UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	Docket Nos. 50-250 OLA-2
FLORIDA POWER & LIGHT COMPANY	)	50-251 OLA-2
	)	
(Turkey Point Plant, Units 3 and 4)	)	(SFP Amendment)

AFFIDAVIT OF MILLARD L. WOHL ON CONTENTION 3

I, Millard L. Wohl, being duly sworn, state:

1. I am a Reactor Engineer in the Technical Specifications Coordination Branch, Division of Human Factors Technology, U.S. Nuclear Regulatory Commission. Prior to November 24, 1985, I was a Nuclear Engineer in the Accident Evaluation Branch, Division of Systems Integrations where I performed radiological consequence evaluations for the Staff Safety Evaluation (SE) dated November 21, 1984, on the expansion of the spent fuel storage capacity at Turkey Point Units 3 and 4. A statement of my professional qualifications is attached.

2. The purpose of this affidavit is to address Contention 3. I have read "Licensee's Motion for Summary Disposition of Intervenors' Contentions" and "Licensee's Statement of Material Facts As to Which There Is No Genuine Issue To Be Heard with Respect To Intervenors' Contentions," dated January 23, 1986. The material facts stated by Licensee in relation to Contention 3 are correct and are supported by the NRC's SE issued in connection with the amendments, and I concur in the conclusions reached in the supporting affidavit of Rebecca K. Carr.

3. Contention 3 states:

> Contention 3. That the calculation of radiological consequences resulting from a cask drop accident are not conservative, and the radiation releases in such an accident will not be ALARA, and will not meet with the 10 CFP [sic] Part 100 criteria.
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> As the basis for this contention, the Intervenors state:
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> The Florida Power and Light Company did not comply with the conservative assumption for a cask drop accident that are specified in the Standard Review Plan 15.7.5 and Regulatory Guide 125 [sic] (5), in that they used a 1.0 radial peaking factor, rather than a 1.65 factor. Thus, the potential offsite dose using the more conservative calculations could cause FPL to exceed the 10 CFP [sic] Part 100 criterion.

The contention, as admitted by the Licensing Board Order of September 16, 1985, alleges that the calculations of radiological consequences resulting from a cask drop accident do not comply with Standard Review Plan criteria or Regulatory Guide 1.25 and will exceed the dose guidelines of 10 CFR Parts 20, 50 and 100. As the basis for the contention, Intervenors state that the calculations are not adequately conservative because of the radial peaking factor used.

4. The NRC's Standard Review Plan (SRP), NUREG-0800, Regulatory Guide 1.25, and NUREG-0612 "Control of Heavy Loads at Nuclear Power Plants" specify assumptions regarding radial peaking factors which are acceptable to the Staff for use in analysis of cask drop accidents. SRP Section 15.7.5, "Spent Fuel Cask Drop Accidents," states in paragraph II.3 that the NRC Staff will accept a model for calculating the consequences of a cask drop accident "if it incorporates the appropriate conservative assumptions in NRC Regulatory Guide 1.25." Section B of Regulatory Guide 1.25 does not specify the number of fuel assemblies which should be assumed to be damaged as a result of a cask drop accident, but instead addresses "the determination of the radiological consequences of a handling accident once an assumption as to the number

of assemblies or rods damaged has been made." Section B of Regulatory Guide 1.25 states that a conservative approach "is to assume that the assembly with the peak [fission product] inventory is the one damaged," and Section C.1.e states that the fission product inventory should be calculated using "an appropriate radial peaking factor." This section also states that the minimum acceptable radial peaking factor for a single assembly fuel handling accident in a pressurized water reactor, such as Turkey Point, is 1.65. Regulatory Guide 1.25 does not recommend a specific numerical value for accidents involving damage to multiple fuel assemblies. NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants," recommends a radial peaking factor of 1.2 in accident evaluations involving damage to multiple assemblies. Thus, while it is acceptable to the Staff to use the 1.65 factor set forth in Regulatory Guide 1.25, it is also acceptable to use a factor of 1.2 when calculating radiological consequences from an accident involving damage to multiple fuel assemblies. The Staff's accident evaluation of cask drop accident at Turkey Point assumed damage to multiple fuel assemblies.

5. SRP Section 15.7.5, paragraph II, states that the doses calculated for cask drop accidents are acceptable if they are "well within" the Part 100 guidelines. "Well within" is defined in Section 15.7.5, paragraph II as less than 25% of the doses in the 10 CFR Part 100 guidelines. The Part 100 guideline doses are commonly used in the nuclear industry for evaluating the acceptability of accident conditions. The 10 CFR Part 100 guidelines set a guideline dose of 300 rem to the thyroid or 25 rem to the whole body from iodine exposure.

6. As indicated in Section 2.5.1 of the SE, the Staff has performed a conservative, independent accident radiological consequences analysis to

determine the offsite radiological consequences of a postulated cask drop accident at Turkey Point. The results of this analysis indicate the offsite doses for such an accident are 26 rem thyroid and less than 0.1 rem whole body at the Exclusion Area Boundary. These doses are well within the offsite radiological guideline values specified in 10 CFR Part 100. That is, the doses are less than 75 rem (25% of 300) for the thyroid and less than 6.25 rem (25% of 25) for the whole body dose.

7. In its analysis, the Staff used conservative assumptions, including "appropriate conservative assumptions" in Regulatory Guide 1.25. Among the assumptions used by the Staff are: 1) a radial power peaking factor of 1.2, as recommended for use in accident evaluations involving damage to multiple assemblies (NUREG-0612); 2) an iodine decontamination factor of 100, as stated in Regulatory Guide 1.25; 3) a cooldown time for impacted spent fuel assemblies of 1525 hours; and 4) an estimated 91 impacted stored spent fuel assemblies.

8. Even though the assumed radial power peaking factor of 1.2 is less than the value of 1.65 recommended in Regulatory Guide 1.25 for a single assembly fuel handling accident, it is conservative for an evaluation involving damage to multiple fuel assemblies, since this value was deemed conservative in NUREG-0612 for heavy load drops involving damage to multiple assemblies. Additionally, the assumed iodine decontamination factor of 100 (as recommended in Regulatory Guide 1.25) does not allow for plateout of iodine within the fuel assemblies or for credit for the chemical species in which iodine is predominantly expected to occur, which is now believed to be chiefly cesium iodine, which is water soluble and therefore would not escape from the pool in a volatile form. The Staff thus believes this decontamination factor to be

conservative, so much so that this degree of conservatism would easily outweigh the difference produced in radiological consequence estimates made with a radial power peaking factor of 1.0 (the peaking factor used by the Licensees, in one estimate) versus the Staff's value of 1.2 or even the Regulatory Guide 1.25 value of 1.65.

9. For the same reasons, the Staff also believes the Licensee's analyses, one of which uses a radial power peaking factor of 1.65 and the other a factor of 1.0, both to be suitably conservative and leading to offsite radiological consequences well within the guidelines of 10 CFR Part 100.

10. In conclusion, the Licensee's and Staff's analyses are consistent with SRP Section 15.7.5 and Reg. Guide 1.25. Moreover, the Staff's independent analysis of the potential offsite doses resulting from a postulated cask drop accident shows that the doses are well within the guidelines of 10 CFR Part 100. Accordingly, summary disposition of this contention should be granted.

The foregoing and attached statement of professional qualifications are true and correct to the best of my knowledge and belief.

Millard L. Wohl

Millard L. Wohl

Subscribed and sworn to before me
this 18th day of February, 1986.

Malinda L. McDonald

Notary Public

My commission expires: 7/1/86

MILLARD L. WOHL

PROFESSIONAL QUALIFICATIONS

TECHNICAL SPECIFICATIONS COORDINATION BRANCH

DIVISION OF HUMAN FACTORS TECHNOLOGY

I am presently employed as a Reactor Engineer in the Technical Specifications Coordination Branch, Division of Human Factors Technology.

Until November 24, 1985, I was employed as a Nuclear Engineer in the Accident Evaluation Branch, Division of Systems Integration, U.S. Nuclear Regulatory Commission, Washington, D.C. My duties in this position were to conduct site and accident analyses, Emergency Response Facility Appraisals, and various other safety-related studies for nuclear power, test, and research reactor facilities. This includes probabilistic risk assessment (PRA) analyses for power reactor environmental impact statements as well as evaluation of applicant/licensee PRA's.

I attended Case Western Reserve University (formerly Case Institute of Technology) and received a B.S. degree in Physics in 1956. I received a M.S. degree in Physics from Indiana University in 195[illegible], did additional graduate work as a special student in Nuclear Engineering Science at Columbia University and in Nuclear Engineering at Case Western Reserve University from 1962 through 1964. I have had short courses in Reactor Safety, Emergency Preparedness, Probabilistic Risk Assessment, and Human Reliability.

I was a teaching assistant in Physics at Indiana University from 1956 - 1958. I have taught physics, physical science, mathematics, and statistics in the evening divisions of Baldwin-Wallace College, the Ohio State University and Cuyahoga Community College from 1958 - 1973.

In 1957, I participated in the Special Power Excursion Reactor Tests at the SPERT-II Facility, National Reactor Testing Station, Arco, Idaho.

In 1958, I joined the NASA Lewis Research Center staff in Cleveland, Ohio. My initial duties involved the writing of Monte Carlo computer codes for the determination of radiation shielding requirements and propellant radiation heating for proposed nuclear-powered rocket designs. Other assignments involved methods development and shielding and nuclear safety analyses for numerous proposed mobile nuclear vehicle applications including the Multi-purpose Nuclear Airplane. I was co-author of a study on disposal of radwaste in space, performed for the USAEC. Numerous other technical publications evolved in the course of the NASA work, some presented at ANS meetings. Additionally, during the period 1958 - 1973, I had substantial research contract management responsibilities.

In 1973, I joined the General Atomic Company in La Jolla, California, as a nuclear engineer. At General Atomic I performed a variety of nuclear safety-related analyses for the High-Temperature Gas-Cooled Reactor (HTGR). These included the analysis of Design Basis Depressurization Accidents (DBDA) and containment integrity stuties, as well as computer code upgrading and modification.

In 1975, I joined the Accident Analysis Branch in the Division of Technical Review, U.S. Nuclear Regulatory Commission. My responsibilities involved site characteristic studies and accident analyses. More recently, I have had expanded responsibilities, including Design Basis and Severe Accident (PRA) Analyses for staff Safety Evaluations and Environmental Impact Statements. These analyses include reactor core and piping system radiological accident analyses, steam generator repair accident analyses, core reload accident evaluations, spent fuel pool rerack accident evaluations, containment enclosure shielding analyses, and severe accident consequence and risk analyses. Additionally, I have participated in operating plant Emergency Response Facility (ERF) appraisal. Also, I have had substantial contract management and expert hearing witness responsibilities.

Presently, I am involved in the upgrading of nuclear power plant Technical Specifications in the newly formed Technical Specifications Coordination Branch, Division of Human Factors Technology.