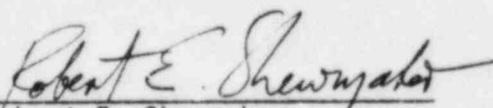


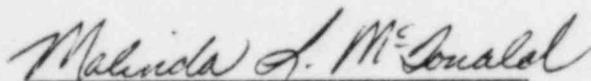
In addition, I have noted by reference, certain allegations which were evaluated by my team which related in part to the specific items of contention made by the Joint Intervenors. Those items are:

II. A.(1)(a)(i); II. A.(1)(d); II. A.(3)(b); II. A.(a)(d); II. A.(4)(e);
II. A.(6)(b); II. A.(6)(c); II. A.(7)(a); and II. D.(3)

In addition to providing the above responses, I have addressed three other issues that follow, which related directly to my efforts and the efforts of my civil-structural team. These discussions, provided as Enclosure II to this affidavit, are in response to items III. D.(1) (which contains 2 issues) and III. D.(2).


Robert E. Shewmaker

Subscribed and sworn to before
me this ~~21~~ day of December, 1984


Notary Public

My commission expires: 7/1/86

- A(4)(b) In conjunction with the evaluation of A-138 contained in SSER 7 and Issue 7, the NRC Task Force determined that the construction and inspection procedures for Class A backfill to be adequate. See LP&L response at 33 on Exhibit 38.
- A(8)(b) The NRC Task Force found Exhibit 40 to be illegible and defers to the LP&L response at 44. Based on the extensive record review effort by the Task Force associated with A-112, A-138, A-139, A-145, A-270 and A-335, the Staff concludes that the applicant did generate and maintain proper documentation for concrete tests concrete compression test and soil backfitting operations as detailed in SSER 7.
- A(8)(c) The NRC Task Force found that while specific provisions of the in-process acceptance criteria were not met for various batches of concrete, there was no detrimental effect on the total structures involved in the Seismic Category I construction. Details of the Task Force finding are contained in SSER 7 for A-111, A-112, A-113, A-139, A-270 and A-335. The Staff has no disagreement with the LP&L response.
- A(10)(a) The NRC Task Force found Exhibit 40 illegible and defers to the LP&L response at 49. Based on the efforts of the Task Force, it was concluded that there were no instances of poor concrete testing for which nonconformance reports should have been prepared. The review and evaluation of the Task Force, as provided

in SSER 7 for A-113, A-137, A-134 and A-136, summarize that the Task Force found the deficiency controls in the civil-structural discipline to be adequate. Also, see SSER 9, Issue 14.

- A(10)(c) The NRC Task Force in the civil-structural discipline found that there were examples of upgrading of deficiencies to NCRs and that issues were adequately captured by the quality system for appropriate resolution. SSER 7, in allegations A-113, A-132, A-134 and A-136, addresses the specifics of these findings. Also, see SSER 9, Issue 4.
- B(3)(a) The NRC Task Force in the civil-structural discipline agrees with the applicant at 67, and refers to SSER 7, Allegation A-110 and SSER 9, Issues 10 and 20.
- B(3)(b) The NRC Task Force is in agreement with the applicant's response at 69. The Task Force has addressed the issue in SSER 7, Allegation A-139.
- B(3)(c) The NRC Task Force found very few errors in the concrete placement packages which had undergone the 100% record review. The staff addressed this in SSER 9, Allegation-A-109.
- B(3)(d) The NRC Task Force is in agreement with the applicant's response at 70. SSER 7, Allegation A-160 and SSER 9, Issue 9 address this issue.
- D(2) The NRC Task Force evaluation of these issues are addressed in SSER 9, Issues 1, 10 and 20.

III. D.(1) Issue 1

"The NRC Task Force has not provided reasoned and documented evaluations to indicate LP&L's QA and management failures have been resolved. ... the NRC staff has not indicated what, if any, action it will require of LP&L to close an open item." (page 53 of JI's motion regarding allegation A-141)

The NRC Task Force did not indicate in SSER 7 what action would be required of LP&L to close the item since at the time of the issuance of the SSER, October 1, 1984, the staff field work had not been completed. Consequently, the facts had not been assembled in order to provide the basis for any decisions. SSER 9 now fully addresses the allegation designated A-141.

In summary, it was found that there were not "70 concrete placement packages" missing, but rather documents related to (the Quality Assurance Installation Review Group (QAIRG)) review of those packages were the object of the search. The log identifying the specific packages to which the deficiencies in documentation applied was located and verified by the allegor to be the appropriate log referred to in the allegation. The log identified 71 items, 56 of which related to concrete activities and Cadwelding.

LP&L and the NRC Task Force were able to locate the deficiency reports or determine that the deficiency was resolved and closed in 1982 or 1983 by the QAIRG for about one-half of the total packages identified on the log. In addition, documents which reflected the documentation review work underway apparently at the time the QAIRG effort was halted in mid-1983 were also found. The NRC Task Force reviewed a composite of some 500 line items noted as deficiencies, some of which were repetitions of the same deficiency, to assess the safety significance of each and whether the deficiency had been addressed by the later 100% document review or had to be addressed in the current effort. The NRC Task Force has determined that all of those deficiencies have been addressed and properly resolved and closure documentation completed.

Based on the NRC Task Force's extensive and exhaustive review of all of the recovered deficiencies (approximately 500 line items) the NRC Task Force has concluded that the 35 to 40 missing deficiency reports, each containing probably several line items as deficiencies, would not reflect any different types of deficiencies than already reviewed. The significant items found in the review of the 500 line items were, in the NRC Task Force's opinion, already addressed by the licensee as a result of other document reviews, most of which were done after the QAIRG effort of late 1982 to mid-1983. The NRC Task Force concluded with confidence that all items of relevance to the structural safety which had been addressed on the QAIRG review of the "70 packages" have been identified and properly resolved even though the specific 35-40 documentation deficiency reports were not retrieved.

III. D.(1) Issue 2

"The NRC Task Force has not provided reasoned and documented evaluations to indicate LP&L's QA and management failures have been resolved.... the NRC staff makes little effort to interpret the allegation properly, much less determine if the problem is of safety significance or if it has been resolved." (p. 53 of JI's motion regarding allegation A-136)

In arriving at a conclusion on any given issue or "problem" as to whether it is a nonconformance or not, there is judgment involved which the applicant must complete. The NRC Task Force's view of the quality assurance program at Waterford 3 is that a three-level ranking of "problems" was in effect: deficiency reports (DRs) and deficiency notices (DNs) being at the lower level; the nonconformance reports (NCRs) at the middle level; and significant construction deficiency (SCDs), which are reportable to the NRC under 10 CFR 50.55(e), at the highest level. The NRC Task Force went through the same judgment process and believes that during its efforts at the site in 1984, it was clearly established that the LP&L nonconformance system was functioning properly in the civil-structural discipline and in the time frame set forth in Allegation A-136 (for the period 1975-1977).

The Joint Intervenors have made statements which the NRC Task Force finds totally in conflict with the facts found during the review and evaluation of A-136 and the other allegations in the civil-structural discipline. Additionally, their statements run counter to engineering

logic and methodology to determine if there are unresolved safety issues which must be addressed before a final safety evaluation can be made for licensing Waterford 3.

The NRC Task Force reasoned at the outset that it would be next to impossible to attempt to contact all personnel who were on site in the 1975-1977 time frame working in the civil-structural discipline who had authority to initiate a nonconformance report, although some such personnel were available for discussions. Personnel would be difficult to locate due to the mobile nature of construction personnel and recollections back in time of up to nine years would not be of much benefit in establishing facts. Likewise, to try to interview a meaningful sample of workers, estimated to have been as many as 10,000 or more over the nearly 10 year construction period, would be equally nonproductive. Therefore, the NRC Task Force was left with an alternative which was to review the physical record that existed from the 1975-1977 era which consisted of written records, photographic records and the actual plant structures which were built in that period.

Obviously, the first step in the evaluation process was to establish that the applicant had in-place, in written form, procedures, as part of the quality assurance program, which provided the details of how the construction work was to be performed, how it was to be inspected and the attributes and parameters which would be inspected, how nonconformances would be controlled as well as how the creation and control of quality records would be done. These key elements, which the Task Force focused

on, represented five of the eighteen elements of 10 CFR 50, Appendix B, the quality assurance criteria. Specifically those dealing with the establishment of a quality assurance program (Criterion II), that activities are prescribed by procedures (Criterion V), that there is a program of inspection (Criterion X), the establishment of control of nonconforming items and activities (Criterion XV) and that there is the maintenance of sufficient records to provide evidence of the quality of the completed work (Criterion XVII).

The construction phase quality program was established early in the plant licensing process and was described in the PSAR in Section 1.8 and was reviewed and accepted by the NRC Staff. The initial program was revised from time to time and those revisions were also accepted by the NRC Staff, therefore there was an acceptable quality program. To test the implementation of the other key criteria in the 1975-1977 time frame, so as to assess whether the nonconforming conditions were being identified, tracked and resolved in an acceptable manner and in compliance with the criteria the applicant had set forth in the PSAR and the appropriate implementing procedures, the NRC Task Force chose to utilize the construction activities of the common basemat. This construction activity took place in the late 1975 and early 1976 time frame. This major structural element was also chosen because it has been the object of numerous allegations and misunderstandings relative to its behavior and performance.

The NRC Task Force found that good procedures existed to control the work. In the course of reviewing allegation A-136, as well as others,

the NRC Task Force reviewed and evaluated the following J. A. Jones Construction Company work or construction procedures, along with the applicable revisions:

W-WP-4, Rev. 0, 10/14/75 - "Handling, Storing, Installing, Cadwelding and Modification of Reinforcing Steel"

W-WP-7, Rev. 0, 11/26/75 - "Concrete Placing, Curing and Finishing"

W-WP-8, Rev. 0, 11/3/75 - "Handling and Installation of Waterstop" (non-safety related item per SSER 7, A-129)

W-SP-1, Rev. 0, 10/16/75 - "Cadwelding"

The NRC Task Force also reviewed the corresponding J. A. Jones Construction Company inspection procedures and the appropriate revisions, which included the following:

W-SITP-4, Rev. 0, 10/24/75 - "Reinforcing Steel-Handling, Storage, Installing, Cadwelding and Modification Inspection"

W-SITP-7, Rev. 0, 11/24/75 - "Inspection of Concrete Placing, Curing, Finishing and Repair"

W-SITP-8, Rev. 0, 10/27/75 - "Waterstop Inspection" (non-safety related item per SSER 7, A-129)

Since, for this construction activity and in this time frame, EBASCO was also responsible for a second and independent inspection function, over and above the NRC requirements, the NRC Task Force also reviewed and evaluated their procedures and revisions for that time frame. Those procedures involved were as follows:

QCIP-4, Rev. A, 11/17/72 - "Control of Concrete Materials and Mixes"

QCIP-5, Rev. A, 1/5/73 - "Control of Concrete Mixing and Transporting"

QCIP-6, Rev. A, 1/25/74 - "Concrete Preplacement Inspection"

QCIP-7, Rev. A, 11/4/72 - "Inspection of Concrete Placement, Curing and Finishing"

QCIP-8, Rev. A, 12/13/72 - "Receiving Inspection, Storage and Testing of Concrete Reinforcing Steel"

QCIP-9, Rev. A, 10/30/72 - "Inspection of Concrete Reinforcing Steel Mechanical Splices (Cadmets)"

Members of the NRC Task Force responsible for the quality assurance program reviewed the EBASCO procedures for processing nonconformances under the 1978 and 1984 revisions of the procedure and found them to be acceptable (SSER 7, A-283). The members of the NRC Task Force

responsible for the civil-structural discipline review completed a general review of the procedure revisions for the 1975 to 1977 period and detected no significant problems. This procedure is known as:

ASP-III-7, "Processing Nonconformances and Audits"

Based on these efforts, the NRC Task Force concluded the procedures were acceptable.

For assessing whether these procedures were adequately implemented, the NRC Task Force evaluated typical DNs and DRs written in the 1975-1977 time frame, as was stated in A-136 and A-139 of SSER 7. By evaluating the lower level discrepancies, it was the NRC Task Force's position that these would represent a good test to determine if the procedural process required to upgrade the problem to a nonconformance did, in fact, function properly. This would help determine whether after a discrepancy had been noted, if it was properly considered for its significance and if significant, under the procedural definition of a nonconformance, it was upgraded to an NCR. The Joint Intervenors apparently missed the point of how the NRC Task Force assessed implementation of procedures in their reading of lines 23 through 25 of A-136 in SSER 7. Thus, the NRC Task Force strongly disagrees with the Joint Intervenors contention at 54 that "a review of DN's will not necessarily lead to a determination of whether nonconforming conditions failed to be identified and documented on NCR's." The reverse, in fact, is true.

In utilizing this logic and addressing the review of DN's and NCRs, the NRC Task Force determined that the nonconformances were being written

for the significant items which met the test of what a nonconformance was defined to be. Therefore, the NRC Task Force concluded that the nonconformance system was being properly implemented in this part of the construction process during the 1975-1977 time frame.

The Joint Intervenors also state, at 54, that "since the allegation was that it was difficult to write NCR's, there is little reason to believe QA personnel would not have similar difficulty in writing up informal quality inspection records such as DN's." First of all, DN's and DR's were part of the quality assurance program. Second, informal quality inspection records have no meaning in the context of nuclear power plant design and construction. The records are either part of the records system encompassing the requirements of 10 CFR 50, Appendix B, Criterion XVII, or they are outside that scope, and hence are informal records or just records. Consideration of them to address safety-related issues must be done with great care. To conclude as the Joint Intervenors have that someone would have difficulty in writing or creating an "informal record" which must meet no specific tests as to what it should contain such as when was the observation made, what was observed, what was the exact location on piece of equipment observed, who observed it etc., is ludicrous.

In fact, the NRC Task Force carefully considered, in allegation A-270, such an informal document known as the "Phearson Afteraction Report." In this case, even though this report was not generated as part of the quality records, the NRC Task Force after reviewing it, recognized that

it may have validity. It was dated, signed, identified the specific concrete placement involved and listed points which generally noted instances where parameters or characteristics required by the construction specification or work or inspection procedures had not been met. Further review however, indicated the quality assurance program had identified these same issues and the discrepancies were recognized on DR's, DN's and NCR's.

The NRC Task Force strongly disagrees with the Joint Intervenors on their contention that it was also difficult to write "informal quality inspection records", but the NRC Task Force, has also demonstrated how a record created outside the quality record system can be considered, whether it be adverse to the case of good quality or supportive of the case of good quality if it does in fact meet certain tests.

The Joint Intervenors at 54 also state that, "there is no reason to believe that the concrete or construction packages which the Staff reviewed would in any way indicate problems which were not identified or documented." Obviously, the review of the documents generated as part of the quality assurance program will not reveal problems which were never identified in the documents, but the NRC Task Force is confident that the problems which did surface and were recognized by personnel on site were, in fact, recorded in the quality records system. The NRC Task Force examined numerous samples of the recorded "problems" which, in aggregate, produced no significant impact on safety. This dispelled any remaining concern over whether some items of major safety significance were never

recorded. For example, the NRC Task Force found among discrepancies the fact that during one of the early concrete placements in the basemat, concrete which had spilled from the transporting equipment was, in several shovelfulls, put back into the flow of concrete to the placement site. This was noted in the records, the concrete contamination was removed and personnel were instructed not to worry about wasting concrete, but to be concerned about contamination. Other examples of discrepancies found involved: noting a hydraulic oil spill on complete concrete sections; damaged waterstop material; and cracks and rockpockets in the formed face of a placement. In all cases, appropriate repairs and corrective actions were taken.

The NRC Task Force concluded that the records reflect a great amount of detail and clearly demonstrate what actually occurred during construction. It was on the basis of the facts obtained from these detailed records that the NRC Task Force was able to assess the deviations from the very specific values and characteristics prescribed in the concrete specification and arrive at the conclusion that the construction, as executed, met the design requirements. The staff has concluded that "problems" of significance were very likely all documented during concrete construction activities.

The Joint Intervenors, also at 54, charge the NRC Task Force with an "entirely paper review." In addition to the review of written documents, physical inspection of exposed structural items, the Task Force did extensive research and review of the construction photographs which exist of

the basemat construction. Many of these provide a great amount of detail. Excellent photos were found of the various phases of basemat concrete construction showing completed Cadwells, reinforcing bars and spacing, concrete delivery, transporting concrete, vibrating concrete, curing concrete and preparation of construction joints and waterstops for subsequent placement. In some cases it was possible, for example, to correlate the specific concrete delivery truck by number from a photograph to the records identifying that truck as having been involved in deliveries that day to a specific discharge spot. The photographs also showed some of the cracking which occurred on the vertical surfaces of the construction joints which was identified and repaired prior to the subsequent adjacent placements.

Based on the various methods the NRC Task Force used to determine the quality of construction and what actually was done during construction, the NRC Task Force is of the opinion that it has sufficient and relevant facts on which to base its conclusions.

The Joint Intervenors at 53 state that "the NRC staff makes little effort to interpret the allegation properly, much less determine if the problem is of safety significance or if it has been resolved." The NRC Task Force, in responding to allegation A-136, stated that "the difficulty of initiating an NCR was not directly assessed, since the emphasis was to determine if unresolved safety issues exist." As described above the NRC Task Force took great pains in completing a detailed review of all available facts and has concluded that there is no indication, based on

the minute types of deficiencies noted in some instances, that significant quality questions were not raised and entered into the quality program in some fashion such as at least as a DR or as a DN.

The NRC Task Force stated in SSER 7, A-136, at 143 that "based on the staff's review of typical DN's and NCR's written in the civil-structural discipline in the 1975-1977 time frame, it appeared that all significant issues were considered against the in-place QA procedures.... This item had no direct safety significance and there were no facts to suggest a generic problem." The NRC Task Force continues to hold these views and note that the issue has been resolved.

III. D.(2)

"The NRC Staff has not adequately examined the deficiencies in the basement and has not ensured that its consultants are independent."
(p. 57 of JI's motion)

With regard to the consultant used by the NRC Task Force, the background information on Robert E. Philleo was provided to all parties in this proceeding on June 15, 1984.

As can be seen, the 38 years of experience were accumulated by Mr. Philleo in ever-increasing important technical and management functions: as a private consultant in the general concrete construction industry; as a civilian engineer with Office of the Chief, U.S. Army Corps of Engineers; and with the Portland Cement Association, as a research engineer.

Prior to this current work for the NRC staff, Mr. Philleo previously worked on a two nuclear projects as an expert in his field. Mr. Philleo served as a consultant to the AEC, Division of Regulation (now the NRC) in the early 1970's on the Turkey Point, Unit 3 prestressed concrete containment dome delamination, while on loan from the Corps of Engineers. Also in this same time frame, Mr. Philleo served as a consultant to the Tennessee Valley Authority on a concern of concrete aggregates used in shielding and on base mat voids at the Browns Ferry facility. Again, this was as a Corps of Engineers employee on loan to another government agency. It is quite clear that Mr. Philleo represented a truly independent and fully versed engineer in concrete construction technology while dispensing his services to the NRC.

The Task Force believes the Joint Intervenors concern over this consultant's independence is ill-founded.