

NRC STAFF EVALUATION OF THE BAILLY CONSTRUCTION PERMIT EXTENSION REQUEST

The NRC staff has performed an evaluation of the request by the Northern Indiana Public Service Company (NIPSCO) to extend the latest completion date of the construction permit (CP) for the Bailly Generating Station, Nuclear-1, from September 1, 1979, to December 1, 1989. This evaluation consists of three parts: (1) the NRC staff evaluation of good cause for failure to complete the Bailly facility by the latest date specified in the CP and a reasonable time for the extension of the CP in accordance with Section 50.55(b) of 10 CFR Part 50; (2) a Negative Declaration regarding the issuance of an Environmental Impact Statement; and (3) an Environmental Impact Appraisal.

The NRC Project Manager assigned to the review of NIPSCO's request for an extension of the Bailly CP is Mr. M. David Lynch. Mr. Lynch may be contacted by telephone at (301) 492-6413 or by writing him at:

Mr. David Lynch
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

The following NRC staff members contributed to the three sections of this evaluation:

NRC Staff Evaluation of Good Cause

Mr. David Lynch

Negative Declaration

Mr. David Lynch

Environmental Impact Appraisal

L. G. Hulman
L. M. Bykoski
M. David Lynch

NRC STAFF EVALUATION OF THE REQUEST FOR AN EXTENSION OF
CONSTRUCTION PERMIT NO. CPPR-104
FOR THE BAILLY GENERATING STATION, NUCLEAR-1
DOCKET NO. 50-367

A. INTRODUCTION

Northern Indiana Public Service Company (NIPSCO or the permittee) is the holder of Construction Permit No. CPPR-104 issued by the Atomic Energy Commission on May 1, 1974, for construction of the Bailly Generating Station, Nuclear 1 (Bailly).^{1/} The plant is presently under construction at the permittee's site located in Porter County, Indiana, about 12 miles east-northeast of Gary, Indiana. In accordance with Section 185 of the Atomic Energy Act of 1954, as amended, 42 U.S.C. Section 2235, and in accordance with Section 50.55(a) of the Nuclear Regulatory Commission's (NRC) regulations, a construction permit (CP) states the earliest and latest dates of construction. By letter dated February 7, 1979, the permittee advised the NRC staff that construction could not be completed by the latest date presently specified, namely September 1, 1979, and, therefore, requested that the construction permit be extended to September 1, 1985. In two subsequent letters dated August 31, 1979, and November 26, 1980, NIPSCO successively amended its estimate of the construction completion date to December 1, 1987, and thence to December 1, 1989. In accordance with Section 50.55(b) of 10 CFR Part 50, the NRC staff, having found good cause shown, and for the reasons stated below, concludes that the latest completion date should be extended as requested to December 1, 1989, pending submittal of acceptable modifications to the construction dewatering program.

This evaluation contains the following sections: Section B, the NRC staff evaluation of the specification of "good cause" shown by the permittee for "an extension" (i.e., the specific delays which the permittee has cited in support of its request for an extension); Section C, an NRC staff assessment of the reasonableness of NIPSCO's estimate of the time to complete the Bailly facility; and Section D, the NRC staff's conclusion.

^{1/}The duties of the Regulatory staff of the Atomic Energy Commission were subsequently assumed by the Nuclear Regulatory Commission in January 1975.

B. NRC STAFF EVALUATION OF THE SPECIFIED DELAYS

In its letter of February 7, 1979, the permittee set forth five factors to which it attributed the delay in completing construction of the Bailly facility beyond September 1, 1979, the latest completion date stated in its construction permit (CP). Four of these five factors occurred after issuance of the CP. The total delay due to these factors accounts for 57 months; these five factors are discussed in Sections 1 through 5 below. In its two subsequent letters on this matter, NIPSCO specified certain additional matters which delayed the construction of the Bailly facility. Basically, these subsequent letters cited the continuing slip in the staff's evaluation of the shorter pile proposal and reflected the actual construction experience of other nuclear power plants.

1. Assumption Regarding The Issuance Date of the Construction Permit

NIPSCO's estimate made in 1973 regarding the issuance date of the Bailly CP assumed that the Atomic Safety and Licensing Board would issue a favorable initial decision in December 1973 and that the NRC staff would issue a CP by January 1, 1974. The actual course of events demonstrated that these assumptions were optimistic. However, it was reasonable to anticipate in 1973 that the CP hearings would end in August of that year based on their start in early April 1973. Instead, the hearing record did not close until November 1973. The Board issued its favorable initial decision in April 1974. Normally, the NRC staff would have been required to issue the CP within a few days. However, the Appeal Board ordered a stay in the staff's issuance of the CP which was finally issued on May 1, 1974.

While none of these individual delays (e.g., the protracted hearings or the Appeal Board Order staying issuance of the CP) were predictable, the permittee could have modified its estimated construction completion date as events unfolded. However, this relatively small slip of four months did not lead NIPSCO to alter its original estimate of the construction completion date.

It is the NRC staff's finding that the original estimate made by NIPSCO in 1973 that the CP could be issued by January 1, 1974, was reasonable based on the CP hearings starting in early April 1973. The NRC staff also finds that the time period between the original date assumed for issuance of the CP (January 1, 1974) and the actual issuance (May 1, 1974) was the direct consequence of the length of the CP hearings and, accordingly, was beyond the control of the permittee.

Accordingly, the NRC staff finds that the first factor stated by the permittee represents good cause for the delay as defined in Section 50.55(b) of 10 CFR Part 50.

2. Delays Attributable to The Judicial Stay

This particular factor is cited by NIPSCO in its letter of February 7, 1979, for 25 months of the delay in completing the Bailly facility. However, NIPSCO has stated at a later date in response to an interrogatory that it chose not to resume construction following a decision of the 7th Circuit.

of the U.S. Court of Appeals (April 13, 1976) denying petitions for review. ^{2/} This would, therefore, account for an 18 month delay beyond the control of the permittee.

With respect to the time between April 1976 (the Court of Appeals decision) and November 1976 when the U.S. Supreme Court denied petitions for certiorari, we find it unnecessary to make any judgment as to whether NIPSCO's delay in resuming construction in the period from April 1976 to November 1976 is attributable to any reason which would constitute good cause inasmuch as NIPSCO made no such claim in its response to the cited interrogatory. The maximum period of time for which we reserve our judgment is seven months. As discussed in Section 6 of this evaluation, this interval is too short to affect our overall assessment.

Based on the foregoing discussion, we find that an 18 month delay attributable to the court ordered stay of construction was a matter beyond the control of the permittee and represents good cause for the specific delay cited. We make no judgment regarding the following seven month period.

3. Mobilization of Contractors

The permittee also stated in its letter of February 7, 1979, that it experienced a two month delay in mobilizing its contractors. It should be noted that most of the contractors and subcontractors involved in building a nuclear power plant in the first half of the construction phase, which is predominately heavy construction, are highly specialized, capital intensive companies. Moreover, at all stages in the construction process, contractors on a nuclear power plant must establish and maintain highly specialized quality assurance/quality control procedures and highly skilled personnel. Under the rules and practice of the NRC, they must comply with the requirements of Appendix B to 10 CFR Part 50 and are subject to a continuing review process by the Office of Inspection and Enforcement. Accordingly, compared to the total number of contractors and subcontractors in heavy construction, there are relatively few who fulfill these requirements and are thus qualified to be employed by a utility in constructing a nuclear power plant.

Since NIPSCO was unable to predict with any precision when the court ordered stay of construction would be lifted, it was unable to schedule the required contractors who could initiate construction immediately following the lifting of the stay on construction. To have kept specialized, capital intensive contractors "on call" for either an 18 month or a 25 month period attributable to the judicial stay of construction would have resulted in inordinately large economic penalties.

^{2/} Northern Indiana Public Service Co. response to Porter County Chapter Intervenor's second set of Interrogatories (6/8/81); answer to Interrogatory 1.

We conclude that the two month interval for NIPSCO to mobilize its contractors following the judicial stay was beyond the control of the permittee and that good cause has been shown for this specific delay.

4. Installation of the Slurry Wall

The installation of a slurry wall around the perimeter of the excavation prior to starting excavation of the site was cited by the permittee as another factor contributing to the delay in completing construction. The installation of the slurry wall was intended to minimize the flow of groundwater through the relatively porous upper layer of unconsolidated sands (i.e., beach sand) into the excavation from the surrounding area, thereby minimizing the drawdown of the adjacent water table. The NRC staff's position when NIPSCO originally proposed to install the slurry wall was that it was a good approach but that it was not required by the NRC. The staff position at this time is that the slurry wall will expedite the early stages of construction and, accordingly, that the time expended in constructing this wall was time well-spent. Basically, a passive barrier to groundwater flow supplemented as required by pumps, is inherently more reliable than depending on active components such as pumps. As installed at the Bailly site, the only major infiltration experienced through this relatively impenetrable barrier is in a limited area at the southeast corner of the excavation. In this corner, the underlying clay layer into which the slurry wall is driven apparently thins out to a negligible thickness or is nonexistent, thereby not providing a positive bottom seal at this point. On balance, the slurry wall has accomplished most of its intended function.

The slurry wall is an improvement over the original NIPSCO proposal which was to perform the construction dewatering using only pumps. This improvement is attributable to the fact that the slurry wall minimizes the drawdown of the groundwater levels in the adjacent Indiana Dunes National Lakeshore. On this basis, the NRC staff believes that the permittee acted responsibly in proposing this alternate engineering approach to the matter of construction dewatering. Furthermore, the slurry wall was installed only after this approach was thoroughly ventilated in a hearing and authorized by an amendment to the CP.

On the basis of the foregoing discussion, we conclude that the permittee has shown good cause for the two month delay associated with installation of the slurry wall.

5. Review of the Shorter Pile Proposal

The final factor cited by the permittee for its failure to complete the Bailly facility by September 1979 is the time which the staff took to conduct a review of the shorter pile proposal. The NRC staff review of NIPSCO's presently proposed and conditionally accepted program began in March 1978 when NIPSCO submitted sufficient information to permit our review to start. Prior to that, NIPSCO had suggested a number of methods for pile placement in the summer of 1974 but did not pursue any particular proposal after the matter of the

CP issuance had been brought to the federal courts. Following the lifting of the court ordered stay of construction in November 1976, NIPSCO made a one-sentence reference to the use of jetting as part of its pile placement program in a letter submitted in December 1976.

While the September 1977 submittal provided some information on the jetting proposal, the NRC staff felt the need to obtain more data regarding the engineering and environmental aspects of this proposal and, therefore, arranged to observe in late September 1977 the first installation of a pile using jetting as a major feature of the placement program. At that time, and in its subsequent review effort, the NRC staff expressed its concerns that the jetting process proposed by NIPSCO as an integral feature of its pile placement program might adversely affect the in situ soil properties of the underlying interbedded glacial sands and clays, and might also adversely affect the adjacent Indiana Dunes National Lakeshore. NIPSCO's position on the matter of adversely affecting the soil properties was that although the jetting process might disturb the underlying soil, the subsequent conventional driving process would redensify the interbedded sands and clays. Existing conventional techniques would then be used to redensify the soil near the top of the piles. The NRC staff did not accept NIPSCO's position on this matter inasmuch as the soil disturbance would have to be incurred through jetting of the piles before it could be determined whether conventional pile driving after the jetting process would actually redensify the disturbed soils as claimed by NIPSCO. Accordingly, lacking any definitive demonstration of NIPSCO's claims, the NRC staff chose on a conservative basis not to accept the September 1977 proposal for pile placement. This was formally stated in a letter from the NRC staff to NIPSCO in February 1978. The NRC staff's position was also based on the consideration that the potentially adverse impact on the adjacent National Park would be avoided if the proposed method of jetting was not implemented.

The differences between the permittee and the NRC staff views on this particular matter can be characterized as an optimistic technical approach by NIPSCO and its consultants and a conservative judgment by the staff and our consultants. This is typical of many such divergent technical views of proposals made by utilities. In most, if not all, post-CP cases where the NRC staff view prevailed, subsequent delays have occurred in the design and construction phases.

The NRC staff finds that NIPSCO acted in good faith in proposing an innovative engineering method for pile placement in September 1977. On this basis, we find that the six month delay attributable to the review and subsequent rejection by the NRC staff of the September 1977 proposal represents good cause for the delay from September 1977 to March 1978.

NIPSCO thereafter submitted what is now called the shorter pile proposal in March 1978. The NRC staff initiated a prompt review of the shorter pile proposal leading to a meeting in May 1978 in the offices of Sargent & Lundy in Chicago. At this meeting, detailed technical discussions of the March 1978 proposal ensued leading to the issuance of NRC staff questions seeking additional information. As part of this process, the NRC staff required the permittee to conduct an indicator pile program and to submit an evaluation of this program as part of its response. The final report in response to this

requirement was submitted by NIPSCO in December 1978.

We find that NIPSCO initiated the indicator pile program in an expeditious manner recognizing the specialized equipment required to drive the indicator piles. We also find that the December 1978 NIPSCO report incorporating all the field experience accumulated in driving the indicator piles was submitted within a reasonable time period.

For the reasons discussed above, we find that the delay attributed to this portion of the review process (i.e., from March 1978 to December 1978) represents good cause for delay.

The NRC staff review of the shorter pile proposal continued from January 1979 until March 5, 1981. The length of this NRC staff review was primarily attributable to internal considerations regarding the NRC's various responsibilities rather than to any significant deficiency in NIPSCO's proposal. Accordingly, we find that permittee had no control over the length of this NRC staff review and, therefore, we find that good cause exists for this period of delay.

6. Second Mobilization of Contractors

In our letter of February 1978, we advised NIPSCO not to place safety-related piles at the Bailly site whose design differed significantly from that described in the CP application until we had reviewed and approved any such proposal. In its letter of November 26, 1980, NIPSCO asserted that following lifting of the NRC staff admonition of February 1978, it needed six months in which to perform a corporate reassessment and to mobilize its contractors prior to initiating the production phase of placing the shorter piles.^{3/} In this instance, we interpret the phrase "mobilize its contractors" to include the engineering work force at its architect/engineer, Sargent & Lundy, and its pile placement contractor. Lacking any detailed justification for this six month mobilization period, we cannot accept the full amount of this stated delay, particularly that portion related to a corporate decision-making process.

Recognizing that NIPSCO was able in November 1976 to mobilize its contractors within two months following the lifting of the judicial stay of construction, we believe that a second mobilization of NIPSCO's work force could reasonably be accomplished within a period of three to four months. This leaves about two months of this particular delay for which good cause has not been shown. However our assessment of a reasonable time within which to complete the Bailly facility is not a precise process (Refer to Section C of this evaluation) which can account for small, individual construction phases such as mobilization of contractors. Moreover, a two month differential between NIPSCO's estimate of the time to conduct a corporate reassessment and to mobilize its contractors and the time estimated by the NRC staff for the second mobilization of contractors

^{3/}

Since we stated our acceptance of the shorter pile proposal in our letter dated March 5, 1981, construction of the Bailly facility could be expected to resume in early September 1981.

is too small when compared to the 107 month total construction time estimated by NIPSCO, to be of significance in our overall assessment of either good cause or of a reasonable time to complete construction of the Bailly facility. ^{4/}

On the basis of the foregoing discussion, we find good cause for the delay incurred in mobilizing NIPSCO's contractors a second time.

Summary of Delays in Completing the Bailly Facility

The delays in completing construction at the Bailly facility by the latest date specified in the CP resulting from the causative factors discussed in Sections 1 through 5 are summarized in Table 1. Of the total 68 month construction period estimated by the permittee in 1973 in arriving at its estimated construction completion date, 50 months were lost due to factors which we find represent good cause. Accordingly, we find that the permittee has identified in its letter of February 7, 1979, factors which represent good cause for the delay in completing construction of the Bailly facility within the time period (i.e., from May 1974 to September 1979) specified in the Bailly CP.

The permittee has also identified in its letters of August 31, 1979, and November 26, 1980, additional factors which we find represent good cause for the delay in completing construction of the Bailly facility in the time period from September 1979 until September 1981.

In the following section, we evaluate whether NIPSCO has specified a reasonable time within which to complete the Bailly facility.

^{4/} In its letter of November 26, 1980, NIPSCO estimated that it would need a total of 107 months, including an allowance for uncertainties, to complete the Bailly facility following the lifting of the NRC staff's hold imposed in February 1978.

TABLE 1

CHRONOLOGY OF MAJOR MILESTONES DURING THE TENURE OF THE BAILLY CP

(May 1, 1974 to September 1, 1979)

<u>DATE</u>	<u>EVENT</u>	<u>TIME INTERVAL (months)</u>	<u>DELAY (months)</u>	<u>COMMENT</u>
JAN 1974	NIPSCO estimate for CP issuance	4	4*	Protracted hearings
MAY 1974	CP issuance	5	none	
OCT 1974	Court ordered stay	18	18	U.S. Court of Appeals
APRIL 1976	Denial of petitions	7	**	U.S. Court of Appeals
NOV 1976	Denial of certiorari	2	2	Mobilize contractors
JAN 1977	Start slurry wall	2	2	Construct slurry wall
MAR 1977	Complete wall	6	none	
SEP 1977	Jetting proposed by NIPSCO	5	5	Review of pile placement using jetting
FEB 1978	NRC letter rejecting pile placement using jetting	1	1	
MAR 1978	Shorter piles proposed	9	9	Review of shorter pile program
DEC 1978	NIPSCO submits final report	3	3	Staff review
MAR 1979	TMI accident	6	6	Ad hoc reorganization of NRR
SEP 1979	Latest CP completion	—	—	
	Totals including Pre-CP factors	68	50	

*Delay incurred prior to CP issuance

**No judgement made regarding good cause

C. REASONABLENESS OF NIPSCO'S ESTIMATE OF THE TIME TO COMPLETE THE BAILLY FACILITY

In accordance with Section 50.55 (b) of our regulations, the Commission will extend the completion date of a CP for a reasonable period of time upon a showing of good cause. The previous section addressed the matter of good cause. This section presents the NRC staff evaluation of a reasonable time for the extension of the Bailly CP.

In NIPSCO's letter of February 7, 1979, the permittee stated that it concluded, based on the construction experience of other utilities building nuclear power plants, that the time to complete the Bailly facility would be longer than the 68 months estimate it made in 1973. This longer construction period was attributed by NIPSCO to the additional engineering effort required to complete the final design due to more numerous and detailed regulatory guides. NIPSCO estimated in this letter that based on its observations, a construction period of 80 months was required from initial ground breaking to fuel loading. Although we do not share NIPSCO's views on the particular cause of lengthier construction, we agree that experience indicates that 68 months from issuance of a CP to completion of construction was optimistic. We also consider NIPSCO's February 7, 1979, estimate of 80 months to have been optimistic, an opinion which NIPSCO came to share, as indicated in its letters of August 1979 and November 1980.

Based on its further evaluation of construction experience with respect to schedules and other factors, NIPSCO submitted on August 31, 1979, a revision of its previously estimated construction completion date. Basically, NIPSCO reevaluated its estimate of the construction period for the Bailly facility based on an NRC staff study entitled, "NRC Caseload, Planning Projections for Fiscal Years 1981-85," March 1979. This NRC study presented a relationship between the percentage of completed construction and the construction time elapsed since placement of the first structural concrete (typically, the reactor building base mat). This relationship established three types of plant construction schedules; i.e., those facilities built faster than the median, a median construction pace and facilities built more slowly than the median. Based on a sample of 18 plants completed in the time frame of 1977 through 1978, the construction period estimated by the NRC staff from first structural concrete to fuel loading is 65 months for an "early" plant, 77 months for a median plant and 87 months for a "late" plant. These values were considered in early 1979 to be representative of industry averages. A plot of the construction curves representing these three scheduler modes is shown in Figure 1. The corresponding intervals from ground breaking to first concrete are 6, 10, and 15 months for the "early", median and "late" models, respectively.

In its letter of August 31, 1979, NIPSCO estimated the construction period from first concrete to fuel loading as 74 months and from beginning of pile placement to first concrete as 9 months. NIPSCO then included an additional 15 months in its estimated construction time to account for various uncertainties. The resulting total construction period was estimated to be 98 months. Starting in October 1979, this yielded the permittee's estimate of December 1, 1987, as the construction completion date.

Due to delays in the NRC staff's review of the shorter pile proposal, NIPSCO amended its estimated construction completion date from December 1987 to December 1989 in its letter dated November 26, 1980. This latest NIPSCO estimate was based on: (1) completion of the NRC staff review of the shorter pile proposal by January 1981; (2) a six month period to mobilize its major contractors following completion of Item (1); (3) pile placement in nine months; (4) a 74 month construction period from first structural concrete; and (5) an 18 month uncertainty allowance added to Item (4) to provide conservatism in its estimate. The significant differences between NIPSCO's August 1979 and November 1980 estimates were the addition of the six month mobilization period and the addition of three more months to the uncertainty estimate.

The NRC staff has made an independent assessment of the time it will most probably take NIPSCO to complete construction of the Bailly facility. We have evaluated the construction progress of plants similar to Bailly for which CP's were issued in the same time frame (late 1972 through mid-1974) and for which construction is now expected to be completed in the early 1980's. Table 2 lists seven facilities (not counting the Bailly facility) which like Bailly have boiling water reactors (BWR's) and Mark II containments. We have focused on the construction experience of Zimmer, WNP-2, Shoreham, LaSalle-1 and Susquehanna-1 since these five facilities are sufficiently close to completion to provide a reasonably firm estimate of the duration of construction for the Bailly facility. Start of construction for these plants ranged from June 1971 through November 1973 and the most likely completion for these facilities is September 1981 through September 1983. The Limerick-1 and Nine Mile Point-2 facilities were not considered in this assessment since they are still four to five years from completion.

The time from issuance of the CP to the construction completion date for these selected facilities estimated by the NRC staff varies from a low of 96 months (LaSalle-1) to a high of 126 months (WNP-2). These construction periods are somewhat misleading, however, since some of the five selected facilities initiated limited construction activities prior to issuance of the CP. This was possible in the time frame under consideration (i.e., 1971 through 1973) since the then Atomic Energy Commission granted exemptions for a number of facilities to allow site preparation and excavation to take place prior to issuance of a CP. The construction time estimated by the NRC staff ranges from 95 months (LaSalle-1) to 134 months (Zimmer and WNP-2).

In early 1975, the Advisory Committee on Reactor Safeguards (ACRS) and the NRC staff identified a significant new concern for a specific type of containment; i.e., hydrodynamic loads imposed on the structures and components of BWR's with vapor suppression containments. These are the General Electric Mark I, Mark II and Mark III containment designs. The basic concern of the ACRS and the NRC staff in early 1975 was that the pool dynamic loads might be significantly higher than the design basis loads which were then being used. After extensive analytical and experimental investigations, the NRC staff established a requirement in late 1978 that utilities building BWR's using Mark II containments adopt a bounding set of pool dynamic loads which are significantly higher than those previously used. These larger, conservative bounding loads led to a redesign by the affected utilities of those structures and components subject to these bounding loads resulting in a delay

TABLE 2
 ESTIMATED CONSTRUCTION PERIODS OF MARK II BWR'S UNDER CONSTRUCTION

FACILITY *	CP	DATE OF CP ISSUANCE	START OF CONSTRUCTION	CONSTRUCTION PERMITTEE	COMPLETION STAFF	CONSTRUCTION PERIOD (MOS.)**	
						BASED ON CP DATE	BASED ON ACTUAL START
Zimmer	CPPR-88	10/72	06/71	11/81	03/82	118	134
WNP - 2	CPPR-93	03/73	06/72	09/83	09/83	126	134
Shoreham	CPPR-95	04/73	11/72	05/82	09/82	113	118
LaSalle - 1	CPPR-99	09/73	10/73	09/81	09/81	96	95
Susquehanna - 1	CPPR-101	11/73	11/73	04/82	04/82	101	101
Bailly	CPPR-104	05/74	-	-	-	-	-
imerick - 1	CPPR-106	06/74	08/70	07/84	03/85	129	-
Nine Mile PL. - 2	CPPR-112	06/74	06/75	03/86	03/86	141	-

* When multiple units are under construction, only the first unit is listed

** Based on the NRC staff's estimates

in completing the five facilities cited above by a period we estimate to be 12 to 24 months. Additionally, the accident at TMI in March 1979 resulted in a delay in construction as did other factors including enhanced NRC staff requirements for the environmental qualification of equipment, fire protection and security and safeguards measures. The delays resulting from the use of larger pool dynamic loads, the impact of the accident at TMI and the other cited factors are not necessarily additive. We estimate a nominal combined delay of about 24 months for all these factors.

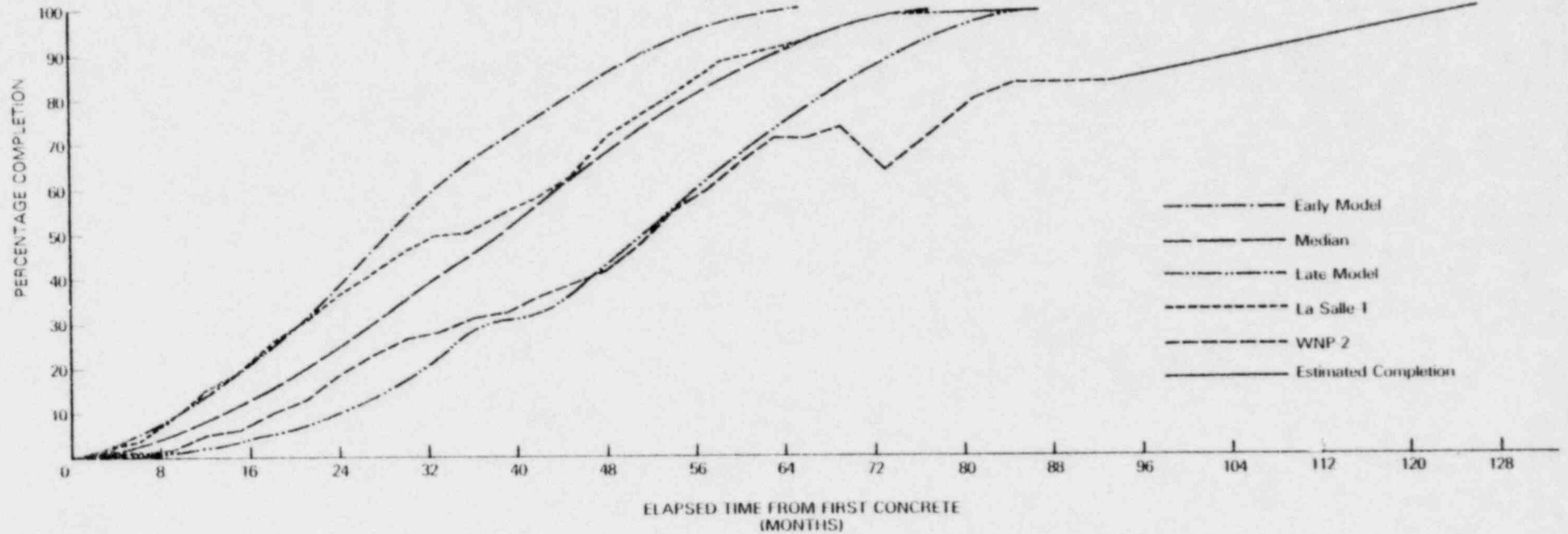
Subtracting 24 months from the NRC staff's estimated 95 months to complete LaSalle-1 to account for the delays resulting from both the impact of the TMI accident and the larger pool dynamic loads indicates that the plant might have been built in 71 months. This is in close agreement with a 70 month construction period that is predicted by the early 1979 NRC model for a plant being built faster than average (5 months from initial ground breaking to first concrete and 65 months from there to completion). Figure 1 illustrates this in that LaSalle-1 followed the "early" plant model for 20 months after first concrete. The time when the construction schedule of LaSalle-1 diverged from the "early" schedule corresponds to early 1976 when the NRC staff concerns regarding the pool dynamic loads caused those utilities building BWR's to redesign and reinforce the basic structures and components of the reactor buildings. Following this, LaSalle-1 tracked the median construction schedule of the 1979 NRC model. The apparent slowdown in LaSalle-1 during the last 18 months of construction is most likely attributable to the impact of the TMI requirements now being implemented on all plants both under construction and in operation.

A similar reasoning process applied to the WNP-2 facility indicates that the plant might have been built in 110 months (134 less 24) while the "late" model of the 1979 NRC methodology would predict 102 months (15 months from ground breaking to first concrete plus 87 months from there to completion). Figure 1 supports this reasoning process since the WNP-2 facility closely tracked the "late" construction schedule for about the first five years of its construction. It should be noted that Commonwealth Edison has successfully built and operated a number of plants prior to starting construction of LaSalle-1 whereas the Washington Public Power Supply System (WNP-2) has yet to complete its first facility. The construction schedules of these facilities appear to correlate with the relative experience of their permittees in building nuclear power plants.

We conclude, then, that the longer schedules presently being experienced in constructing BWR facilities using Mark II vapor suppression containment designs reflect the adverse impact of two separate matters (the TMI accident and the larger pool dynamic loads) which should not adversely affect a similar plant such as the Baily facility, starting construction now. On this basis, we conclude that the models developed by the NRC in 1979 to estimate construction schedules are still valid. We further conclude that a utility which is experienced in building and operating nuclear power plants can be reasonably expected to build a plant faster than the median schedule while a utility without prior nuclear power plant construction experience such as NIPSCO, can be reasonably expected to complete construction of the Baily facility on a schedule similar to that of the WNP-2 and Zimmer facilities (i.e., the 1979 NRC "late" model.)

FIGURE 1

COMPARISON OF LA SALLE-1 AND WNP-2 WITH THE 1979 NRC SCHEDULE MODEL



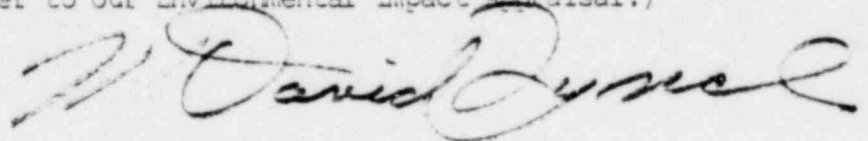
With respect to NIPSCO'S estimate of nine months to drive the safety-related piles, we find this time interval to be both reasonable and prudently conservative.

On the basis of the foregoing discussion, the NRC staff position is that NIPSCO should be able to complete the Bailly facility within about a 96 month period from resumption of construction (9 months from start of pile placement to first structural concrete plus 87 months from there to completion). The 74 months which NIPSCO estimates from first structural concrete to completion plus its uncertainty estimate of 16 months adds up to 92 months to complete the Bailly facility after pile placement. This 92 month construction period estimated by NIPSCO is not significantly different from the 87 month period predicted by the 1979 NRC construction schedule models.

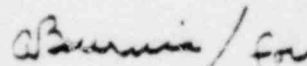
Inasmuch as the NRC construction schedule "late" model reflects data for nuclear power plants of all types (i.e., BWR's and PWR's) and since the statistically derived model yields estimates which are not significantly different from NIPSCO'S estimate, we consider the permittee's estimate of 92 months for the total construction period to be both reasonable and prudently conservative. The two month differential between the time when NIPSCO assumed the NRC would issue a favorable evaluation of the shorter pile proposal (January 1981) and the actual issuance (March 1981) can be readily accommodated within NIPSCO'S 18 month period for uncertainties. Moreover, the relatively wide spread in the time to construct a nuclear power plant predicted by the 1979 NRC statistical models (70 months to 102 months) and the 18 month uncertainty estimated by NIPSCO both illustrate that the construction period of a nuclear power plant cannot be predicted in a precise manner. Accordingly, we find that NIPSCO'S estimated completion date of December 1, 1989, is reasonable.

D. CONCLUSION

For the reasons stated herein, the NRC staff concludes that good cause has been shown for extending the latest construction completion date for construction of the Bailly Generating Station, Nuclear-1, Construction Permit No. CPPR-104, to December 1, 1989, and, accordingly, the NIPSCO request should be granted after NIPSCO submits acceptable modifications to its monitoring and mitigation program for construction dewatering. (Refer to our Environmental Impact Appraisal.)



M. David Lynch, Project Manager
Licensing Branch No. 2
Division of Licensing



A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing

Dated: July 17, 1981

NEGATIVE DECLARATION SUPPORTING THE EXTENSION OF
THE EXPIRATION DATE FOR
CONSTRUCTION PERMIT NO. CPPR-104
BAILLY GENERATING STATION, NUCLEAR-1
DOCKET NO. 50-367

The U.S. Nuclear Regulatory Commission (the Commission) has reviewed the Northern Indiana Public Service Company (NIPSCO or permittee) requests dated February 7, August 31, 1979, and November 26, 1980, to extend the expiration date of the construction permit for the Bailly Generating Station, Nuclear-1 (CPPR-104) which is located near Gary in Porter County, Indiana. The permittee in its most recent letter of November 26, 1980, requested an extension of the permit to December 1, 1989, as a reasonable period for completion of construction of the Bailly facility, including an allowance for contingencies.

The Commission's Division of Licensing (the NRC staff) has prepared an environmental impact appraisal relative to this amendment to CPPR-104. Based upon this appraisal, the NRC staff has concluded that an environmental impact statement for this particular action is not warranted. This decision was made pursuant to the Commission's regulations in 10 CFR Part 51. Specifically, the Commission has determined that this change to the construction permit (extending the latest date of construction completion) is not a major federal action significantly affecting the quality of the human environment.

The environmental impact appraisal is available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C. 20555 and at the West Chester Township Public Library, 125 So. 2nd Street, Chesterton, Indiana 46304.

Dated at Bethesda, Maryland, this day of 1981.

FOR THE NUCLEAR REGULATORY COMMISSION

A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing