p>Omitted reinforcing steel was not detected prior to concrete placement.</p> | | |
|---|---------------------------------------|--|--|--|



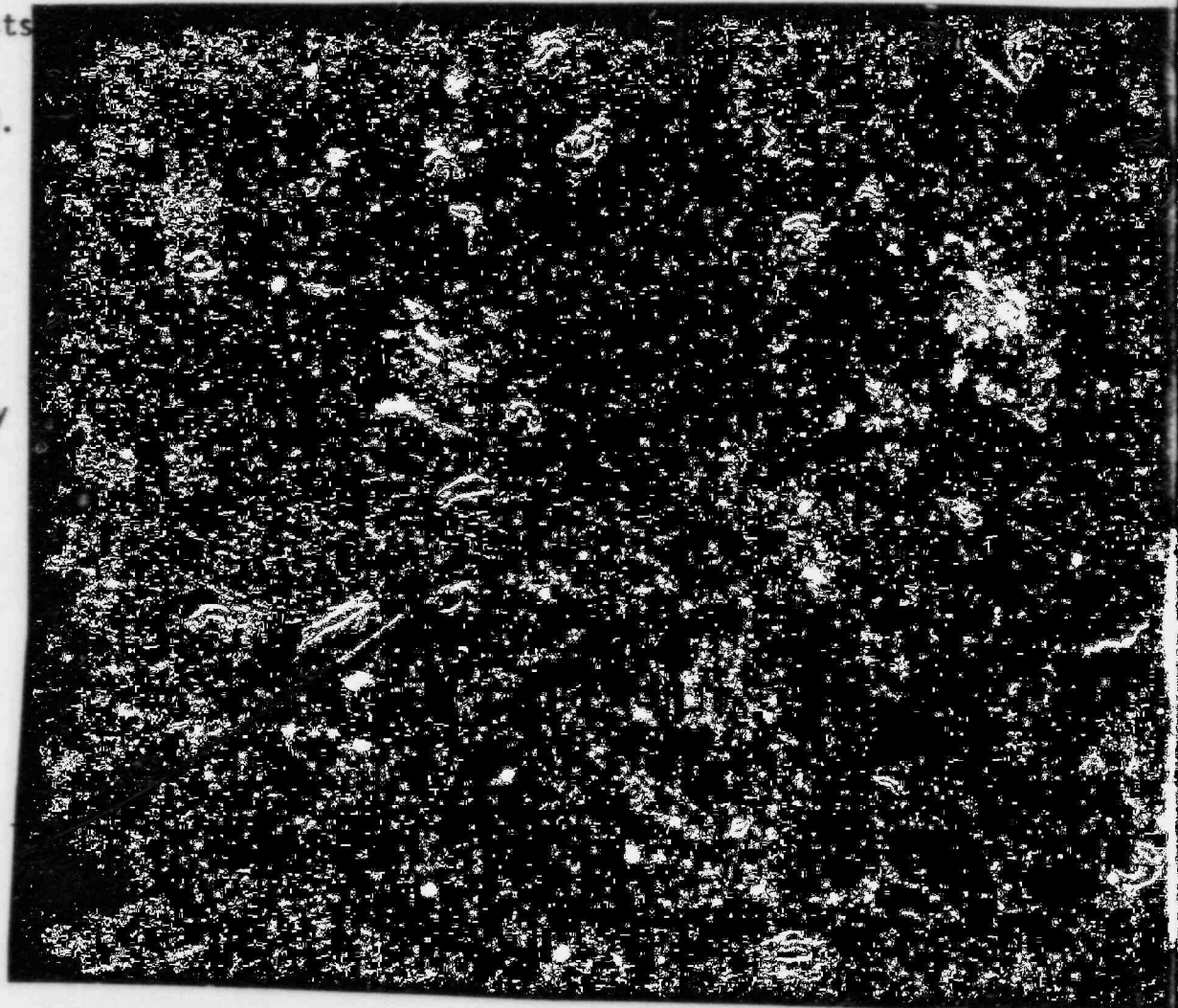
Category Title	Potential QA/QC Breakdown	Characterization of Violation	TUEC Action Required; if none, the basis for not requiring action on the part of TUEC
7 Uncontrolled repair of concrete	Uncontrolled and undocumented repairs.		
8 Falsification of records	Concrete test lab reports may have been falsified.		
9 Recertification testing	Recertification tests may have been given "open book" which would indicate an ineffective QC control of the Inspector certification program.		



Category No.	Category Title	Potential QA/QC Breakdown	Characterization of Violation	TUEC Action Required; if none, the basis for not requiring action on the part of TUEC
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0 Improper testing Concrete compression tests may have been run at a rate faster than allowed.

Extra cylinders from acceptable placements may have been switched to other placements.



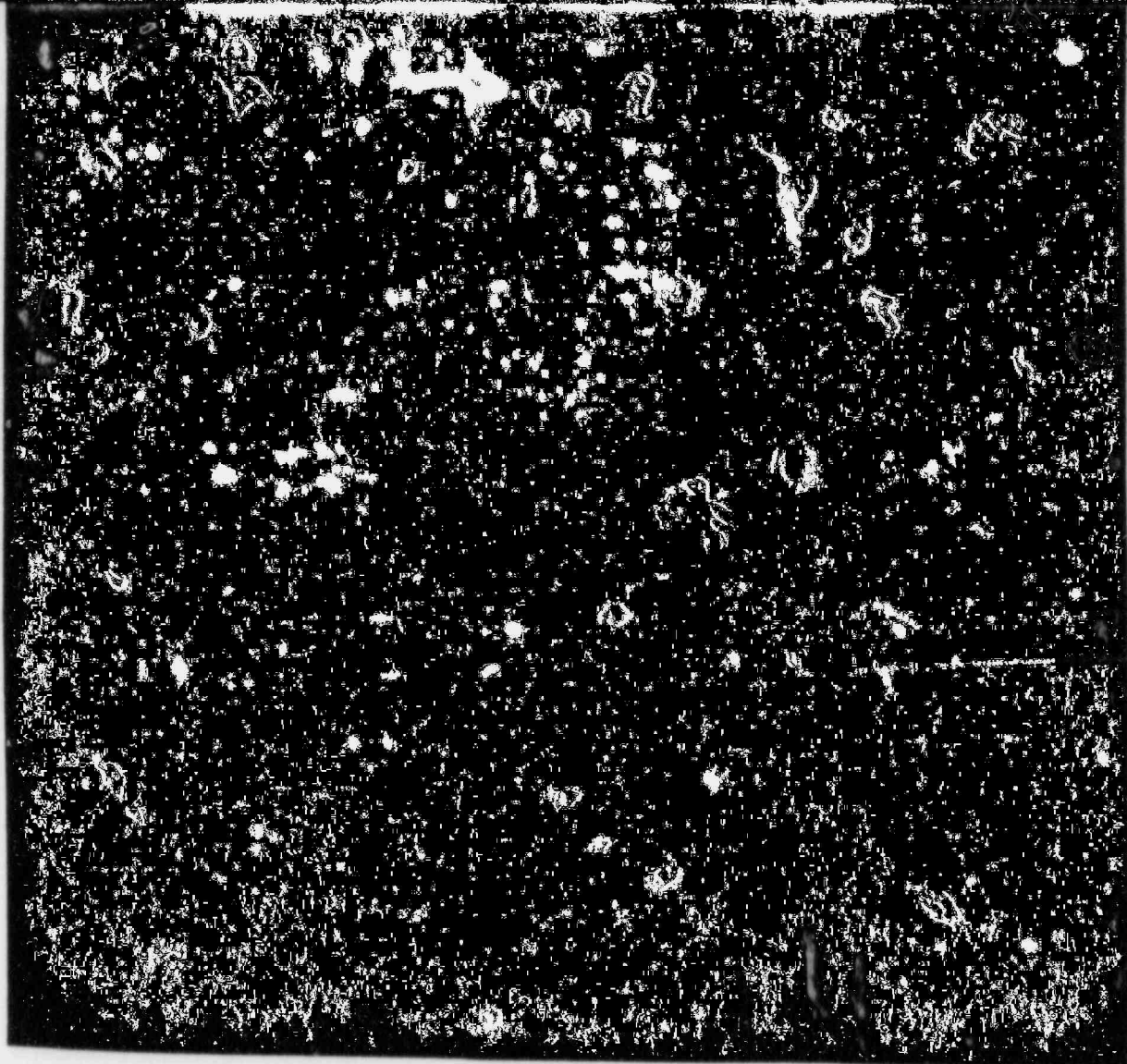
TUEC Action Required; if none,
the basis for not requiring
action on the part of TUEC


Characterization of Violation

Potential QA/QC Breakdown

Category Title

1 Poor workmanship
regarding the use
of rotofoam
Inadequate inspections
were performed to verify
the removal of the roto-
foam.

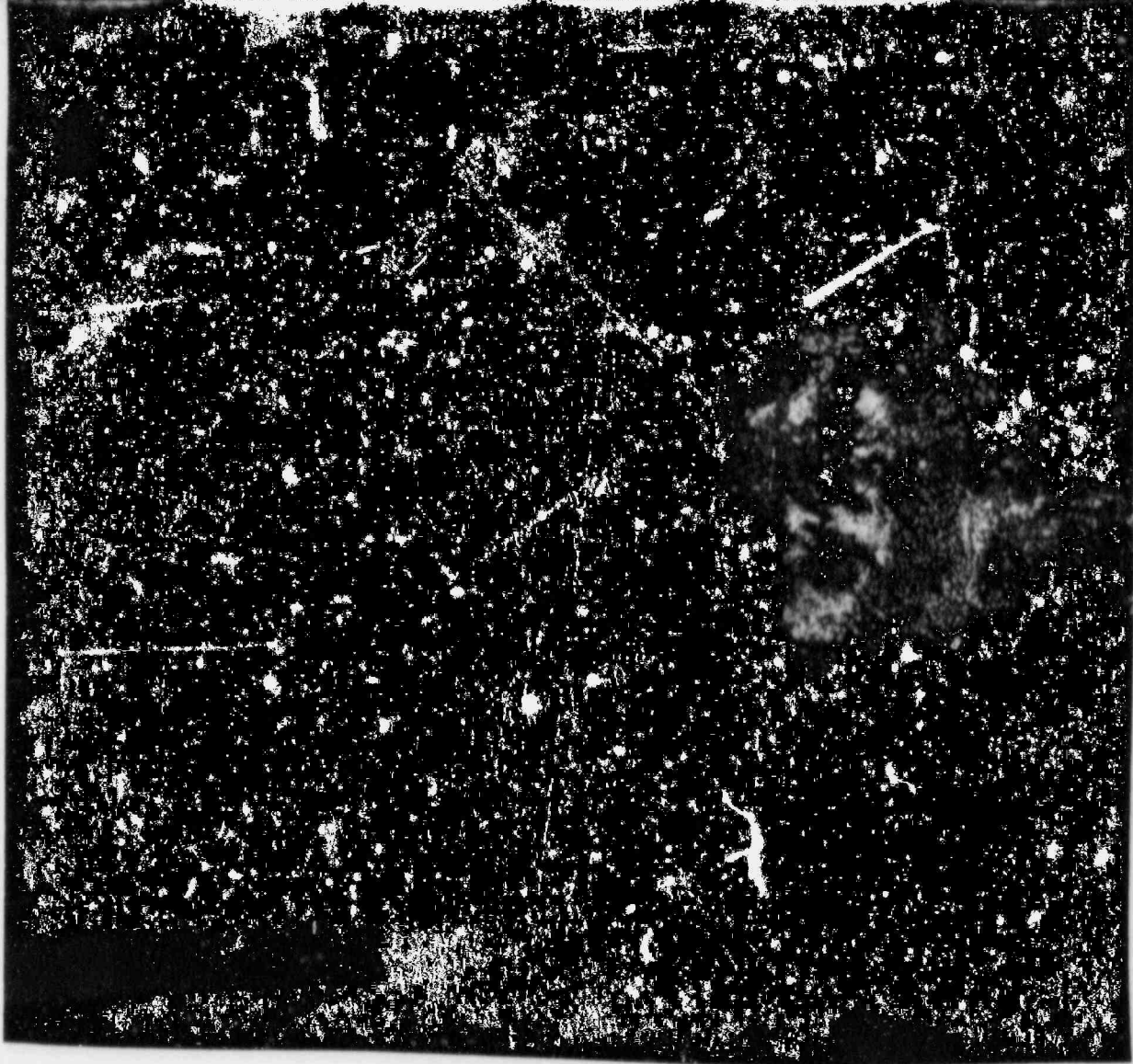


Category	Category Title	Potential QA/QC Breakdown	Characterization of Violation	TUEC Action Required; if none, the basis for not requiring action on the part of TUEC
4	Control room area deficiencies	QC did not ensure that applicable provisions of Regulatory Guide 1.29 were fully met.		

Category No.	Category Title	Potential QA/QC Breakdown	Characterization of Violation	TUEC Action Required, if none, the basis for not requiring action on the part of TUEC
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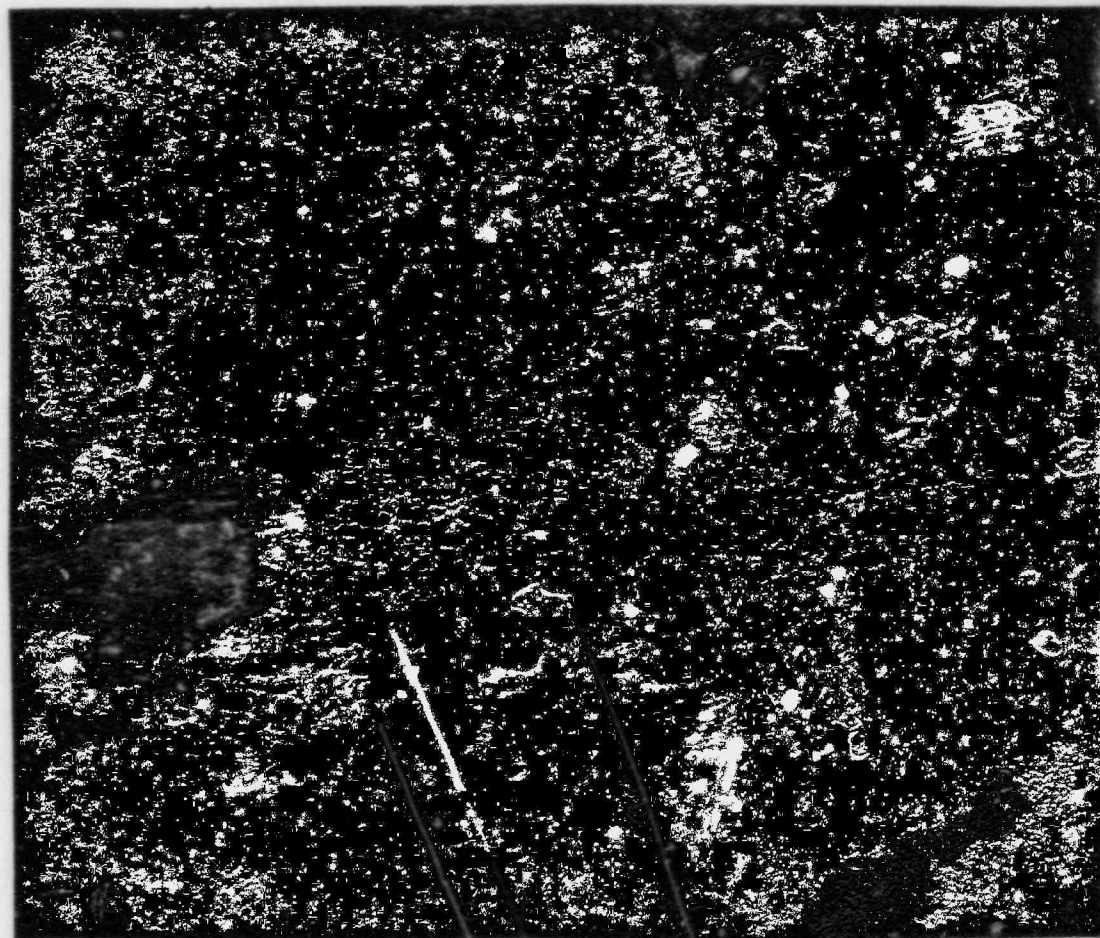
4 Control room area
Cont) deficiencies

5 Unauthorized cutting of rebar
There may have been no effective QC program to oversee the issuance and use of diamond core drill bits.



Category No.	Category Title	Potential QA/QC Breakdown	Characterization of Violation	TUEC Action Required; if none, the basis for not requiring action on the part of TUEC
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17 Concrete sampling If the scales at the batch plant were tampered with as alleged, TUEC may not have had adequate QC control at the batch plant.



Allegation Summary

1. Category No.: 1 TRT Members: J. Devers/R. Philleo
2. Subject: Inadequate Materials Used In Concrete
3. Summary of Allegations:
 - AC-16: [REDACTED] Rejected aggregate was incorporated in the basemat of the Unit 1 reactor.
 - AC-19: (Unknown) Truck drivers added unauthorized quantities of water to concrete used in the basemat.
 - AC-20: [REDACTED] Rejected concrete was placed in the Turbine Generator Building.
 - AC-21: (Unknown) Concrete with excessive slump was placed.
 - AC-27: (Unknown) Contained no new allegations; it merely reiterated those already made.
 - AC-47: [REDACTED] Concrete was placed in the Circulating Water Intake Structure after the concrete was rejected for being over specification limit on time.
4. Region IV's Conclusions:
 - AC-16: The NRC Region IV investigation concluded the allegation could not be substantiated.
 - AC-19: As a result of the corrective action initiated because of adding water without approved supervision and signature in response to the IE citation (Report No. 75-10) and in consideration of the requirement for zeroing of the water meter and the provision for additional water temper, the allegation cannot be substantiated.
 - AC-20: The NRC Region IV staff determined that although the falsification of test records may have occurred, no impact on the safety of the structures could be identified. This determination is based on the miniscule amount of concrete involved and on the following facts: the strength of the concrete was determined by concrete cylinder compression strength testing to meet specifications; the field tests for slump and air content met specifications; the uniformity of batching assures similarity of properties.
 - AC-21: Considering the fact that the alleged discrepancy involved only a quarter of an inch, and the fact that a review of the records indicated that this small amount did not influence the running average. Since the concrete in question was being pumped, a reduction of slump would be expected to occur through the pipeline. This factor alone would reduce the reported slump to a value under 4 inches.

FOIA-85-59
C/ 636

AC-47: Not investigated by the NRC Region IV staff.

5. What TRT Had Done:

AC-16: Examination of the concrete basemat placement record packages.

AC-19: Examination of all 258 batch tickets in concrete placement
101-2781-001.

AC-20: Examined a random selection of 65 concrete placement packages.

AC-21: Review Gibbs & Hill (G&H) Specification 2323-SS-9, Rev. 4,
Section 5.2.

AC-27: Contained no new allegations.

AC-47: Examined 51 Circulating Water Intake Structure concrete placement
packages.

6. TRT's Conclusions:

AC-16: Not Valid - If nonconforming aggregate was used in the basemat
of the Unit 1 reactor, it did not adversely affect its concrete properties.

AC-19: Not Valid - TUEC violated procedure CCP 10, paragraph 4.10.5.6,
but any water which was added to the concrete was within the specified
limits.

AC-20: Not Valid - In their examination of the random samples of
concrete placements in the Turbine Building, which is a non-safety
related structure, the TRT found no evidence of irregularities.

AC-21: Not Valid - Batch placements were within tolerances specified
by G&H, and the TRT found no documentation that these slump requirements
had been violated.

AC-47: Not Valid - Since the batch tickets state that none of the
rejected concrete batches were placed in the Circulating Water Intake
and that the Circulating Water Intake Structure is classified as
nonsafety-related, in accordance with the Final Safety Analysis
Report (FSAR) (Volume IV, Section 3.2), the TRT concludes that the
allegation is without foundation.

7. Action Required: None.

Allegation Summary

1. Category No.: 2 TRT Members: J. Devers/R. Philleo
2. Subject: Concrete Placements
3. Summary of Allegations:
AC-22/ () "Bad concrete work" and "sloppy" placement of
AC-23: concrete.
AC-50: () "Soupy" concrete in a slab in the Auxiliary
Building.
4. Region IV's Conclusion:
No investigation by Region IV.
5. What TRT Had Done:
AC-22 & AC-23: Reviewed 22 concrete placement packages from random.
AC-50: Reviewed concrete placement packages: 002-2785-001; 002-2790-003; 002-2790-004.
6. TRT's Conclusions:
AC-22 & AC-23: Not Valid: In its records review the TRT found some discrepancies in concrete placements that were identified and resolved by established QC procedures; for those cases, the allegations have merit. However, the discrepancies found are not uncommon in concrete work. The TRT walkdown showed that the discrepancies were resolved and that the concrete shows no degradation.
AC-50: The TRT investigated the specific allegation concern "soupy concrete" by reviewing all the relevant concrete placement packages and found the allegation to be unfounded. The allogger may have been unaware that mortar had been authorized in lieu of concrete for a small portion of the structure.
7. Action Required: None.

Allegation Summary

1. Category No.: 3 TRT Members: J. Devers/R. Philleo
2. Subject: Poor Weather Conditions for Placement of Concrete
3. Summary of Allegations:
 - AC-24: (Unknown) Concrete was placed during a rainstorm without the approval of QC.
 - AC-35: [REDACTED] Concrete was placed during or immediately before freezing weather.
 - AC-52: [REDACTED] Field-cured and laboratory-cured cylinders failed specification requirements.
4. Region IV's Conclusion:
 - AC-24: The allegation relative to concrete placement on the dome of Unit 1 is essentially correct and is evidence of a breakdown in the licensee's quality assurance program.
 - AC-35: There are no regulatory or industry prohibitions on placing concrete in cold weather conditions. The NRC Region IV Staff visually inspected each of the placements in question for evidence of damaged concrete and found none.
 - AC-52: Not investigated by NRC Region IV.
5. What TRT Had Done:
 - AC-24: Examined concrete placement 101-8805-013.
 - AC-35: Examined concrete placements 101-2808-001 and 105-2773-001.
 - AC-52: Examined cylinder compressive strength data.
6. TRT's Conclusions:
 - AC-24: Valid - But the Unit 1 dome was proved sound both by ultrasonic testing and structural integrity testing.
 - AC-35: Valid - But the sections of concrete alleged to have been exposed to freezing temperature at an early age were shown by in-place strength tests to have substantially the same strength as concrete whose protection was not in doubt.
 - AC-52: Valid - But the field-cured test cylinders demonstrated adequate protection for the type of concrete placed, with the exception of one slab in the Safeguards Building, which was shown

Category No. 3

- 2 -

by Schmidt Hammer Testing to be adequate. The allegation relating to laboratory-cured cylinders was found to be a misunderstanding of the design strength of the concrete in question. The required design strength was 2500 psi. The laboratory-cured cylinders in question in all cases exceeded the 2500 psi requirement.

7. Action Required: None.

Allegation Summary

1. Category No.: 4 TRT Members: J. Devers/R. Philleo
2. Subject: Concrete Voids/Cracked/Crumbled
3. Summary of Allegations:
 - AC-25: [REDACTED] Hollow places existed in concrete behind the stainless steel liner in Unit 1 Containment Building.
 - AC-28: [REDACTED] Fresh concrete was placed on top of crumbling concrete during the construction of the spillway.
 - AC-32: (Unknown) The repair of a 20-foot x 20-foot honeycomb area located in Unit 1 Auxiliary Building was inadequate.
 - AC-33: (Unknown) Cracking existed on floor slab concrete in the Plant Building.
 - AC-34: (Individual "A") Voids found in the walls by tapping with a hammer and listening for a hollow sound.
 - DC-008: (N/A) Void identified in Unit 1 Reactor Building Steam Generator Compartment wall.
 - DC-009: (N/A) Embedded foreign material was located with a flex drill in 002-7810-002.
4. Region IV's Conclusions:
 - AC-25: The NRC Region IV Staff discovered that the allegation was true, but with the exception that it was Unit 2, instead on Unit 1. The deficiency had been detected and documented within the context of the licensee's quality assurance system.
 - AC-28: Not investigated by the NRC Region IV.
 - AC-32: The NRC Region IV Staff determined that the allegation was based on factual events that had been detected and documented within the context of the licensee's quality assurance system as required by Appendix B to 10 CFR 50.
 - AC-33: The NRC Region IV Staff determined that this allegation had no merit. Hairline surface cracks in concrete are not considered to have any effect on structural integrity.

AC-34: The NRC Region IV Staff determined that the allegation was based on an inference that a hollow sound indicates a hollow wall which was shown to be an incorrect inference. The allegation is thus without merit.

DC-008 & DC-009: Not investigated by the NRC Region IV Staff.

5. What TRT Had Done:

AC-25: The existence of the voids and the required repair procedures are documented in design change authorization No. 6663.

AC-28: Reviewed concrete placement packages of the Squaw Creek Dam spillway.

AC-32 & AC-33: The 20-foot x 20-foot honeycomb area in the Auxiliary Building and the cracks in the concrete basemat were documented and repaired in accordance with approved procedures.

AC-34: Reviewed NRC Resident Inspector's report concerning voids in building walls.

DC-008 & DC-009: These deficiencies were documented on nonconformance reports and corrective action taken.

6. TRT's Conclusions:

AC-25: The allegation of hollow places behind the stainless steel liner of the Unit 2 reactor cavity is true and the hollow places are currently undergoing repairs.

AC-28: In the absence of a specific allegation, the TRT reviewed documentation for several placements done in cold weather and concludes that the protection was adequate. In addition, the allegation has no safety significance, since the spillway is not safety-related.

AC-32: The allegation of honeycombing in the Unit 1 Auxiliary Building is true and the repairs made were in accordance with approved procedures. Therefore, the allegation has no safety significance.

AC-33: While the allegation of cracking in the concrete basemat is accurate, it is not correct to assume that detrimental structural consequences will result from the cracks. The structures are designed to tolerate cracks of the magnitude and location of those found.

AC-34: The allegation of numerous concrete voids was not substantiated.

DC-008: The allegation of a void in the generator compartment wall of the Unit 1 Reactor Building is true. The void was filled even though it did not require filling from the standpoint of adequacy of design. The TRT agreed after its review of the G&H evaluation of the condition.

DC-009: Although the allegation was correct in identifying foreign material in the concrete, the area was adequately repaired so that this condition will have no impact on safety.

7. Action Required:

The repairs and the repair documentation to the honeycombing discussed in Item AC-25 must be inspected/reviewed and approved by the NRC Resident Inspector before the TRT can determine that this issue has no safety significance.

Allegation Summary

1. Category No.: 5 TRT Members: J. Devers/R. Philleo
2. Subject: Miscellaneous Concrete
3. Summary of Allegations:

AC-26: (Unknown) Equipment set on grout before the grout properly gained strength through aging.

AC-31: [REDACTED] Hanger inserts were installed at improper angles.

AC-36: (Unknown) Trash in the bottom of a form was covered with concrete.

AC-43: (Unknown) Did not include any new allegations; it merely reiterated those made in AC-26, 31 and 36.
4. Region IV's Conclusion:

AC-26: Not investigated by the NRC Region IV Staff.

AC-31: The NRC Region IV Staff concluded that this specific allegation appears to be more of a design concern by the alleged, than an improper installation construction practice having been implemented by him.

AC-36: The NRC Region IV investigators interviewed the individual identified by the alleged as the source of the story, who promptly denied that the incident took place as alleged. It was established that the source of the allegation, although employed at CPSES, was, in fact, not at work that day.
5. What TRT Had Done:

AC-26: Inspected all the grouted plates and the 860' and 862' elevations.

AC-31: Inspected 150 anchors between 860' and 905' elevations.

AC-36: Reviewed concrete placement package 101-8805-002 and Inspection Report 79-20.

AC-43: See above.
6. TRT's Conclusions:

AC-26: Not Valid - The grout survived the initial load application without failure.

AC-31: Not Valid - No infraction of installation procedures for anchor inserts was found by the TRT.

AC-36: It is extremely unlikely that a Christmas party was held at the top of a containment 200-feet above the ground in the winter, and even if true, the containment structure concrete, including the dome, was proven adequate and acceptable in the in-situ structural integrity test.

AC-43: See above.

7. Acting Required: None.

Allegation Summary

1. Category No.: 6 TRT Member: Terry Langowski
2. Subject: Reinforcing Steel Was Improperly Installed or Omitted
3. Summary of Allegations:

Alleger:

AC-30
AQC-12 and AC-37
AC-38
AC-39
DC-003, DC-004, DC-005
AC-49

Unknown
Unknown-
No Allegers

- AC-30 No reinforcing steel was installed in a 6' x 6' section of concrete in the Safeguards Building.
- AC-37 and AQC-12 Reinforcing steel was installed that was not properly inspected upon receipt.
- AC-38 Horizontal tie reinforcement was omitted from the Unit 1 containment wall.
- AC-39 Reinforcement was omitted from four column faces in the EA wall of the Auxiliary Building.
- DC-003 (1) Reinforcing steel was omitted in a reactor cavity placement between elev. 812'-0 and 819'-0½ in Unit 1.
- (2) B&R construction requested to change the configuration of 2 x 9 - #9 reinforcing bars from a bent to a true circular arrangement.
- (3) Due to interferences within the triangular columns surrounding the reactor cavity, reinforcing bar details were modified to clear.
- DC-004 (1) 6 - #10 additional horizontal rebars were omitted from a beam over a construction opening in the Auxiliary Building.
- (2) 9 - #9 and 2 - #4 additional rebars were omitted around an elevator shaft door in Reactor Building 1.
- DC-005 (1) 46 - #9 rebars were omitted on the face of a wall in the excess letdown heat exchanger room in Unit 1.

DC-005 (2) 10 - #8 additional rebars were omitted from a beam over a construction opening in Safeguards Building No. 1.

(3) B&R construction requested to Substitute #5 vertical wall rebars in lieu of the #8 rebars required in the Auxiliary Building.

AC-49 Reinforcement was installed upside down in a building near the Unit 2 containment.

4. Region IV's Conclusion:

AC-30 Not investigated by Region IV.

AC-37 and AQC-12 Not investigated by Region IV.

AC-38 Region IV concluded the allegor was referring to an actual occurrence in Unit 2. Where it was shown that the structure was safe in the as-built condition.

AC-39 The Region IV staff reviewed an analysis made by Gibbs and Hill showing the structure capable of carrying the loads and concluded the issue to have no safety significance.

DC-003, DC-004 and DC-005 Not investigated by Region IV since these are not allegations.

AC-49 Not investigated by Region IV.

5. What TRT Had Done:

AC-30 During an interview with the allegor, the TRT learned that the allegation actually referred to the return pump station at Squaw Creek Dam. See Category No. 12 AC-29.

AC-37 & AQC-12 The TRT reviewed all the receipt inspection records for #18 reinforcing bars received in 1976 and determined that three shipments of weldable reinforcing steel were received. These were all properly signed off by QC. The TRT also reviewed testimony given by the allegor wherein he stated that the reinforcing steel was subsequently inspected and signed off.

- AC-38 The TRT reviewed all the concrete placements for the Unit 1 Containment wall and determined that all the reinforcing steel was placed as required. The TRT also reviewed Inspection Report 79-25 and the calculations made pertaining to the actual occurrence in Unit 2.
- AC-39 The TRT reviewed an analysis made by Gibbs and Hill engineering investigating the load carrying capability of the columns without the missing reinforcing bars.
- AC-49 The TRT reviewed the transcript of a Region IV interview with the alleged wherein he stated the problem had been corrected prior to concrete placement.
- DC-003, DC-004 and DC-005 The TRT reviewed documentation pertinent to the issues such as drawings, calculations, nonconformance reports, design change/design deviation authorizations, and concrete pour packages.

6. TRT's Conclusions:

- AC-30 The allegation referred to the return pump station at Squaw Creek Dam.
- AC-37 & AQC-12 Based on the fact that the reinforcing steel used was accepted by QC, this issue has no safety significance or generic implications.
- AC-38 The TRT concluded that the horizontal shear bar reinforcement was placed in the Unit 1 containment wall as required and further agrees with the conclusion drawn in the Region IV inspection report 79-25 that the allegation refers to the Unit 2 containment structure where it was shown that the structure would be capable of carrying the design loading with the reinforcing steel in its as-built location. The TRT concludes this issue to have no safety significance.
- AC-39 The TRT reviewed the computations made in the Gibbs and Hill analysis and agrees with their conclusion that the structure would be capable of carrying the design loads in the as-built condition. This issue has no safety significance.
- DC-003 (1) The TRT cannot determine the safety significance of this issue until an analysis is performed by TUEC verifying that the reinforcing steel in the as-built condition is acceptable.

- (2) and (3) Changes made to the reinforcing bar details are acceptable and do not effect the safety of the structures.

- DC-004 (1) Shoring was left in place within the construction opening until the concrete had cured making the additional reinforcing steel unnecessary. This issue has no safety significance.
- (2) The reinforcing steel was subsequently placed by drilling and grouting. Therefore, this issue has no safety significance.

- DC-005 (1) The reinforcing steel was subsequently placed by drilling and grouting. Therefore, this issue has no safety significance.
- (2) The size of the construction opening was decreased allowing the reinforcing steel to be placed. Therefore, this issue has no safety significance.
- (3) The reinforcing steel was installed as per drawing requirements. Therefore, this issue has no safety significance.

- AC-49 The reinforcing steel installation was corrected prior to concrete placement; therefore, this issue has no safety significance.

7. Action Required:

With regard to DC-003(1), TUEC shall provide an analysis of the as-built condition of the Unit 1 reactor cavity that verifies the adequacy of the reinforcing steel between the 812'-0 and 819-0½ elevations. The analysis shall consider all required load combinations.

8. Hearings:

None of the above allegations was the subject of hearings.

Allegation Summary

1. Category No.: 7 TRT Member: J. I. Tapia
2. Subject: Uncontrolled Repair of Concrete Hole
3. Summary of Allegations:

Allegation pertains to the removal of a hilti bolt from the floor (at 852' elev.) in the Safeguards Building which resulted in a hole through the floor which was later repaired in an uncontrolled manner. Allegor: [REDACTED]
4. Region IV's Conclusion:

Region IV conducted an investigation (Report 81-12) and concluded, based on observations on either side of the slab, that the repair did not go all the way through the floor.
5. What TRT Had Done:

TRT agrees with Region IV's conclusion. This is based on the TRT's own observations. For purposes of conservatism, the TRT calculated the strength capacity of the slab assuming a 14" section of slab and two reinforcing bars removed.
6. TRT's Conclusions:

TRT concludes that the allegation is not valid, and that repair was good. There is no safety significance based on a conservative slab capacity analysis.
7. Action Required:

No actions required of utility.
8. Hearings:

This allegation has not been covered in the hearing.

Allegation Summary

1. Category No.: 8 TRT Member: Terry Langowski
2. Subject: Falsification of Records
3. Summary of Allegations:

<u>Allegation</u>	<u>Alleger</u>
AQC-1	Unknown
AQC-2	Unknown
AQC-3 and AQC-7	[REDACTED]
AQC-46	Unknown
AQC-51	[REDACTED]

AQC-1: Concrete air entrainment records falsified on Jan. 20, 1976.

AQC-2: 1) Slump records falsified April 11-13, 1978
2) Lab tests for concrete 10 yd³ or less were not performed prior to 1978
3) Lab tests were signed by a Level II inspector not present at the time the tests were performed
4) Alleger signed a pressure gauge certification he was not qualified to certify.

AQC-3: Aggregate tests were falsified (January 1976)

AQC-7: Compression strength test results falsified

AQC-46: Midpour test results were falsified during the placement of the Unit 1 containment base mat on Feb. 21, 1976

AQC-51: Cadweld tensile test results were reported by an inspector without actually performing the tests during the Spring and Summer of 1976

4. Region IV's Conclusion:

AQC-1 Region IV concluded that although falsification occurred, it had no effect on the safety of the structure since compressive strength test results were within the specification.

AQC-2 (1) Region IV reviewed the alleged falsified reports, which failed to provide any meaningful information.

(2) Region IV reviewed the personnel log books of a number of laboratory personnel and could not substantiate the allegation.

(3) Region IV reviewed daily payroll records and could not substantiate the allegation.

- (4) Region IV could not refute the allegation but concluded that since the alleged did not perform the test himself the issue had no safety significance.

AQC-3 The Region IV staff concluded that any falsification of test records on the part of the alleged would not have had a significant adverse impact on the quality of the concrete.

AQC-7 The Region IV staff concluded that because of the uniformity of the concrete produced and the concurrent testing by other laboratory personnel, the allegation could not be substantiated.

AQC-46 The Region IV staff reviewed batch tickets and compressive strength test results which showed the concrete to be uniform and adequate strength. The Region IV staff concluded the concrete placement was adequately tested and properly batched. The allegation was refuted.

AQC-51 Not investigated by Region IV.

5. What TRT Had Done:

AQC-1 The TRT examined the reports that allegedly had been falsified and determined that the falsification had indeed occurred. The TRT also examined the compressive strength test results of the concrete placed which showed the strength to be within specification.

- AQC-2
- (1) The TRT examined the test records and could not determine if the results were falsified. Therefore, the TRT reviewed the results of compressive strength tests performed on the concrete and found the results to be acceptable.
 - (2) The TRT reviewed concrete placement packages for pours 10 yd³ or less and could not determine if the field tests were actually performed. However, compressive strength test results showed the concrete strength to be within specification. The TRT also interviewed four former R. W. Hunt employees who did not substantiate the allegation.
 - (3) The TRT reviewed the Region IV inspection report & 78-07 and agreed with the method of investigation
 - (4) and concluded that the report accurately reported the results of the investigation.

- AQC-3 In addition to reviewing the Region IV inspection report 79-09, the TRT examined the results of slump and compressive strength test for the period in which the falsification was alleged to have occurred. The TRT found the results to be consistent with concrete produced before and after this period.
- AQC-7 In addition to reviewing the Region IV inspection report 79-09 the TRT reviewed slump and air entrainment test results of concrete placed during the period in which the falsification was to have occurred and did not find any apparent variation in the quality of the concrete placed.
- AQC-46 The TRT reviewed the concrete pour package for the placement of the base mat and could not determine if the midpour field tests were indeed falsified. A review of compressive strength test results showed the concrete strength to be within specifications.
- AQC-51 The TRT reviewed the entire 440 cadweld tensile test results for 1976 and identified 30 tests that were performed by the inspector in question. The TRT reviewed the results of tensile tests on cadwelds performed by the inspectors who performed the 30 cadwelds in question and found them to be acceptable.

6. TRT's Conclusions:

- AQC-1 The allegation that a concrete air entrainment record was falsified is true. Even so, the compressive strength of the concrete in question was acceptable.
- AQC-2 The allegation that slump tests on April 11 and 13, 1978 were performed incorrectly and that the results were falsified cannot be refuted. The TRT examined the compressive strength test results of the concrete and found that they were within the specification. The allegation that laboratory tests for small placements were not performed was found to have no safety significance since in addition to the recorded laboratory tests, cylinder strength tests were also performed to demonstrate adequate strength. In addition, interviews with former R. W. Hunt employees

denied the validity of the allegation. The allegation that an inspector signed test results for which he could have had no knowledge was found not to be valid because no reports could be found validated by the inspector for the days alleged. The allegation that the alleged signed a pressure gauge test which he was not qualified to certify was found to have no safety significance since the alleged did not actually perform the calibration.

AQC-3 The TRT cannot refute the allegation that concrete aggregate tests were falsified. However, concrete placed during the period cited in the allegation was consistent with concrete placed before and after.

AQC-46 The allegation that midpour tests were falsified during the placement of the Unit 1 containment mat cannot be refuted. However, compressive strength test results indicate that the concrete placed was of high quality.

AQC-51 The allegation that cadweld tensile tests were falsified cannot be refuted. If this falsification did occur, the structural integrity of the exterior wall of the Unit 1 containment wall was not violated because (1) the tensile test results of other cadweld test specimens, performed by the 21 cadwelders, were found to be satisfactory, (2) the cadweld rejection rate for each cadwelder is at an acceptable level, and (3) the containment structure met all criteria for displacement and cracking control when subject to 115% of design pressure.

Accordingly, all of the above allegations have neither safety significance nor generic implications.

AQC-7 The allegation that compressive strength test results were falsified cannot be closed at this time. The issues regarding air content and slump as well as other allegations discussed above were resolved on the basis of the concrete strength test results. Due to the importance of the concrete strength test results, the TRT concludes that additional action by TUEC is necessary to provide confirmatory evidence that the reported concrete strength test results are indeed representative of the strength of the concrete placed.

7. Action Required:

TUEC shall determine areas where safety-related concrete was placed between January 1976 and February 1977 and provide a program to assure acceptable concrete strength. The program shall include tests such as the use of random Schmidt Hammer tests. The program shall include a comparison of the results with the results of tests performed on concrete of the same design strength in areas where the strength of the concrete is not questioned to determine if any significant variance in strength occurs.

8. Hearings:

None of the above allegations were the subject of hearings.

Allegation Summary

1. Category No. 9

TRT Member: Terry Langowski

2. Subject: QC Inspector Training and Qualification

3. Summary of Allegations

Allegation

AQC-9

Alleger

[REDACTED]

Recertification of inspectors was by "open book" examinations and answers were given during the tests.

4. Region IV Conclusion inspection report 79-09

No specific investigative effort was pursued. The matter of qualifications and certification of R. W. Hunt personnel was reviewed in detail during March 1977. The details regarding the resulting noncompliance citation and subsequent licensee corrective action is contained in inspection report 77-02. The Region IV staff could not verify the validity of the stated allegation beyond the oral statements given.

5. What TRT Did

The TRT reviewed Region IV inspection reports (77-02 and 79-09) and personnel records of former R. W. Hunt employees. The TRT also examined concrete data management records for concrete placed between 1975 and 1978 and found the concrete to be of uniform quality.

6. TRT's Conclusion

The alleger's work prior to the recertification tests was found to be satisfactory as a result of the March 1977 NRC Region IV investigation. This would indicate that the alleger possessed sufficient knowledge to conduct the laboratory tests properly. Also a review of concrete data management records which showed the concrete to be of uniform quality was contributed to by a number of inspectors whose qualifications are not questioned. Therefore, the TRT concludes this issue to have no safety significance.

7. Action Req: None.

8. Hearings

The above was not the subject of hearings.

Allegation Summary

1. Category No.: 10 TRT Members: J. Devers/R. Philleo
2. Subject: Improper Testing
3. Summary of Allegations:
 - AQC-4: [REDACTED] Required aggregate testing equipment was sitting unused on lab shelves.
 - AQC-5: [REDACTED] Shortcuts taken on tests involving grading of aggregate.
 - AQC-6: [REDACTED] Untested concrete placed in 6600cy basemat for Unit 1.
 - AQC-8: [REDACTED] Cylinder compressive tests were run at a faster loading rate.
 - AQC-11: [REDACTED] Concrete cylinders with adequate strength were used to represent other placements.
 - AQC-48: [REDACTED] Concrete cylinders in the Hunt Lab Moist Room were allowed to dry.

4. Region IV's Conclusions:

AQC-4: Based on the investigation conducted by the NRC Region IV Staff and on the fact that the test for potential reactivity was conducted in the Chicago office of R.W. Hunt prior to July 1976, which is one month after the alleged was dismissed, the allegation with respect to the potential reactivity test cannot be substantiated.

AQC-5: The NRC Region IV Staff could not refute the allegation. The tests in question were of a monitoring nature and not material acceptance tests. The matter is deemed not to have an impact on the quality of the concrete.

AQC-6: A review was conducted of batch tickets and test records for the subject 6600 cy placement by the NRC Region IV Staff. Sixty-seven QC test records were identified and, in all cases, the results were found to satisfy the specification requirements. The Region IV Staff concluded that the base mat concrete placement was adequately tested and properly batched. The allegation was refuted.

AQC-8: The tests were conducted by more than seven different inspectors on a rotating job assignment basis. Since there was no wide variance in test data, the consistent batching records, and the high concrete strengths achieved, the NRC Region IV Staff concluded that the fast loading would not have an adverse impact on the safety of the structures.

AQC-11: Not investigated by the NRC Region IV Staff.

AQC-48: Not investigated by the NRC Region IV Staff.

5. What TRT Had Done:

AQC-4: Reviewed "Folder 1-Potential Reactivity, 4000 Ton Test."

AQC-5: Reviewed test method for drying aggregates.

AQC-6: Reviewed all the batch tickets and test records for the 6600 cy basemat placement.

AQC-8: Reviewed cylinder compressive strength test reports.

AQC-11: Same as AQC-8.

AQC-48: Interviewed a Level II Inspector, who was present throughout the period in question.

6. TRT's Conclusions:

AQC-4: Not Valid - Because documentation showed that all required tests for ASTM C-289 were performed.

AQC-5: Not Valid - Because the alleged shortcut of using a hot plate is permitted per the provisions of the specified test method in ASTM C-136.

AQC-6: Not Valid - Because documentation indicated that all the required tests were performed.

AQC-8: The allegation may be true, but the fastest possible loading of test cylinders would have increased the indicated strengths by no more than 6.5 percent and would have no affect on the acceptability of the concrete. (Violated ASTM C-39)

AQC-11: The alleged substitution of test cylinders would have affected so few cylinders that even if true, it could have no material effect on the overall test results.

AQC-48: Valid - But any drying that might occur would have only a minor effect and would produce a conservative result in that measured strengths would be lower than actual results.

7. Action Required: None.

Allegation Summary

1. Category No.: 11 TRT Member: C. Hofmayer
2. Subject: Maintenance of Air Gap Between Concrete Structures
3. Summary of Allegation:

It is alleged that there was poor workmanship regarding the use of elastic joint filler material ("rotofoam") as a temporary spacer during construction to maintain the required air space between seismic Category I concrete structures. TUEC received this allegation anonymously in a telephone call on November 22, 1977.
4. Region IV's Conclusion:

Region IV reports by R. Stewart (IR 77-13 and IR 78-01) investigated rotofoam removal and concluded that inspection and documentation program initiated by B&R was acceptable. It is noted that the program reviewed by the Region IV inspector was subsequently deleted on July 18, 1978.
5. What TRT Had Done:

Reviewed available inspection reports and related documents. Discussed the subject three times with TUEC (Moehlman, Hooten, Kissinger, and Scott), including a telephone conference call with Gibbs and Hill. Conducted field investigation to the extent practical.
6. TRT's Conclusions:
 - (a) TRT cannot determine whether an adequate air gap has been provided between concrete structures. Inspection records indicate unsatisfactory conditions due to the presence of debris in the air gap, such as woodwedges, rocks, clumps of concrete and rotofoam. The NCR issued (4½ years later) to dispose of this matter is very sketchy as to what was done. It also was not apparent that the permanent installation of rotofoam between the Safeguards Building and the Reactor Building, and below grade for the other concrete structures, is consistent with the original seismic analysis.
 - (b) Potential violations include FSAR Sections 3.8.1.1.1, 3.8.4.5.1 and 3.7.B.2.8; 10 CFR 50, Appendix B, Criterion XVI Corrective Action; and, B&R Procedure QI-CP-QCI-2.4-9.

- (c) Inadequate separation between concrete structures could alter the dynamic response of seismic Category I structures and in turn the systems housed within them. Thus the original seismic safety analysis of all seismic Category I structures, systems and components could be questioned.

7. Action Required:

TUEC has been required to perform inspections and provide the results of analyses to demonstrate that seismic Category I structures, systems, and components are safe in the as-built condition.

8. Hearings:

This item was briefly mentioned by R. Stewart in his general hearing testimony, but apparently never pursued by the hearing board.

Allegation Summary

1. Category No.: 12 TRT Members: J. Devers/R. Philleo
2. Subject: Concrete Constructional Deficiencies/Tolerances
3. Summary of Allegations:
 - AC-29: [REDACTED] A spillway pillar, span or column was erected 75° to 80° offset.
 - AC-30: [REDACTED] No reinforcement was placed in a 6' x 6' area of a concrete wall around a 24" pipe.
4. Region IV's Conclusions:

No investigation conducted by Region IV.
5. What TRT Had Done:
 - AC-29: Reviewed concrete placement packages and examined drawings and the structure in question.
 - AC-30: Same as AC-29.
6. TRT's Conclusions:
 - AC-29: The TRT concludes that the allegation is not valid because a structure that was constructed at 75° to 80° offset from the intended geometry could not be accepted by inspection personnel without detection of such a significant deviation.
 - AC-30: The TRT concludes that the allegation is not valid because the area surrounding the pipes in question could hardly be accepted by inspection personnel without confirming that all the required reinforcement surrounding the 24-inch pipe was placed. In addition, the concrete placement card indicates that the reinforcement was placed.
7. Action Required: None.

Allegation Summary

1. Category No.: 13 TRT Members: J. Devers/R. Philleo
2. Subject: Cracks in Concrete Pad Beneath the Reactor Vessel
3. Summary of Allegations:
AC-44: [REDACTED] Detrimental cracks exist in the concrete pad at the bottom of the reactor vessel.
4. Region IV's Conclusion:
AC-44: The allegation was based on factual events that had been detected and documented within the context of the Licensee's Quality Assurance System. The NRC Region IV Staff concluded this issue to have no safety significance.
5. What TRT Had Done:
AC-44: Reviewed concrete placement package 101-2812-001, NCR C650 and examined the cracks in question.
6. TRT's Conclusions:
Although the allegation is correct in citing the existence of cracks, it is not correct in imputing detrimental structural consequences to them. The safety of the structure is not adversely affected by the cracks.
7. Action Required: None.

Allegation Summary

1. Category No.: 14 TRT Member: J. I. Tapia
2. Subject: Control Room Ceiling Elements
3. Summary of Allegations:

Allegation states that field-run conduit, drywall and lighting installed in the control room ceiling are classified as nonseismic, supported only by wires, and that these items may fall as a result of a seismic event. Allegor is [REDACTED]
4. Region IV's Conclusion:

Region IV addressed this allegation in Inspection Report 83-24. Their conclusion was that the items in question were not supported only by wires, but rather that the wires were a redundant high strength support system installed to satisfy the requirements of R.G. 1.29. They further concluded that all three items were classified as seismic Category II (the drywall is a modified nonseismic element).
5. What TRT Had Done:

TRT reviewed available calculations for all seismic Category II and nonseismic items located in the control room ceiling. An inspection of the ceiling was conducted. Discussions were held with responsible design engineers.
6. TRT's Conclusions:

The allegation is considered invalid. However, in the course of the TRT's review, it was determined that the failure of the suspended ceiling elements was not originally considered. Subsequently, the drywall was modified by installing stainless steel cables. The other two suspended ceiling elements were not modified. There were no supporting calculations available showing seismic design considerations for any of the suspended ceilings. The TRT also concluded that, in the design of lighting fixtures, the rotational interaction with the suspended ceiling elements was not considered. The TRT also found that the fundamental frequencies of the supported masses were not determined to assess the influence of the seismic response spectra at that elevation.
7. Hearings:

This allegation was presented in an affidavit to ASLB. Board did not enter it into evidence and, therefore, was never litigated.

8. Actions Required:

TUEC shall provide the NRC with the following information:

1. The results of seismic analysis which demonstrates that the nonseismic items in the control room (other than the sloping suspended drywall ceiling) satisfy the provisions of Regulatory Guide 1.29 and FSAR Section 3.7B.2.8.
2. An evaluation of seismic design adequacy of support systems for the lighting fixtures (seismic Category II and the suspended drywall ceiling (nonseismic items with modification) which accounts for pertinent floor response characteristics of the systems.
3. Verification that those items in the control room ceiling not installed in accordance with the requirements of Regulatory Guide 1.29 satisfy applicable design requirements.
4. The results of an analysis that justify the adequacy of the nonsafety-related conduit support system in the control room for conduit whose diameter is 2 inches or less.
5. The results of an analysis which demonstrate that the foregoing problems are not applicable to other Category II and nonseismic structures, systems, and components elsewhere in the plant.

Allegation Summary

1. Category No. 15 TRT Member - C. Hofmayer
2. Subject: Unauthorized Cutting of Rebar
3. Summary of Allegation [redacted] alleged that undocumented and unauthorized holes were drilled through reinforcing steel (rebar). Neither could provide specific locations where the unauthorized drilling took place. [redacted] alleged that [redacted] drilled unauthorized holes through rebar during the installation of the trolley process aisle rails in the Fuel Handling Building. [redacted] stated that such holes may have been drilled without authorization.
4. Region IV's Conclusion: IR 83-27 (9/28/83) addressed these concerns and found them to be unsubstantiated. [redacted] allegations lacked specificity. [redacted] allegation was considered unsubstantiated since DCA-7041 authorized cutting of No. 18 rebar. TRT could agree with this if allexer had not claimed that holes were drilled 9 in. deep. This aspect of the allegation apparently was not addressed by Region IV. Office of Investigation (OI) interviewed nine individuals alleged to have knowledge of unauthorized cutting of rebar and all provided sworn statements denying any knowledge of such activities (OI Report A-4-83-005, May 20, 1983).
5. What TRT had done: Reviewed relevant IR and OI reports and supporting documents. Reviewed [redacted] log and had lengthy interview with [redacted] and brief discussion with [redacted]. Reviewed 10 CMC's and traced back to design authorization and rebar cutting drawings. Regarding [redacted] allegation, reviewed DCA-7841, relevant reinforcement drawings and G&H design calculations and inspected the trolley process aisle rails and its anchoring system.
6. TRT's Conclusion:
 - a. [redacted] allegations were more specific (as to who made unauthorized cuts of rebar or where the cuts took place. [redacted] names [redacted] as having knowledge of unauthorized cutting. Both were interviewed by OI and provided sworn statements denying the allegation. Based on interview with [redacted] it was concluded that the number of unauthorized rebar cuts alleged, if true, would have an unsequential effect on the safety of the structures. [redacted] allegation could not be closed out since if holes were actually drilled 9 in. deep, rebar would have been cut in the Fuel Building without authorization.

- b. If it can be shown that first and third layers of rebar in Fuel Handling Building were cut, then TUEC will have violated Procedure QI-QP-11.2-1 which requires engineering approval for all rebar drilling.
 - c. Unauthorized cutting of rebar in the Fuel Building at the 810 foot, 6 inch floor level could affect the structural integrity of the floor slab. However, the extent of alleged cutting is not expected to have a significant effect on the overall safety of the structure.
7. Action Required: Regarding Fuel Handling Building, TUEC was required to demonstrate that only the first layer of No. 18 bars were cut or provide design calculations that demonstrate structural integrity if two layers of rebar were cut.
8. Hearings: The allegation regarding the Fuel Building is not related to the hearing. [REDACTED] who is the principal alleged concerning unauthorized rebar cutting, did file an affidavit with the hearing board through CASE.

Allegation Summary

1. Category No.: 16 TRT Member: J. I. Tapia
2. Subject: Overexcavation and Improper Fill Under Unit 1
Containment Building
3. Summary of Allegations:

Allegation relates to invalidation of the expected seismic response of the foundation due to a change in properties resulting from the removal of in-situ material and replacement with lean concrete.
Alleger: 84-006 3/7 84 [REDACTED]
4. Region IV's Conclusion:

Region IV addressed this concern in five reports (75-05, 75-06, 75-07, 75-09, 76-05). Their conclusion was that repair procedures were correctly performed. NRR was also involved in submitting an affidavit (Owen Thompson) addressing the effect on seismic response. ASLB agreed with staff and issued summary disposition closing the concern.
5. What TRT Had Done:

TRT calculated the change in foundation stiffness due to replacement of a limited amount of original rock with dental concrete. TRT also reviewed affidavits filed by NRC staff supporting the motion for summary disposition before the ASLB. TRT also reviewed grouting and dental concrete procedures and interviewed the NRC inspector present during the excavation.
6. TRT's Conclusions:

TRT concludes that allegation is not valid. Dental concrete and grout did not affect either the static or dynamic properties of the foundation. No safety significance or generic implications.
7. Hearings:

ASLB disposed of this concern (intervenor contention no. 7) by granting a summary disposition on March 5, 1982.
8. Action Required:

No actions required of utility.

Allegation Summary

1. Category No.: 17 TRT Members: J. Devers/R. Philleo
2. Subject: Concrete Sampling
3. Summary of Allegation:
AQC-45: [REDACTED] Personnel produced incorrect readings on concrete batch plant scales by leaning on the wires connecting the weighing hoppers to the scales.
4. Region IV's Conclusion:
AQC-45: The NRC Region IV Staff was aware of the allegation but did not investigate.
5. What TRT Had Done:
AQC-45: The TRT entered the scale room when all hoppers were loaded and deflected each scale wire as far as could be conveniently done by one person. Interview of batch plant operator was also conducted.
6. TRT's Conclusion:
The TRT interviewed relevant personnel, observed the layout of the scale room, conducted a demonstration of the alleged tampering, reviewed test data on freshly placed concrete, and examined two NRC inspection reports in evaluating this allegation. Based on its finding, the TRT concludes that the allegation cannot be verified.
7. Action Required: None.