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USNRCUNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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BEFORE THE COMMISSIONOFFICE OF SECRETARY
DOCKETING & SERVICE
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In the Matter Of:

COMMONWEALTH EDISON COMPANY

(Braidwood Station, Units 1
and 2))
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)
)
)
)Docket Nos. 50-456
50-457AFFIDAVIT OF MICHAEL J. WALLACE

I, Michael J. Wallace, being first duly sworn, depose
and state as follows:

I am employed by Commonwealth Edison Company as the
Assistant Manager of Projects and as the Project Manager of
Braidwood Nuclear Power Station. As Project Manager of
Braidwood, I have primary responsibility for completion of the
Braidwood Project, through fuel load of Units 1 and 2,
including the management of construction, testing, and
operating activities. More specifically, my management
responsibilities include, among other things, the scheduling
and completion of construction activities as well as verifi-
cation and corrective action programs, giving due consideration
to quality, budgetary, schedule and regulatory constraints.

In the course of my duties, I have undertaken to
ascertain the impact that the admission of Intervenor's QA

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contention has had and will have on the Braidwood Project, and in particular, on the completion of several critical path construction items on Unit 1 (hereafter called "Project construction"). At a nuclear power plant, project construction and project licensing must proceed simultaneously if very costly delays are to be avoided. The need to litigate a highly complex QA contention has greatly complicated the licensing and construction effort. This has caused Commonwealth Edison to realign Project priorities and assign top Project and Quality Assurance management personnel to support the hearing process. The result has been a significant disruption of construction activities. Based on continued litigation of the QA contention, construction activities will undergo significant further disruption, resulting in a delay of Project construction.

In reviewing the impact of litigating the QA Contention on Project construction, I considered the actual effort expended by Project personnel and the Project impact experienced during the recent time period in which we reviewed the documents in our files for the purpose of responding to and producing documents related to the First Set of Intervenor's Interrogatories. I have been advised that substantial additional discovery is expected, and that senior management will be required to prepare testimony for presentation at the ASLB hearings. Based on this, I have projected the likely minimum impact associated with future activities related to litigation of the QA contention. My assessment is presented in

four sections. The first section explains how the admission of the QA contention has disrupted the orderly progress of work activities that was directed towards completion of Project construction, and instead, has required revision of Project priorities to support the litigation of the QA contention. The second section addresses the impact of the litigation process on the Project through the time-consuming involvement of key Commonwealth Edison managers, which is diverting them from attending to Project activities. The third section addresses the impact of the litigation process upon the site contractor who has the largest craft workforce and whose activities are very significant to the Project's ability to complete construction and pre-operational testing in a timely manner. The fourth section estimates the likely minimum impact of this disruption of construction activities on Project construction.

Section 1 - Impact of QA Contention on Project Priorities

For a full understanding of my assessment, it is necessary first to explain the status of Project construction. Construction of Braidwood Unit 1 is approximately 90% complete. The remaining activities include the following:

(a) System Completion - At this point of Project construction, the bulk installation of components and materials has been largely completed. Attention is now being focused on the further work needed to complete the installation of components and materials to the point of operational readiness. To

effect this transition, lists of work to be performed are developed, and each contractor must then work to complete a myriad of generally unrelated work items. System completion is presently 70% complete.

(b) System Testing - As systems are completed, preoperational testing is accomplished through the execution of 231 separate tests. As these tests are undertaken, additional work is frequently identified which requires completion by contractor personnel before individual tests are completed. System testing is presently 55% complete.

(c) Pipe hanger installation - With piping nearly fully installed and partially supported, the installation of all remaining piping supports or hangers must be completed. For large bore pipe hanger installation is 85% complete; for small bore pipe hanger installation is 70% complete.

(d) Electrical conduit installation - In order to complete electrical installation, electrical conduit remains to be installed in several areas. Electrical conduit installation is over 90% complete.

(e) Electrical cable pulling - With installation of electrical cable tray virtually complete, conduit installation must be completed and then electrical cable must be pulled through the trays and conduit to complete the electrical installation associated with specific pieces of equipment. Cable pulling is currently 80% complete.

(f) HVAC installation - Included in this activity are the installation of heating, ventilating, and air conditioning duct work, installation of duct supports, completion of various plenums, and installation of HVAC equipment. HVAC installation is approximately 55% complete.

(g) Instrumentation installation - The instrumentation and controls associated with each plant system must be installed and connected to the appropriate plant equipment. Instrumentation installation is over 90% complete.

(h) Hydrostatic testing - Various piping systems and components are required to be hydrostatically tested after they are installed. Hydrostatic testing is 30% complete.

(i) Other activities - There are a large number of other activities which also must be completed, but which are less significant in determining the construction completion schedule. These activities include installation of galleries for operational access to valves and equipment, installation of insulation on piping and components, installation of penetration seals, and completion of various inspections, construction tests, and documentation reviews.

The critical path items for completion of the physical plant are system completion, system testing, and pipe hanger installation. While Project management concurrently develops and implements many activities to maintain the construction schedule, particular focus is brought to those activities most

important to timely completion of the Project. This focus is accomplished through the establishment of "Project Priorities" by the senior Commonwealth Edison Project management.

In May 1985, prior to the admission of the QA Contention, the following production-oriented activities were being given priority treatment, to facilitate completion of Project construction. (Concurrently, a number of non-production related items were also being given special attention to assure the adequacy of inspections, documentation, and various corrective action efforts.)

- (1) System Completion
- (2) System Testing
- (3) Pipe Hanger Installation
- (4) Hydrostatic Testing
- (5) HVAC Installation
- (6) Critical Material Purchases

After the admission of the QA contention by the ASLB, we were advised by counsel that a significant level of effort would be required of senior Project managers to support the litigation of the QA contention in a timely fashion. Based on this advice, which was confirmed by the experience gained during July and August 1985 from the extensive time devoted to answering Intervenor's interrogatories, it became clear to me that the time and attention of senior Commonwealth Edison Project managers could not be effectively allocated between the competing demands of completing Project construction and sup-

porting the litigation of the QA contention. It was therefore necessary to make significant revisions to overall Project Priorities.

In late August of 1985, Project Priorities were revised, with a relative ranking of importance, to serve as a guide for all project management in directing attention and allocating resources. The following were established as the top 11 priorities to be specifically reviewed weekly by the Project Manager with senior Commonwealth Edison Project management:

- (1) Completion of specific corrective action programs placed in issue by the QA Contention
- (2) System Completion and System Testing
- (3) Completion of BCAP task force activities to support QA Contention litigation
- (4) Project followup of BCAP task force conclusions to support QA Contention litigation
- (5) Resolution of open NRC Region III items referenced in the QA contention
- (6) Project Support of ASLB hearings in addition to items 1 and 3 through 5, for example discovery and testimony development
- (7) Piping Hanger installation
- (8) Cable Pulling
- (9) HVAC Installation
- (10) Completion of other select corrective action programs
- (11) Processing and closing non-conformance reports

The top priority, and 5 of the 6 highest priorities established, dealt directly or indirectly with efforts needing greatest management attention to support the litigation of Intervenor's' contention. This relegated activities necessary to Project completion, including the critical path item -- pipe hanger installation, to a secondary status and consequently they received less management attention than they had prior to the admission of the QA contention by the ASLB.

The effect of the revised priority listing was to communicate to every organization in the Project that significant, exceptional efforts would be required to assure adequate preparation for QA contention litigation. Furthermore, the August list of priorities made clear that most production efforts would have to be subordinated to litigation-related efforts.

Managing the Project in the manner described above was considered necessary, given the large number of issues which are introduced in the QA contention. This action will definitely have an overall impact on the Project Construction schedule, since it confirms that the Project attention will be focused and future resources will be allocated in a manner comparable to what was actually experienced in July/August.

Section 2 - Impact of QA Contention on Senior Commonwealth Edison Project Management

Commonwealth Edison Company essentially functions as the general contractor for the Braidwood Project. The Company

organizes, plans, leads and coordinates the activities of five major contractors and a variety of minor contractors who perform the construction work at the Project site. This work includes mechanical installation; electrical installation; structural erection; heating, ventilating and air conditioning (HVAC) installation; and Architect/Engineer services. A total of 78 Commonwealth Edison personnel have varying responsibilities for managing and coordinating the activities of all contractors. Central to the style of management implemented by Braidwood Project personnel are coordination among Commonwealth Edison Project organizations, and a high degree of direct, frequent, personal interfacing with contractor managements.

Attachment 1 to my affidavit presents an organization chart showing senior Commonwealth Edison Project and Quality Assurance management and the number of management personnel assigned to each Project organization. Senior Commonwealth Edison managers having the most significant responsibility for and managerial impact on contractor activities are:

M. Wallace	Project Manager
D. Shamblin	Project Construction Superintendent
C. Schroeder	Project Licensing and Compliance Superintendent
W. Vahle	Project Field Engineering Manager
G. Groth	Assistant Project Construc- tion Superintendent

M. Lohmann	Assistant Project Construction Superintendent
E. Fitzpatrick	Assistant Manager of Quality Assurance
T. Quaka	Quality Assurance Superintendant

These managers are directly responsible for, among other things, establishing Project Priorities, and reviewing, analyzing and addressing significant schedule problems or opportunities for schedule improvements. These managers are also responsible for allocating resources to accomplish Project objectives. Because of their high degree of daily involvement, Commonwealth Edison managers, by their action or inaction over time, indirectly impact the timely execution of the Project's plans and thereby affect the project schedule.

During the months of July and August, senior Project and Quality Assurance Management experienced significant, time-intensive involvement in various activities associated with discovery in connection with the QA contention, including preparing and reviewing interrogatory responses, and identifying and making available to Intervenor over 58,000 pages of documents. Such efforts consumed approximately the following percentage of working hours for these individuals during this period:

M. Wallace	21%
D. Shamblin	22%
E. Fitzpatrick	21%
C. Schroeder	72%

G. Groth	23%
W. Vahle	25%
T. Quaka	16%

By contrast, the Emergency Planning Contention, the only other contention presently in contest in these proceedings, has been addressed by other Commonwealth Edison organizations and individuals, and has not required any time from these senior managers.

The time which these senior managers were required to devote to addressing QA contention related issues was time that was not spent managing Project and Quality Assurance activities. Moreover, the fact that these men were senior managers resulted in the impact being greater than that which would be implied by a simple redirection of efforts to the litigation. The diversion of management attention causes a "ripple effect" that spreads through the 5,500 person workforce on site. Overall Project production activities, particularly, Systems Completion and System Testing, suffered by not receiving greater management attention. An example illustrates how System Completion was disrupted. I normally meet twice weekly with the Startup Superintendent to review items he has identified in order to improve System Completion progress. Similarly, the Construction Superintendent routinely reviews the efforts of construction engineers to support System Completion activities. The time required to participate in the development of answers to Intervenor's interrogatories caused me to cancel over half my

regular meetings with the Startup Superintendent and forced the Construction Superintendent to curtail his regular reviews. Direct senior management attention was therefore diverted from a critical area of activity.

These and other activities essential to completion of Project construction will continue to be impacted by the substantial time commitments of senior Project and Quality Assurance management personnel to support future litigation activities. Counsel advises that Intervenors intend to file a second set of interrogatories which are expected to be as broad and complex as the 62 interrogatories and their many subparts of the First Set. In addition, I anticipate that many of the managers may be deposed, and that manpower resources will be needed to support my counsel at depositions. Finally, a total commitment of management resources will be required to draft and file testimony on the more than 60 separate issues that are a part of the QA contention, and to testify over the projected hearing duration of 4 to 6 weeks.

The adverse impact on the efficiency and effectiveness of the management of the Project will become increasingly more substantial as key leaders and decision-makers are forced to set aside or reduce attention to Project activities to support the litigation effort. While some additional management talent could mitigate the situation, the personal knowledge, experience, interpersonal relationships, and team synergism inherent to the present management team

cannot be effectively replaced or augmented through the mere addition of people. The body of personnel with first hand knowledge of contention issues is limited, and they are, in general, the senior management and their direct subordinates -- the same people who are running the job.

Section 3 - Impact of QA Contention on Contractor Important to Mechanical Installation Activities

The activities of the Mechanical Installation contractor, Phillips, Getschow Company, have been impacted more than any other site contractor by the efforts required, during the past few months, to address QA contention-related issues. As an example, prior to the admission of the QA Contention by the ASLB, the corrective action program associated with the installation and installation inspection of safety-related equipment was scheduled for completion in March 1986. The program was being implemented concurrent with system completion and testing activities. However, after the admission of the QA Contention with its central focus on this corrective action program, it became clear that the program's schedule had to be accelerated to support timely litigation of related QA contention issues. Thus, I made completion of this program the top priority of the mechanical installation contractor.

As a result, the following steps were taken: (1) the Phillips, Getschow Project Engineer, the third most critical person in the organization, was relieved of all normal

engineering responsibilities, which included managing the 237 person engineering department, and given primary responsibility for managing successful completion of this program as soon as possible; (2) 20 engineering personnel were assigned to work exclusively on this program, compared to 8 previously; and (3) all other Phillips, Getschow departments and resources were directed to support this effort as their top priority.

Personnel within the Phillips, Getschow organization have been further impacted due to the need to support a wide variety of other contention-related activities. Of more than 60 contention issues, fully half are concerned with activities of the Phillips, Getschow organization. Just the preparation of responses to the Intervenor's first set of interrogatories for these issues consumed 27% of the time of the Phillips, Getshow Project Engineer during July and August. (The remaining 73% of his time was spent expediting the safety-related equipment program, discussed above, as a result of it being a Quality Assurance Contention issue). Interrogatory response preparation also consumed 25% of the time of the Phillips, Getschow Quality Assurance Coordinator and 13% of the time of his 8 key staff people. In addition, it consumed 40% of the time of the Quality Control Manager. The Quality Assurance/Quality Control groups are most impacted because of the efforts associated with researching various records and documents to identify relevant information in support of interrogatory responses.

Future efforts associated with additional interrogatories, depositions, expeditious completion of various activities, testimony preparation, and hearing support are expected to draw much more significantly on critical Phillips, Getschow management and staff resources. The net effect will be to even further remove these people from normal managerial activities, and reduce the availability of key managers to resolve problems and capitalize on opportunities for improvement. This leads to a significant reduction in efforts being made to assure timely completion by the mechanical installation contractor of critical path activities, in particular, pipe hanger installation.

Section 4: Conclusion

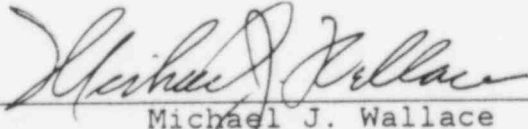
Commonwealth Edison is presently involved in an extensive Project schedule and budget review process, which takes place annually. That process, expected to conclude in December, includes an evaluation of current productivity rates and current estimates of work remaining, with a particular focus on critical path activities, as a basis for reviewing and updating the estimated dates that fuel will be loaded into Braidwood Units 1 and 2. That process will also take into consideration the overall impact that admission of the QA contention is estimated to have on completion of critical path activities.

In Sections 1 through 3 above I presented an assessment of the impact of the QA contentions on Project priorities,

on senior Commonwealth Edison Project management, and on the contractor important to mechanical installation activities. In my judgment, the completion schedule for these critical path activities will be adversely impacted in a significant manner by the continued litigation of the QA contention. The major mechanism by which the Project will be affected is through a significant diversion of the time and attention of the key leaders and decisionmakers of the Project. They are the people with the first hand knowledge of contention issues, and, yet, they are also the people running the job.

Based on the assessment presented above, experience to date, and assuming no expansion of the QA contention beyond its present limits, I estimate that the delay in the completion of critical path activities is on the order of 3 or 4 months.

Further Affiant Sayeth Not


Michael J. Wallace

SUBSCRIBED AND SWORN to
before me this 23 day
of Sept., 1985.


Notary Public

My Commission Expires August 16, 1988

BRAIDWOOD PROJECT ORGANIZATION

ATTACHMENT 1

