



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

Local PDIR

NOV 17 1976

MEMORANDUM FOR: Files

FROM: J. Carl Stepp, Chief  
Geosciences Branch, DSE

SUBJECT: VISIT TO BLACK FOX SITE TO INSPECT OFFSETS  
IN EXCAVATION FOR UNIT NO. 1

On October 9 and 10, I visited the Black Fox Station Unit 1 site and vicinity to inspect faulting and offsets reported in the excavation for Unit 1.

On October 9, I visited the site vicinity and exposures of the Seneca fault near the Pensacola Dam, about 50 miles northeast of the site. My purpose in visiting the site vicinity was to become familiar with the geologic section there and determine whether evidence of local deformation could be found. None was found in the exposures available to me. My purpose in visiting the exposure of the Seneca fault was to observe the nature and extent of local deformation associated with the fault in the exposure.

On October 10, I visited the Black Fox Station Unit 1 site. I was accompanied on the visit by Joe Tapia and Bill Hubacek of the NRC Region IV Office. We met with PSO staff and consultants at the PSO field office and later, we inspected exposures in the excavation for Unit 1. A list of attendees is attached. We were joined during our inspection of the excavation exposures by Dr. Fischer, who inspected the exposures on behalf of the intervenor.

Before inspecting the trenches we were briefed by the PSO consultants on the status of the investigations. The excavation had been completed down to the top of the Drywood coal. At that level 4 trenches were opened for the purpose of mapping the Drywood coal horizon. This was done because localized structure at that horizon had been recognized during site investigations (see Safety Evaluation Report P 2-18). Initially four trenches were opened; trenches 1 and 3 are about 250 ft in length extending across the excavation in an east-west direction. Trench 2 connects trenches 1 and 3 at their east end. Trench 4 extends

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about 100 ft southward from near the center of trench 3. These four trenches together expose the Drywood coal in subcrop and the local anomaly in the coal which had been identified during site exploration (see PSAR Fig. 2B.5-14 and SER P 2-18).

The trenches revealed a local synclinal depression in the Drywood coal. The axis of the depression is east of the center of the foundation and trends approximately north-south. Shear offsets of the Drywood coal horizon were seen in trenches 1 and 3 on the west flank of the local anomalous depression in the Drywood coal. The shear plane dips west at an angle of 10 degrees to 17 degrees with the horizontal and strikes approximately north. The Drywood coal horizon is offset about 1 ft vertically and as much as 10 ft horizontally. The sense of displacement is normal. The strike of the shear plane appears to be approximately parallel to the trend of the axis of the local depression in the Drywood coal. A second fault was exposed about 5 feet east of the west end of trench 1 and in trench 2 about 10 feet south of its intersection with trench 1. This fault appears to dip to the west at a low angle and shows minor offset at the Drywood coal horizon. A third minor shear was seen in trench 1 approximately 30 ft east of its west end. This fault is extremely localized and appears to be confined to the strata above the Drywood coal horizon.

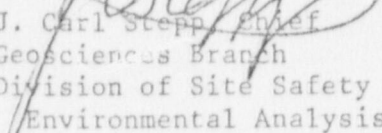
Following the discovery of fault offsets along the west flank of the anomalous depression in the Drywood coal PSO excavated seven additional trenches for the purpose of tracing the extent of faulting in the excavation. In addition, trench 3 was deepened in an effort to determine the downward extent of the faulting into the Savannah Formation which directly underlies the Drywood coal and is approximately 75 ft in thickness. The upper part of the Savannah formation consists of a gray silt clay about 10 ft in thickness underlain by a gray shale containing concretions extending below the level penetrated by trenching.

In trenches 1 and 3 the silt clay horizon appears to thin under the depression in the coal and to be somewhat thicker (squeezed upward) in the area of fault offset along the west flank of the depression in the coal horizon. This together with slumps in the zone of faulting suggest that the offsets were caused by differential compaction at or shortly following formation of the Drywood coal, thus, the faulting appears to have a non tectonic origin.

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PSO was doing additional mapping of trench 10 (deepend sector of trench 3) in an effort to determine whether or not the shear offsets penetrate the underlying concretionary shale. In addition, the contact between Pennsylvanian and Quaternary rocks exposed in trench 12 was being mapped to determine whether evidence of post Quaternary offset could be found.

Following inspection of the trenches we again met with PSO briefly at the construction field office. We requested that maps of the trenches be furnished to the staff upon completion of the field work in order that the staff prepare for a second site visit to confirm details of the mapping. We further requested that a complete report, including interpretations, be submitted to the staff for review.

  
J. Carl Stepp, Chief  
Geosciences Branch  
Division of Site Safety and  
Environmental Analysis

Enclosure:  
Attendance List

cc: w/enclosure  
R. Boyd  
R. DeYoung  
R. Denise  
D. Vassallo  
S. Varga  
J. Tourtellotte  
D. Davis  
B. Paton  
W. Hubacek, Region IV  
S. Wastler  
L. Reiter  
R. Jackson  
L. Heller  
PDR  
Local PDR