CEMRO-ED-ST 6 Jun 95

MEMORANDUM FOR RECORD

SUBJECT: Trip Report for Visit to Browns Ferry Nuclear Power Stations 14 - 16 May 95

1. I arrived at Huntsville, AL, the afternoon of 14 May. No business was conducted on this day.

2. On the morning of 15 May, I proceeded to the Browns Ferry Nuclear Plant (BFNP). At BFNP I met with the individuals from Tennessee Valley Authority (TVA) listed in enclosure 1 for an entrance briefing.

3. After the entrance briefing I met with the Nuclear Regulatory Commission resident inspectors to explain the purpose of my visit.

4. Messrs. Locke, Enis, Jansen, and Golub then escorted me on a tour of the site. Particular attention was given to the intake pumping station because of concerns regarding the blast evaluation and subsequent vehicle barrier location.

5. After the site tour Mr. Enis, Mr. Locke, and myself discussed the site drawings, construction detail drawings, and blast analysis. Of particular interest to TVA was their blast analysis of the intake pumping station using the CONWEP computer program. My observation was that TVA was using the CONWEP program properly and their implementation of the results was consistent with good engineering practice. Subsequent analysis that I have performed show that the pressures inside the intake pumping station are at sufficiently low levels so as not to interrupt the operation of the equipment when a standoff distance of at least 100 feet is maintained. My overall impression is that the planned elements of the vehicle barrier system(VBS) are capable of stopping the design basis vehicle, and the location of the VBS will mitigate damage caused by the design basis bomb to an acceptable level. It is also my opinion that configuration of the cabled barriers to the terrain on the west side of the protected area will result in adequate vehicle stopping capacity.

6. Also discussed was a list of questions faxed to me on 3 May (see enclosure 2). My response to these questions is as follows.

a. Question a1. Sketch 2 is correct.

b. Question a2. Yes.

c. Question a3. If a fixed condition is used for a bollard, such as a 2 foot diameter by 4-foot-deep concrete footing, it is not necessary to consider surrounding soil data. Detailed soil

property investigation is not required, only general classification of the soil in vicinity. This classification may be based on previous soil testing.

d. Question a4. Sag of up to 7 inches is acceptable as long as the height of the centerline of the cable group remains between 29 and 36 inches.

e. Question a5. No.

f. Question a6. Yes, use typical local practice.

7. On 16 May I returned to Omaha.

8. If anyone has questions regarding this trip report, please contact me at (402) 221-4914.

Dale T. Nebuda

DALE T. NEBUDA, P.E.
Structural Engineer

2 Encls

REGULATORY LICENSING MEETING

ATTENDANCE LIST

SUBJECT: NRC CONTRACTOR - DALE NEBUDA VISIT - VEHICLE BARRIER SYSTEM (VBS) FOR BFN

DATE: 05/15/95 **TIME:** 0900 **LOCATION:** Licensing Conference Room, Plant Administration Building

NAME	ORGANIZATION	ADDRESS/PHONE
JD JOHNSON	Site Quality	CFC ID 4638
Ron Golub	Project Management	MOD-2A 4536, 90593
Russell O Jansen	Civil Engg - Site	EDB-1F / x 7816
J.R. GLASS	CIVIL ENGR.-SITE	EDB 1F / 7754
R.O. ENIS	CIVIL ENGR-CORP.	LP4F-C / X 8402-C (30137)
MIKE HELLUMS	CORP. LIC	BR4G-C / X2695-C
H.L. Williams	ENG & MATERIAL MGR	EDR-1A
Ralph E. Jackson	Site Security	BFTVC - 1B
James E Brazell	Site security	BFTVC - 1B
NEBUDA-DALE-T.	USACE	402-221-4914
STEVE RUDGE	SITE SUPPORT	BFN PAB-1C / 3690
STEVE LOCKE	SITE ENGR - CIVIL	EDB-1F / 7628

ENCLOSURE 1

FAX COVER

Send To:

Name: DALE NEBUDA

Company: USACE

Address:

Fax Number: (402) 221-4315 Number of Pages: 4

Verification Number:

Subject: VEHICLE BARRIERS & NUREG/CR 6190

From: Tennessee Valley Authority - Browns Ferry Nuclear Plant

Name: STEVE LOCKE

Organization: Nuclear Engineering / Civil Engineering

Address: EDB 1F, Box 2000, Decatur, AL 35609

Fax Number: (205) 729-7439

Telephone Number: (205) 729-7628

Special Instructions: PLEASE PROVIDE WRITTEN RESPONSE OF CLARIFICATIONS FOR FUTURE USE BY TVA SITES

IMPORTANT! If you do not receive all pages, please call immediately

ENCLOSURE 2

COMPUTED _____ DATE _____

CHECKED _____ DATE _____

Q1) CAN YOU CLARIFY THE TERM FOUNDATION AS USED IN NUREG/CR 6190, VOL 2 TABLE 4.3 AND IN SECTION 4.2.2 OF THE SAME DOCUMENT? THIS QUESTION IS BASICALLY RELATED TO BOLLARD TYPE BARRIERS. TWO SKETCHES ARE ATTACHED WHICH REPRESENT TWO INTERPRETATIONS. PLEASE COMMENT ON WHICH SKETCH CONFIGURATION IS CORRECT. INTERPRETATION TO DETERMINE BOLLARD RATING FROM TABLE 4.3. ARE BOTH ACCEPTABLE?

Q2) FOR PURPOSES OF DEFINING A FIXED CONDITION IN THE BERM PROGRAM, CAN A 2'-0" MINIMUM DIAMETER X 4'-0" MINIMUM DEPTH CONCRETE FOOTING BE CONSIDERED AS A FIXED CONDITION, WHICH WOULD BE CONSIDERED EQUIVALENT TO A DEADMAN AS DEFINED IN NUREG/CR-6190 VOL 2?

Q3) WHEN USING BERM, IF A FIXED CONDITION IS USED FOR A BOLLARD IN A 2' DIA X 4' DEEP CONCRETE FOOTING, IS IT REQUIRED TO CONSIDER SURROUNDING SOIL DATA? SECTION 4.2.2 OF NUREG/CR-6190 VOL 2 STATES THAT SOIL TYPE IS NOT A MAJOR PARAMETER FOR CABLE REINFORCED FENCE AND PLANTERS. IF THE SOIL IS NOT SIGNIFICANT FOR THE CABLE BOLLARD TERMINATION POST (SET IN A 2' DIA. X 4' DEEP CONCRETE FOOTING); THE SITE SOIL TYPE WILL BE BASED ON EXISTING DOCUMENTATION RATHER THAN PERFORMING ADDITIONAL TESTING IN SPECIFIC AREAS WHERE THE CABLE SYSTEM WILL BE INSTALLED. IS THIS AN ACCEPTABLE APPROACH TO SOIL CLASSIFICATION FOR USE IN BERM PROGRAM.

Q4) RATHER THAN LIMITING THE SAG TO 2 X CABLE DIAMETER, IS IT ACCEPTABLE TO MAINTIAN CABLE GROUP CENTERLINE BETWEEN 32 AND 36 INCHES ABOVE NOMINAL GRADE AS DEFINED IN NUREG/CR-6190 VOL 2 SECTION 4.2.6?

Q5) HAS THE USACE COMPLETED THE REVIEW OF THE TEMPERATURE AFFECTS ON CABLE SYSTEMS RELATIVE TO "SAG" REQUIREMENTS? IF SO, WHAT GUIDANCE WILL BE GIVEN?

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ENCLOSURE 2

SHEET ____ OF ____

COMPUTED ____ DATE ____

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Q6) IS REINFORCEMENT STEEL REQUIRED IN A 2' DIA. x 4' DEEP FOOTING SUCH AS THE ONE PROPOSED FOR A CABLE-BALLARD SYSTEM (SEE Q1 AND Q2)? IF YES, BUT ONLY TEMPERATURE AND SHRINKAGE STEEL, WOULD AREAS SUCH AS THE TENNESSEE VALLEY WITH MILD WINTERS (SHALLOW FROST LINES) BE EXEMPT BASED ON A FAIRLY CONSISTENT GROUND TEMPERATURE BELOW THE FROST LINE?

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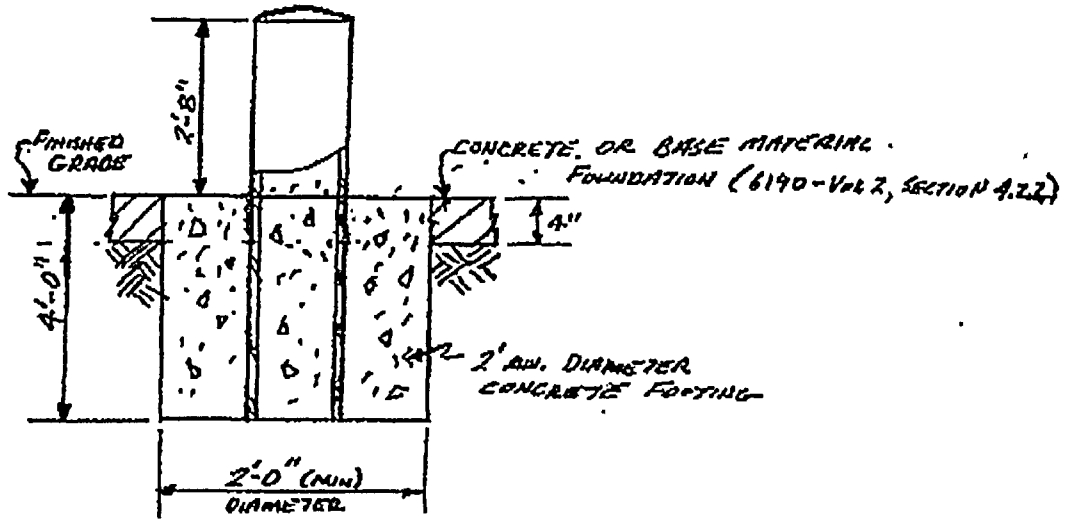
ENCLOSURE 2

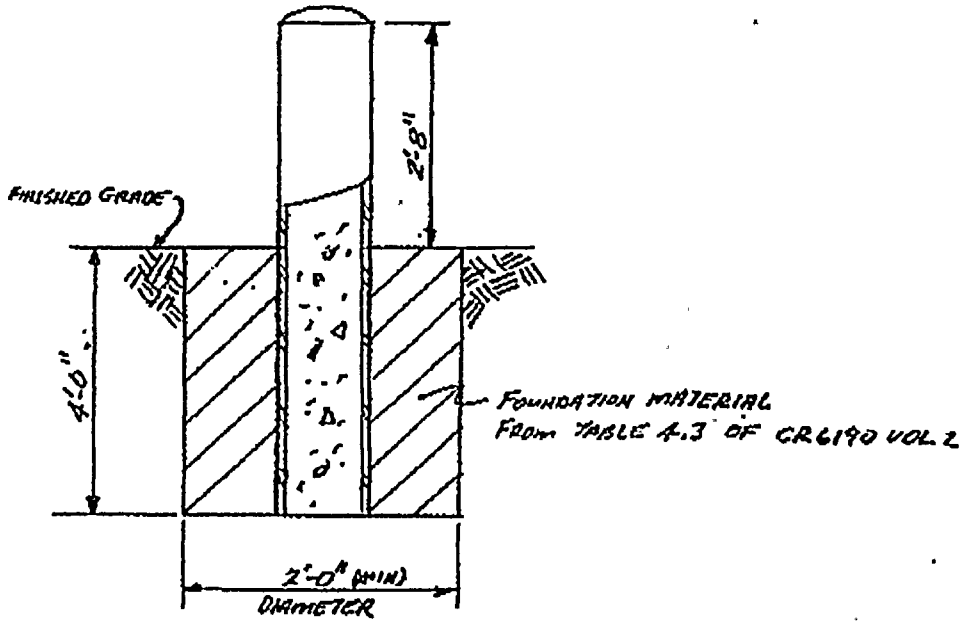
SHEET _____ OF _____

COMPUTED _____ DATE _____

CHECKED _____ DATE _____



SKETCH 1



SKETCH 2

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TOTAL P.004

ENCLOSURE 2