Docket Nos.: 50-390
and 50-391

16 SEP 1986

APPLICANT: Tennessee Valley Authority

FACILITY: Watts Bar Nuclear Plant, Units 1 and 2

SUBJECT: SUMMARY OF SECOND MEETING WITH TVA CONCERNING CABLE PULLING AT WATTS BAR

On September 9 and 10, 1986, the NRC staff and NRC consultants (hereafter referred to as the staff) met with TVA at Watts Bar to discuss cable pulling techniques with the electricians and construction supervisors responsible for performing cable installation, and to inspect cable installations as observable from pull boxes and terminations. The agenda is presented in Enclosure 1. Meeting attendees present at the entrance and/or exit meetings are listed in Enclosure 2.

At the exit meeting, the staff identified a number of preliminary concerns regarding cable pulling (Enclosure 3). The concerns are preliminary as TVA has not formally responded to the staff's August 4, 1986 request for information concerning cable pulling, and the staff has not completed its review.

Thomas Alexion, Project Manager
PWR Project Directorate #4
Division of PWR Licensing-A

Enclosures: As stated

cc: See next page

PWR#4/DPWR-A
TAlexion/mac
09/15/86

PWR#4/DPWR-A
BJYoungblood
09/16/86

MEETING SUMMARY DISTRIBUTION

Docket File
NRC PDR
L PDR
NSIC
PRC System
PWR#4 Reading File
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ACRS (10)

NRC Participants
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M. Hunt
R. Donovan
S. Goldberg
M. Branch
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OTHERS

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Watts Bar Nuclear Plant

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ENCLOSURE 1

AGENDA FOR SECOND WATTS BAR SITE VISIT REGARDING CABLE PULLING AND BEND RADII

1. Discussion of Cable Pulling and Installation Techniques (Past and Present)

   A free form discussion focusing on cable pulling techniques actually used and bend radii concerns. Electricians and construction supervisors responsible for performing and directing cable installation during the period when the bulk of the cable was installed should be present.

2. Inspection of Cable Installations

   The conduits shown in the attached list will be evaluated. The condition of the cable as observable from pull boxes and terminations will be determined. Note: Cables that were inspected during the site visit of 7/18/86 need not be reinspected. However, a second inspection of Manhole No. 22 is desired as is an inspection of the manhole adjacent to No. 22.

TVA Cable Program
Candidates for Cable Inspection/Watts Bar

FRC No.	Conduit No.	Description/Items of Interest
1	1PP2188A	8 kV 3 cables #2/0
2	1PP2189B	8 kV 3 cables #2/0
9	1B1054G	600V 8 cables #8 1/C
10	1M3380A	600V 3 cables 16/C #12, 7/C #10, 9/C #12
15	1PLC2810B	600V 3 cables 400 MCM
16	1PLC2940A	600V 3 cables 400 MCM
20	1VC582A	600V 3 cables 9/C #14
25	1PLC62E	1 cable, instrument
28	1G1525B	600V 4 cables
28A	1G1524A	600V 5 cables
37	2PLC2763A	600V 3 cables 400 MCM
42	2PM7401A	29 cables
43	2PM7400B	26 cables
57	2PM6444E	8 cables
64	2M2987B	20 cables
66	2PLC215B	19 cables
67	2NM-3256E	28 cables
69	2VC-2069-B	3 cables 600V 2/C #12, 4/C #12, 12/C #12
70	2VC2577A	8 cables 600V
71	2PM7872F	1 instrument cable
75	2RM43BA	2 cables
79	RM609B	10 cables

Also Revisit:

- manhole 22 & adjacent manhole

ADDITIONAL QUESTIONS FOR WATTS BAR

RELATING TO FINAL TRAINING BEND RADII

FOR SHIELDED POWER CABLE

Appendix C of WBN Quality Control Instruction QCI-3.05, R10 contains a table of minimum training radii limits for shielded power cables (V5 level, Table 2 from DS-E12.1.5).

For each of the cable manufacturers listed in the table, provide the correspondence from TVA requesting relief from the minimum bend radius recommendation of ICEA and the manufacturers' responses to the request.

ENCLOSURE 2

NRC/TVA MEETING ON CABLE PULLING AT WATTS BAR

September 9 and 10, 1986

NAME	ORGANIZATION
T. Alexion	NRC
A. Gill	NRC
G. Toman	Franklin Research Center
J. Gardner	Consultant
W. Thue	Consultant
M. Hunt	NRC
R. Donovan	NRC
S. Goldberg	NRC
M. Branch	NRC
P. Humphrey	NRC
G. Toto	TVA
J. McDonald	TVA
L. Ottinger	TVA
W. Raughley	TVA
J. Collins	TVA
K. Petty	Stone & Webster
M. Brandon	TVA
V. Kaminsky	TVA
J. Tucker	TVA
J. Parrish	TVA
R. Bell	TVA
M. Martin	TVA
A. Ray	TVA
H. Johnson	TVA
W. Bullard	TVA
R. Parker	TVA
A. Greer	TVA
G. Buford	TVA
K. Jenrem	TVA
D. Thompson	TVA
P. Wilson	TVA
P. Elia	TVA
S. Street	TVA

ENCLSOURE 3

PRELIMINARY CABLE PULLING AND BEND RADII CONCERNS

1. Condulets used as pull points in 6.9 kV runs.

2. Possible bend radius violations on 6.9 kV cable, when compared to normal industry practice and the relief contained in Table 2 of Electrical Design Standard DS-E12.1.5.

3. Presence of condulets at or near the top of long verticle runs.

4. Pull-bys or pull-lines sawing through coverings and exposing conductors.

5. Jamming of cables in bends during pulls thereby scraping off outer coverings.

6. Bending of multiconductor cables to a multiple of individual conductor diameters.

7. Pull segments assumed in sidewall bearing pressure calculations did not actually agree with the method of pull.

8. TVA has not formally responded to the August 4, 1986 request for information.