



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

JAN 23 1980

MEMORANDUM FOR: James P. Knight, Assistant Director for
Engineering, DSS
THRU: *RBM for* Robert E. Jackson, Chief
Geosciences Branch, DSS
FROM: L. W. Heller, Leader
Geotechnical Engineering Section
Geosciences Branch, DSS
SUBJECT: STATUS OF GEOTECHNICAL REVIEW OF MIDLAND AND BAILLY
PLANTS BY CORPS OF ENGINEERS

Interagency Agreement No. NRC-03-79-167 with the Corps of Engineers was executed on September 25, 1979 that included two review tasks for Midland and Bailly.

The target date for letter reports from the Corps outlining unresolved issues and recommendations for resolution for both plants was 12/79.

Corps personnel visited NRC to attend a meeting on Midland on January 15 and 16, 1980. Conversation with District and Division Corps representatives revealed that adequate Corps manpower to accomplish the review had not yet been identified or assigned; one reviewer had made a cursory examination of available information and had visited both sites, but at least a three man review team is needed for these plants.

On January 18, the Corps advised me that the lead reviewer previously assigned to the cases (and who had made both site visits) will terminate his review in two weeks and be assigned to other duties for a 6 month period. A replacement (John Grundstorm) was being assigned and I was told he would begin work immediately.

On January 21, Joe Kane contacted the Corps and was advised that the following team was being assembled to work on the Midland/Bailly review at the Detroit District office.

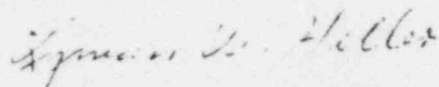
526-5776
526-5781
Bill Lawhead - Coordinator/Administrator
John Grundstorm - geotechnical engineer
Ron Erickson
Bill Otto
Peter Kytasty

Also Note change in "Midland/Bailly" 2-6-1980

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I estimate that the review subtask schedule given in the contract will be delayed by about 3 months since the Corps is just now beginning their review. +
Thus, for the Bailly plant, we would be prepared to release pile driving operations, probably with a number of stipulations and conditions that could again halt driving, by June rather than March.



Lyman W. Heller, Leader
Geotechnical Engineering Section
Geosciences Branch, DSS

cc: H. Denton
R. Mattson
F. Schroeder
D. Ross
D. Lynch
D. Hood
R. Jackson
L. Heller
J. Kane
D. Thompson
T. Davvison, Univ. of Ill.

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FROM Kubinski

DATE 1 Feb 80 4 CAT 1

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SUBJECT: Geotechnical Engineering Assistance to NRC Orientation Meeting at the Bethesda, Maryland 7-8 November 1979

5. The items discussed are listed below:

a. Meeting I:

I. This meeting was of orientation nature and a good introduction to the entire program was given by Dave Lynch, Project Manager, NRC, Bailly Nuclear Generating Station.

II. The purpose of NRC's mission with respect to review is to insure radiological safety and containment of all possible danger. It is not NRC's concern to see that OASHA standards or safety in general ^{are} observed.

III. The issue at Bailly is concerned with piles supporting ~~of~~ primary containment facilities. It is a rigid structure and, therefore, no displacement can be tolerated. Dynamic operations result in displacement and this displacement must be monitored so that the entire structure is adjusted accordingly. ^{There} is a very defined load/deflection analysis for the entire facility.

IV. The containment facility cannot fail. It may have to be politically safe which implies a greater than necessary safety factor to be technically safe.

V. The Safety Evaluation Report (SER) has not yet been written for the Bailly plant.

VI. It is necessary to defend any technical judgments before the Advisory Committee for Reactor Safety (ACRS). At the Bailly site it will be necessary to defend as built conditions.

VII. The term "Intervener" is defined as follows: An intervener must live within 50 miles of the proposed facility (the State in which the facility exist can act as an intervener); the interveners may hire firms or individuals to represent them in obtaining information concerning the construction or operation of nuclear facilities.

VIII. The normal review process consists of the following items:

- Applicant submits PSAR (Preliminary Safety Analysis Report)
- NRC writes Safety Evaluation Report (SER). This SER is a concise picture of NRC staff's review.

NRC submits SER to Advisory Committee on Reactor Safety (ACRS). The ACRS can form subcommittees in which their members and/or their consultants can evaluate the specific issues.

- ACRS evaluates SER/PSAR and letter on the safety of the plant is written.

SUBJECT: Geological Engineering Assistance to NRC Orientation Meeting at the Bethesda, Maryland 7-8 November 1979

- Public hearings are generated only if the license is thought to be able to be granted. This is a construction license.

- The Construction Permit, issued by NRC, but license is granted by the Chairman of the Commission.

- The review of deviations from the PSAR, SER and CP must be reported by the applicant to the Nuclear Regulatory Commission Office of Inspection and Enforcement (I&E). The I&E Office sends this information to the review office for review, and ~~the~~ new license or amended license is usually issued.

NOTE: The following is a list of items concerning the Bailly plant.

IX. The construction permit for Bailly Plant consist of non-displacement high capacity piles which go to bedrock or glacial till and support ~~the~~ concrete mat foundation. They are embedded ⁱⁿ concrete approximately three feet.

X. A brief driving history for the piles is as follows. In driving the piles stiffening occurred at 55 feet. Blow counts from 200 to 300 blows per inch were experienced. The till material is at about 110 feet and bedrock is at 120 feet. Above a very stiff clay deposit which is ^{usually} ~~is~~ shaped in profile, intermittent sands and clays are the overburden material. This stiffening occurs in a very dense sand above this larger clay deposit.

XI. In May 1974 the construction permit called for a test pile program which indicated significant problems in driving. Shortly after that, NIPSCO came in with a short pile proposal. In September 1977 an alternate proposal to jet long piles was submitted. A test program was initiated and in February 1978, the NRC issued an order to jetting the piles. In jetting the piles, the soil reacted similar to a giant wash boring (1,000 gallons per minutes at 300 PSI). The area of disturbance was much too large and the pile was actually loose near the surface. The nature of the structure which was to be supported by these piles demanded that the piles have uplift capacity. Because of the disturbance and lack of uplift capacity, the short pile concept is once again an issue as of March 1978. These piles would develop end bearing and friction. The applicant was allowed to drive 100 piles as indicators to determine capacities and applicability of using the short pile concept. A cluster was driven to observe heave within the piles. This brings us to the current state of the issue.

XII. It is now the task of the NRC review to look at all of the above submittals and reconsider the entire issue. They must also determine if construction restrictions are required or further load test are required. The jetting procedures have made soft spots which encompass almost five percent of the area of the foundation. These ~~loosen~~ ^{loosen} areas must be densified and a technique developed to insure that they develop all lateral capacities as well as uplift capacities.

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SUBJECT: Geotechnical Engineering Assistance to NRC Orientation Meeting at the
Bethesda, Maryland 7-8 November 1979

XIII. The Advisory Committee on Reactor Safety (ACRS) has already indicated that nothing was substantially wrong with use of short piles to provide substantial foundation. That is, that there is no deflection in the piles and that all the disturbed areas due to the jetting procedures are densified.

XIV. It is apparent that now it is necessary to look at the PSAR and become fully familiar with it as well as considering the groundwater affect on the foundation.

XV. NCE will have to prepare the entire Safety Evaluation Report (SER) and not just assist in its preparation. A sample Safety Evaluation Report is available from NRC and will be transmitted.

NOTE: The last item is of general nature.

XVI. The hearing ^{of a Hearing Board} process can be described as follows. Administrative law judge act as the Chairman. Engineer Scientists and some technical people drawn from university staff act as part of the committee. The commission delegates authority to the Board, the Board in turn can dictate policy. The Board can question any item and the interveners' attorney can question around items brought up by the Board. It is, therefore, necessary to minimize any questions the Board may have by clear concise presentations.

XVII. NCE will meet with Newmark, Hall and Davison at Champagne (University of Illinois) concerning the piling issue sometime in January or February.

b. Meeting II:

This meeting was of a briefer nature than Meeting I. At this meeting Joe Kane (NRC) and Darl Hood (NRC Project Manager) presented an introduction concerning issues at the Midland Nuclear Facility.

I. As a preliminary to the meeting, the following items were discussed. A brief discussion on what safe shutdown earthquake (SSE) or an operating base earthquake (OBE) were had. Appropriate volumes of the Preliminary Safety Analysis Report (PSAR) were to be sent to NCE as soon as possible. The applicant, Consumers Power Company (CPCo), must still respond to original I&E questions on the interim report and on 10CFR 50.54(f). There is apparently a report or a paper on the dewatering system.

II. The I&E Office (Inspection and Enforcement) is investigative in nature and generally goes to the NRR (Nuclear Regulatory Review) for support. The I&E Office considered the overall performance of the applicant as well as the technical adequacy of any field changes. The viability of the Quality Assurance Program is also investigated by this group.

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SUBJECT: Technical Engineering Assistance to NRC-Oriented Meeting at the
Baltimore, Maryland 7-8 November 1979

III. The current state of the review is one in which the construction permit should be suspended, modified or revoked by the Commission. One of these actions is necessary to take concerning the quality assurance breakdown at the Midland site as well as the inadequate fill in support of Category I structures. +

IV. Questions of a non-policy nature can go directly to the applicant. No commitment is considered to be binding between NCE and the applicant. Once these questions are established and they are addressed to the applicant, they should be documented especially when they are relatively significant.

V. Construction inspections or visits to the site are necessary in performing the mission. NCE must be able to reply (we saw) in reference to a specific issue if possible.

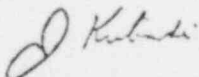
VI. More than one visit is in most cases necessary, since sequential events will be occurring in the fixing of unstable conditions at the site.

VII. The NRC Office of Inspection and Enforcement has a fulltime man at the site, and he can be contacted concerning observing any action at the site.

VIII. Meeting concluded with two immediate items of major concern:

- a. Should the existing license be modified, suspended or revoked.
- b. A list of visits and times sequentially established in the future.

6. These meetings were of orientation in nature and it is difficult to establish any conclusions. The actions to be taken in the future are ones concerning scheduling field trips and site visits, carrying out orientation procedures with all documents transmitted, assuring that all documents have been transmitted and then beginning the review process and making either recommendations, comments, or conclusions regarding the situations at both facilities.


J. KUBINSKI
Technical Branch

CONCURRENCE:

R. Erickson

L. Heller (NRC)

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UNITED STATES
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MAR 06 1980

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O. Thompson

MEMORANDUM FOR: Robert E. Jackson, Chief
Geosciences Branch, DSS

THRU: Lyman W. Heller, Leader
Geotechnical Engineering Section
Geosciences Branch, DSS

FROM: Owen O. Thompson, Geotechnical Engineer
Geotechnical Engineering Section
Geosciences Branch, DSS

SUBJECT: SITE VISIT TO BAILLY WITH COE DETROIT

PLANT NAME: Bailly Nuclear 1
LICENSING STAGE: Post CP
DOCKET NUMBER: 50-367
TAC NUMBER: 4764
MILESTONE NUMBER: R-18
RESPONSIBLE BRANCH: LWR-4; M. D. Lynch, LPM
REVIEW STATUS: Awaiting COE review comments

On February 20 and 21, I visited the Bailly site with M. D. Lynch, Project Manager, DPM, and representatives from the Corps of Engineers (COE) Detroit District and North Central Division. The licensee and his consultants also were present. The attendance list is attached.

The purpose of the visit was to enable the COE staff to become familiar with the site since the COE has assigned different reviewers to the Bailly project since the site visit on November 26, 1979.

The licensee presented a summary of the design and construction history. We were conducted on a tour of the excavation and we viewed the present site conditions. The excavation was muddy and icy. The tops of piles were visible as follows:

- a) all production piles (numbering about 1000 piles) in the turbine building area
- b) the piles installed for the indicator pile program, numbering about 130 piles
- c) the 40 piles in the area of the evaluations

of test area E (where jetting was used).

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No. of pages: 16

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WASHINGTON, D. C. 20555

FEB 11 1980

MEMORANDUM FOR: D. T. Lynch, LPM
Light Water Reactors, Branch No. 4, DPM

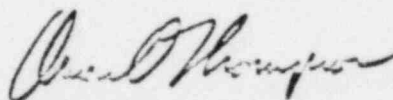
THRU: Robert E. Jackson, Chief
Geosciences Branch, DSS

Lyman W. Heller, Leader
Geotechnical Engineering Section
Geosciences Branch, DSS

FROM: Owen O. Thompson, Geotechnical Engineer
Geotechnical Engineering Section
Geosciences Branch, DSS

SUBJECT: COORDINATION OF BAILLY REVIEW

In a phone conversation February 6, 1980, with Mr. Neil Gehring, Corps of Engineers, Detroit (C of E Detroit), I attempted to establish a date for a visit to the Bailly site for the benefit of the new C of E Detroit reviewers. We have been trying to coordinate this visit with a visit to Midland site since both projects will have the same reviewers. Furthermore, we have attempted to have consecutive visits to minimize the travel of Waterways Experiment Station (WES) personnel (seismic analysis review consultants to C of E Detroit). Mr. Gehring informed me that WES does not currently have a qualified reviewer to assign to the Bailly project. He indicated that C of E Detroit management would consider this problem and inform us of their course of action. In the interim, I suggest that you tentatively arrange a site visit for the week of February 19 and 20, 1980. This schedule precludes a combined Midland/Bailly site visit but hopefully will expedite the review by C of E Detroit. If they identify additional consultants, another site visit may be necessary at a later date.



Owen O. Thompson, Geotechnical Engineer
Geotechnical Engineering Section
Geosciences Branch, DSS

cc: L. Rubenstein
J. Knight
R. Jackson
L. Heller
O. Thompson
D. Hood
J. Kane

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

FEB 19 1980

Docket No.: 50-367

MEMORANDUM FOR: L. S. Rubenstein, Acting Chief, Light Water Reactors, Branch No. 4, Division of Project Management

FROM: M. D. Lynch, Project Manager, Light Water Reactors, Branch No. 4, Division of Project Management

SUBJECT: FORTHCOMING MEETING WITH NIPSCO REGARDING THE BAILLY REVIEW OF THE FOUNDATION PILE PROPOSAL BY THE U. S. CORPS OF ENGINEERS

DATE & TIME: February 20, 1980
11:30 A.M.

LOCATION: Bailly Site

PURPOSE: To acquaint the Corps of Engineers with the Bailly site.

PARTICIPANTS: NIPSCO
A. Severance, et al
NRC
O. Thompson, et al
D. Lynch

A large, stylized handwritten signature in black ink, appearing to read "M. D. Lynch".

M. D. Lynch, Project Manager
Light Water Reactors, Branch No. 4
Division of Project Management

cc: See next page

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

FEB 28 1980

MEMORANDUM FOR: Robert E. Jackson, Chief
Geosciences Branch, DSS

THRU: Lyman W. Heller, Leader *[Signature]*
Geotechnical Engineering Section
Geosciences Branch, DSS

FROM: Owen O. Thompson, Geotechnical Engineer
Geotechnical Engineering Section
Geosciences Branch, DSS

SUBJECT: MEETING WITH COE (DETROIT) SEB, GSB, AND CONSULTANTS
REGARDING PILES AT BAILLY

DATE AND TIME: March 10, 1980 - 8:00 a.m.

LOCATION: University of Illinois
Urbana, Illinois

PURPOSE: To discuss the COE findings regarding the acceptability
of the applicant's pile proposal; to identify unresolved
issues and to formulate staff positions necessary to
allow pile driving to continue.

PARTICIPANTS:

D. Lynch, DPM	O. Thompson, GSB
F. Schauer, SEB	T. Davisson, GSB Consultant
J. Ma, SEB	W. Otto, COE
W. Hall, SEB Consultant	J. Grundstrom, COE
L. Heller, GSB	R. Erickson, COE
	P. Kytasky, COE

[Signature]

Owen O. Thompson, Geotechnical Engineer
Geotechnical Engineering Section
Geosciences Branch, DSS

cc: L. Rubenstein
D. Lynch
D. Hood
J. Knight
F. Schauer
J. Ma

L. Heller
J. Kane
O. Thompson
N. Gehring, COE Detroit
W. Hall, Univ. of Illinois
T. Davisson, Univ. of Illinois

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