



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

APR 8 1980

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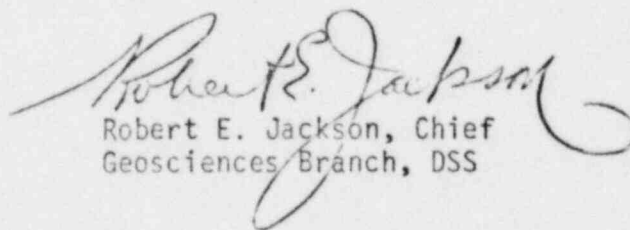
MEMORANDUM FOR: Robert L. Baer, Chief  
Light Water Reactors Branch No. 2, DPM

FROM: Robert E. Jackson, Chief  
Geosciences Branch, DSS

SUBJECT: FAULTING IN UNIT 1 ESW PUMPING STATION AND  
UNIT 2 TURBINE BUILDING AREA

As per the requirements outlined in our August 14, 1978 memorandum, J. Wills of the Tennessee Valley Authority (TVA) informed S. Wastler on September 24 and October 22, 1979 that additional faulting had been discovered at the Phipps Bend Nuclear Plant. The NRC staff has received and evaluated the attached TVA letter reports. The reports dated October 24, 1979 and February 19, 1980 respectively are entitled "Reverse and Transverse Faults in the Unit 1 ESW Pumping Station" (TVA designated number 15) and "Fault Zone in the Rock Foundation for the Unit 2 Turbine Building" (TVA designated number 16). These reports provide the geologic data and mapping of Fault zones 15 and 16.

Based on the NRC staff's evaluation of these reports, similar past TVA reports and the resulting staff fault evaluations (e.g. November 5, 1979), the staff considers fault zones 15 and 16 to be associated with deformational activity related to the region's early geologic history, sometime before 250 million years before present. In addition, the staff agrees with TVA in that Fault zone 16 is the extension of faults 7, 8 and 9. Faults 7, 8 and 9 are discussed in the July 18, 1979 memorandum from R. Jackson to Robert Baer. Therefore, the staff considers the faults non-capable within the meaning of Appendix A to 10 CFR Part 100.

  
Robert E. Jackson, Chief  
Geosciences Branch, DSS

Enclosure:  
As stated

cc: w/enclosure  
J. Knight  
R. Jackson  
L. Reiter  
J. Greeves  
R. Benedict  
S. Wastler  
S. Goldberg  
PDR  
Local PDR

400 Chestnut Street Tower II

February 19, 1980

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Mr. Denton:

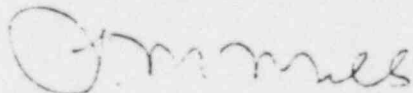
In the Matter of the Application of ) Docket Nos. STN 50-553  
Tennessee Valley Authority ) STN 50-554

In a October 22, 1979, telephone conversation, Jerry Wills of my staff notified Bob Benedict of your staff that an additional fault had been discovered at our Phipps Bend Nuclear Plant in the unit 2 turbine building area. A conference call was subsequently made to the NRC geologist, Sandra Wastler, on October 23, 1979, to discuss the fault. The enclosure provides a detailed description of this feature.

We do not consider this minor fault to be capable within the meaning of Appendix A to 10 CFR Part 100.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



L. M. Mills, Manager  
Nuclear Regulation and Safety

Enclosure

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## PHIPPS BEND NUCLEAR PLANT

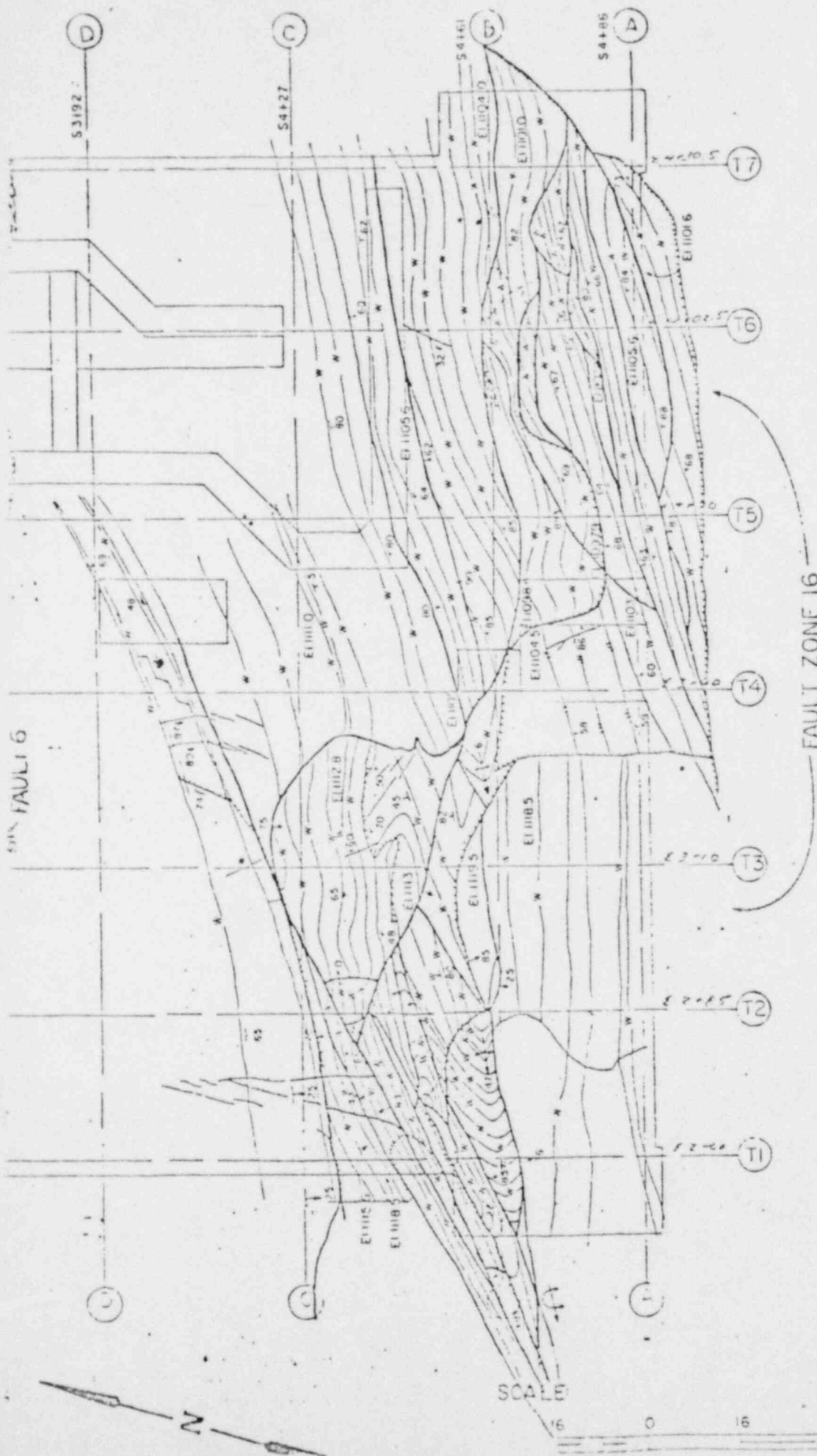
### Fault Zone In The Rock Foundation For The Unit 2 Turbine Building

Continued excavation of the weathered rock in the south end of the Unit 2 turbine building has exposed complex folding and faulting (see attached map A).

This area is defined by a weathered, faulted, contorted rock zone striking approximately N 50° E and dipping from horizontal to vertical, but generally parallel to the regional dip. On the east perimeter of the turbine building excavation, the faults extend under the overburden. They are exposed again by excavation 300 feet to the east in the CCW trench, from which they can be traced along the excavated rock surface to the CCW pumping station (see attached map B).

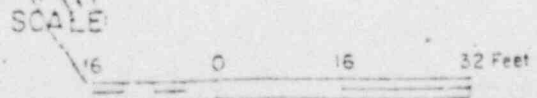
This fault zone (designated number 16) is an extension of faults 7, 8 and 9, located in the CCW pumping station foundation. This was reported to NRC in a memorandum from J. E. Gilliland to H. W. Denton, dated April 30, 1979 (MEB 790502 521).

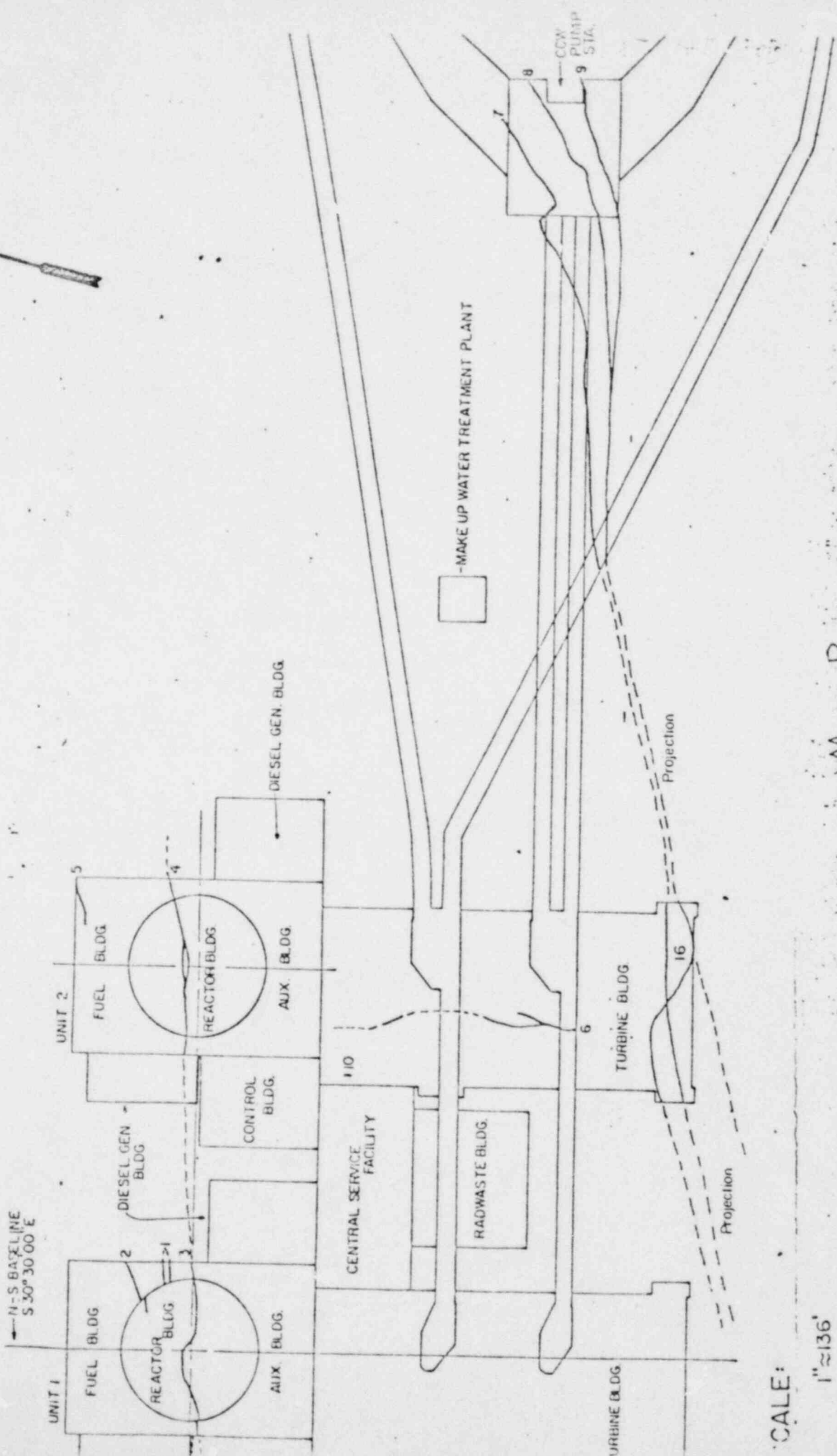
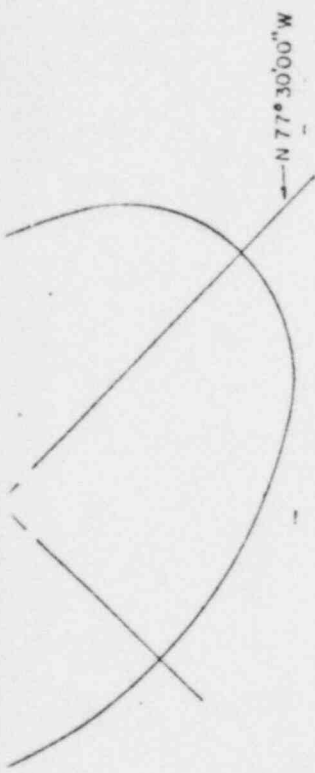
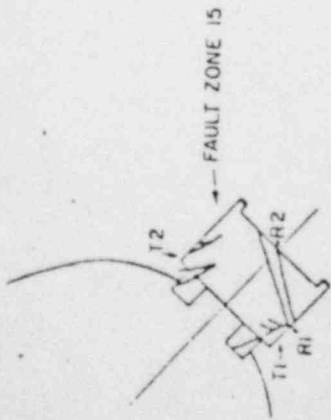
Examination of the overburden-rock contact around the perimeter of the excavation has revealed no offsetting of Quaternary terrace deposits. The folds and faults in the Unit 2 turbine building excavation show no evidence which would indicate that they did not occur in the early tectonic development of the Paleozoic (250+ million years) folding and faulting in this area. These faults, having been stable for 250 million years are not considered to be capable of producing ground offsets or generating earthquakes. Therefore, we do not classify them as capable faults, within the meaning of Appendix A to 10CFR part 100.



UNIT 2 TURBINE BUILDING

MAP A





MAP B

SCALE:

1" ≈ 136'

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 7910300155    DJC DATE: 79/10/24    NOTARIZED: NO    SCKET #  
 FACIL: ST-50-553    Phipps Bend Nuclear Plant, Unit 1, Tennessee Vall    05000553  
 ST-50-554    Phipps Bend Nuclear Plant, Unit 2, Tennessee Vall    05000554  
 AUTH. NAME    AUTHOR AFFILIATION  
 MILLS, L.M.    Tennessee Valley Authority  
 RECIPIENT NAME    RECIPIENT AFFILIATION  
 DENTON, H.R.    Office of Nuclear Reactor Regulation

SUBJECT: Confirms 790924 telcon re addl earth faults in area of Unit 1 pumping station & forwards detailed description. Three color photographs encl.

DISTRIBUTION CODE: 80018    COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 3  
 TITLE: PSAR/FSAR AMDTS and Related Correspondence

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	RC-LWR #2	1	0	LA LWR #2	1	0	
INTERNAL:	01 REG FILE	1	1	02 NRC PDP	1	1	
	06 I & E	2	2	08 OPFR LIC BR	1	1	
	09 GEOSCIEN BR	4	4	10 QAR	1	1	
	11 MECH ENG BR	1	1	12 STRUC ENG BR	1	1	
	13 MATL ENG BR	2	2	15 REAC SYS BR	1	1	
	16 ANALYSIS BR	1	1	17 CORE PERF BR	1	1	
	18 AUX SYS BR	1	1	19 CONTAIN SYS	1	1	
	20 I & C SYS BR	1	1	21 POWER SYS BR	1	1	
	22 AD SITE TECH	1	0	26 ACCOINT ANLYS	1	1	
	27 EFFL TRT SYS	1	1	28 RAD ASMT BR	1	1	
	29 KIRKWOOD	1	1	AD FOR ENG	1	0	
	AD PLANT SYS	1	0	AD REAC SAFETY	1	0	
	AD SITE ANALYSIS	1	0	DIRECTOR NRP	1	0	
	HYDRO-METEOR BR	2	2	MPA	1	0	
	CELD	1	0				
EXTERNAL:	03 LPDR	1	1	04 NSIC	1	1	
	30 ACRS	10	10				

ltr  
 MOORE AD  
 EPB #2 - BC  
 SCALTI PM  
 EPB #2 LA

POOR ORIGINAL

59  
 55      40



400 Chestnut Street Tower II

October 24, 1979

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Mr. Denton:

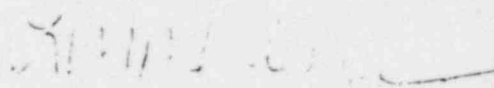
In the Matter of the Application of ) Docket Nos. STN 50-553  
Tennessee Valley Authority ) STN 50-554

In a September 24, 1979, telephone conversation, Jerry Wills of my staff notified Bob Benedict of your staff that additional faults had been discovered at our Phipps Bend Nuclear Plant in the area of the Unit 1 ESW pumping station. A conference call was subsequently made to the NRC geologist, Sandra Wastler, on September 24, 1979, to discuss the fault. The enclosure provides a detailed description of this feature.

We do not consider this minor fault to be capable within the meaning of Appendix A to 10 CFR Part 100.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

  
L. M. Mills, Manager  
Nuclear Regulation and Safety

Enclosure

DUPLICATE

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BOOK  
1/71  
ORIGINAL  
PHOTOS TO  
FILES

PHIPPS BEND NUCLEAR PLANT  
REVERSE AND TRANSVERSE FAULTS  
IN THE UNIT 1 ESW PUMPING STATION

Geologic mapping of foundation bedrock in the Unit 1 ESW pumping station has revealed two reverse faults in the southeast quadrant of the building, and two transverse faults located west of the reverse faults. They are grouped as fault zone 15 and designated R1, R2, T1, and T2 (see attached photos and drawing for locations).

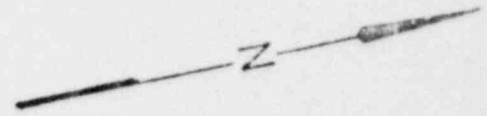
Faults R1 and R2 are reverse faults parallel to the axis of an anticline to the southeast. R1 dips  $67^{\circ}$  NW. and strikes N.  $50^{\circ}$  E. R2 dips  $76^{\circ}$  SE. and strikes N.  $50^{\circ}$  E. Both fault traces are defined by calcite-healed fractures that extend across the floor of the excavation from the south wall to the east wall of the building.

Transverse faults T1 and T2 are located west and northwest, respectively, of R1 and R2. T1 consists of three nearly vertical branches, one striking N.  $52^{\circ}$  W., and the other two striking N.  $10^{\circ}$  E. The fault traces are defined by calcite-healed fractures that offset bedding from 3 to 7 inches. T2 is 70 feet north of T1 and exhibits essentially the same characteristics.

All four faults described were formed during the Paleozoic Era and are characteristic of tectonic forces that developed during the formation of the Saltville fault family. These faults, having been stable for 250 my, are not considered to be capable of producing ground offsets or generating earthquakes. Therefore, we do not classify them as capable faults, within the meaning of Appendix A to 10 CFR Part 100.



# UNIT I ESW PUMPING STATION



MAJOR AXIS OF SPRAY POND  
N 77° 30' 00" W

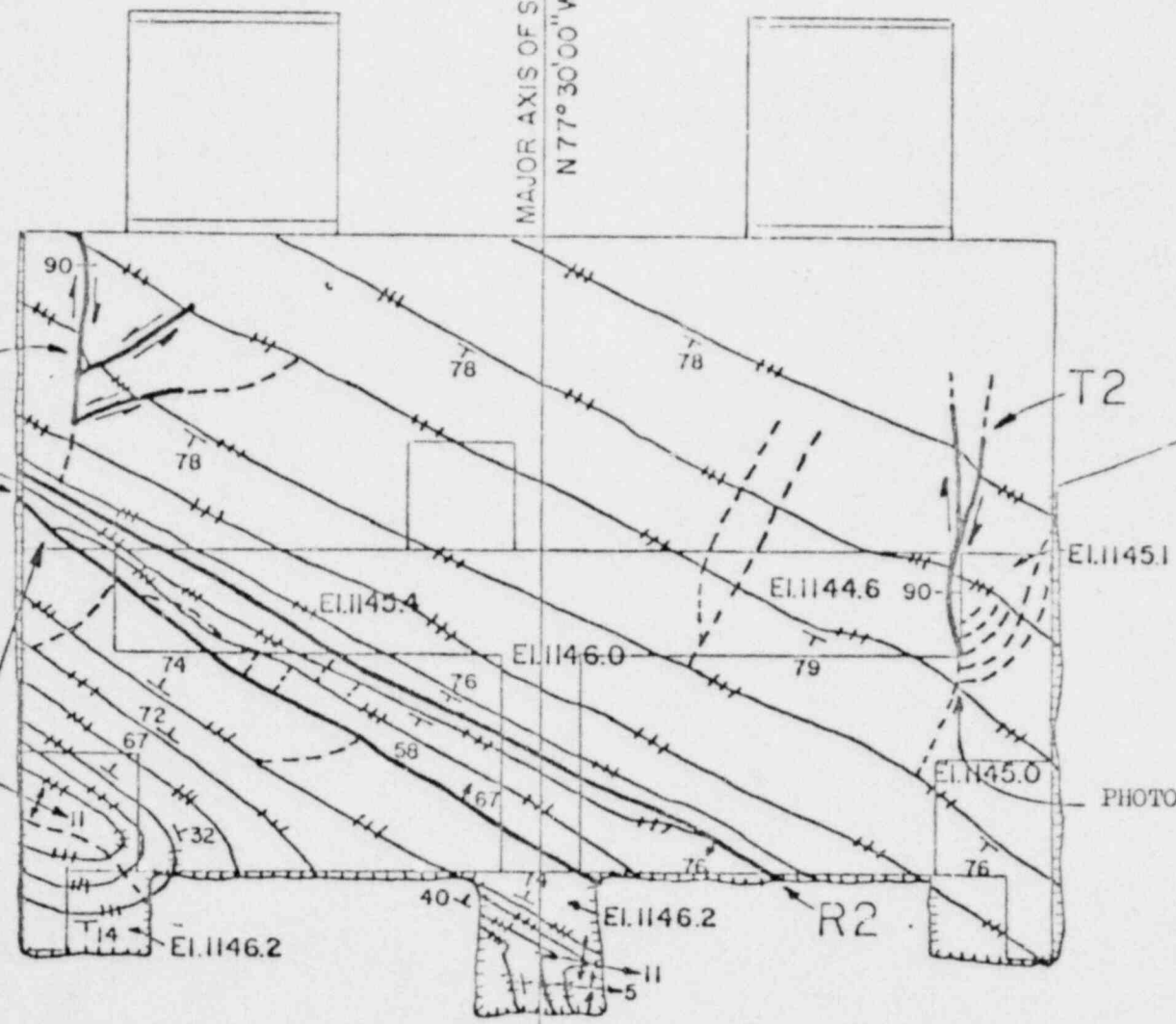
PHOTO #3

T1  
R1

T2

PHOTO #1

PHOTO #2



SCALE:  
1" = 16'

FAULT ZONE 15

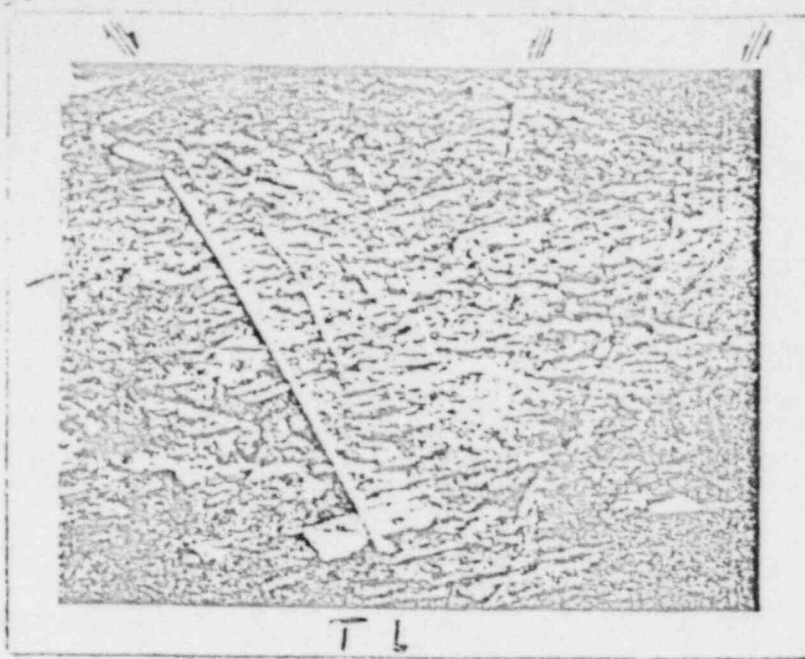


PHOTO 15 - Fault zone, 15 - R1  
View North

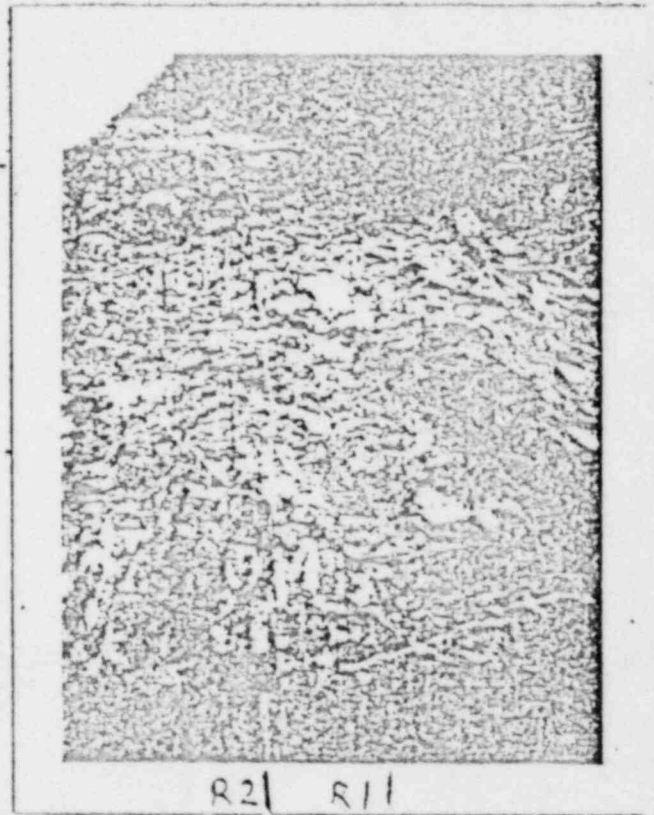


PHOTO 15 - Fault zone, 15 - R2, R11  
View North

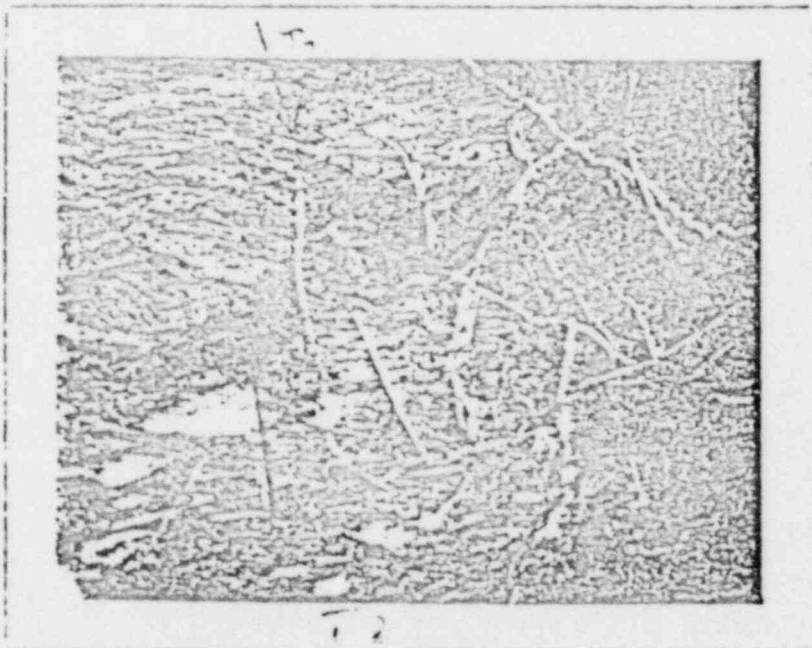


PHOTO 15 - Fault zone, 15 - T2  
View North

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