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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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November 19, 1984<sup>1</sup>

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

Glenn O. Bright  
Dr. James H. Carpenter  
James L. Kelley, Chairman

In the Matter of

CAROLINA POWER AND LIGHT CO. et al.  
(Shearon Harris Nuclear Power Plant,  
Unit 1)

Docket 50-400 OL

ASLBP No. 82-468-01  
OL

Wells Eddleman's Response to Summary Disposition on  
Contentions 144 and 154  
(Site Emergency Planning Contentions)

Contention 144: Applicants and Staff both appear to misread or misapply NUREG-0654 and NUREG-0737, Revision 1. 10 CFR 50.47(b) provides that (except for 50.47(d) 5% power licenses) the onsite and offsite emergency response plans must meet the following standards (fn.1). Footnote 1 there refers as follows: "<sup>1</sup>These standards are addressed by specific criteria in NUREG-0654/FEMA-REP-1." NUREG-0654 itself (see p.2 of it) says it is "final guidance" and provides specifically under item B.7 at page 36: "Each licensee shall specify the ... personnel who will augment the plant staff as specified in the table ... B-1." (emphasis added in all quotes above).

Therefore, the 30 minute and 60 minute response times specified in NUREG-0654 Table B-1 must be met, regardless of typographical errors

<sup>1</sup>Per extension of time for Staff filing to November 8, approved by the Board at recent hearings, 10 days from that filing is November 18, a Sunday, so this is timely filed.

cited elsewhere in Staff and Applicant motions and affidavits.

This is particularly true in light of the excuse given by CP&L for the 30-45 (note 30) and 60-75 (not 60) minute arrival times for supplemental staff: adverse weather. Under adverse weather conditions in a developing nuclear accident, it is more necessary, not less necessary, that staffing at the nuclear plant having the accident be supplemented promptly as necessary to have a better chance to contain the accident.

This is because adverse weather during a radioactive release may well prevent prompt evacuation (by delaying evacuation times enough that the release will reach evacuees before they can escape), thus requiring sheltering followed by evacuation of contaminated areas. It is also because adverse weather can include rain, snow, freezing rain, hail, etc which can draw radioactive material to the ground by rainout (fog under an inversion can also have this effect, or the inversion can hold the plume closer to the ground, increasing radiation levels those in shelter or evacuation will be exposed to). Thus, those being evacuated or sheltered <sup>well</sup> may face higher doses of radiation in adverse weather, and their evacuation also may be delayed (resulting in a sheltering dose plus a later evacuation dose) due to adverse weather. Obviously, a longer evacuation time, or longer sheltering time, once radionuclides are brought to the ground by rainout or inversion, would tend to increase exposure to nuclides in solid or liquid forms (and gaseous nuclides may be swept down toward the ground by rainout, cf. Applicants' affidavit on summary disposition of Eddleman contention 80).

To avoid these additional dose effects (and the uncertainty facing planners or potential evacuees/shelterees under adverse weather condition, it is very important that the Harris plant have all available personnel to supplement its staff promptly (i.e. within the NUREG-0654/0737 specifications) and not later.<sup>2</sup>

<sup>2</sup>NUREG-0737 requires exceptions be justified but makes no exceptions to 50.47

fn 2 continued from previous page:

Indeed, NUREG-0737 cannot override the requirements of 10 CFR 50.47 incorporating NUREG-0654 as outlined above (see p.1) *Supra*

It should be clear that if supplementary personnel are not present within the times required by NUREG-0654, Table B-1, then the staffing levels required are not met.

In addition, CP&L's "Fact" 10 and Black affidavit paragraph 9 amount to an admission that the Table 2.2-1 of the onsite plan do NOT provide for the "60 minute" additions specified in 0737 as correctly identified with NUREG-0654 Table B-1. Again, these are requirements, not options, under the Commission's Rules as cited on page 1 above.

My discovery responses (p.10 of 9-07-84 filing) have been available to Applicants and Staff for some 2 months now and cover these matters, so they can't claim ignorance of my position in preparing their Motions, Affidavits, or Response by Staff. They clearly haven't carried their burden of proof (see attached FACTS IN DISPUTE LISTING - Contention 144) and the motions for summary disposition of this contention should be denied.

#### Contention 154

The first thing to note about the Motions on this contention is that none of them, nor their "supporting" affidavits, purports to show that Harris plant operators are now trained, or have the education or judgment, to exercise good judgment when dealing with the complex task of dose assessment under the pressure of accident conditions. The contention says the operators are unqualified, not untrained, and discovery responses 154-8 and 154-4(b) and (c) demonstrate that the level of knowledge/experience required by my concerns would be a "senior (experienced) health physicist on snift at all times" who is trained in

dose assessment. This is not addressed by the motions or affidavits.

Moreover the procedure PEP 341 for manual dose assessment is complex, and does require some judgments on its face (e.g. of wind speeds and directions) in addition to requiring judgment to implement. (A copy is attached for the Board. It has been served on all parties previously in the SHNPP Emergency Procedures notebook under cover letter from CP&L dated September 12, 1984.) It references Annex B of the onsite plan specifically (PEP-341 p.4 of 20, item 2.1 subitem 2 is Annex B). I have noted some of the areas requiring evident judgment, and some deficiencies (even in the windspeed section!) as well, on the attached statement of Facts in Dispute (154).

But the main focus of this argument is that the training, tests, and so on referred to in the Motions and Affidavits hasn't been done yet. There is nothing to demonstrate that the Harris operators are in fact qualified to carry out dose assessment under accident conditions, especially by manual calculations (PEP-341). Thus, the contention isn't satisfied and the arguments for summary disposition are not relevant. Applicants and the Staff have the burden on summary disposition of bringing forth specific facts to show how the contention is not in dispute. One must presume that they brought forth the facts available to them, none of which demonstrate that the operators now have the qualification to perform dose assessment calculations, particularly manually and/or under accident conditions when the pressure would really be on them. This is particularly true in the light of the limited mathematical education requirements for nuclear operators.

The above arguments are fleshed out somewhat further in the Statement of Facts In Dispute on 154, attached. For those and the above reasons (including cites/notes to PEP-341) the motions for summary disposition of Fddleman 154 should be denied.

*Wells Eddleman*  
Wells Eddleman  
19 November 1984



## FACTS IN DISPUTE LISTING

### Contention 144

1. 10 CFR 50.47(b) and NUREG-07654 specifically require that the specifications of Table B-1 or NUREG-0654 (the source of Table 2 in NUREG-0737 by Staff; and Applicants' own statement) be met. No exceptions are provided in the rule 50.47.

Applicants' Black affidavit, paragraph 6, admits an exception. Therefore this matter and the matter of paragraph 10 of the same affidavit, claiming requirements are met, is still in dispute. This contradicts Applicants' "Facts" 6 and 11, and the Staff's similar statements.

2. The Black affidavit, paragraph 7, cites a cover letter for NUREG-0737 as allowing exceptions from the requirements of NUREG-0654, Table B-1. But a cover letter cannot alter the Commission's Rules (that takes a rulemaking). Therefore, 10 CFR 50.47(b) and its footnote 1 apply, nullifying Applicants' "Fact" 7 and the rest of Black affidavits paragraph 6 and NRC Staff's agreement with it.

3. Staff approval (Staff affidavit; Black affidavit paragraph 11 and Applicants' "Fact" 12) cannot be given to something contrary to the Commission's Rules -- at least not with validity. Therefore the availability of sufficient supplemental staff for emergencies a 30 and 60 minutes after the emergency begins, are in dispute

4. Adverse weather requires more supplemental staff quicker to maintain (or give the best chance to protect) public health and safety in a nuclear accident -- see Response at pp 2-3. Thus the validity of any rationalization, even if (arguendo) the rules permitted it(which they don't), is in dispute. NUREG-0737, Supplement 1, 8.4.1.1 (p.23) requires exceptions be justified, but no justification is given in either Applicants' or Staff's filings. (see Staff Simonds affidavit at p.3, item 4)

5. CP&L's Table 2.2-1 does not identify the on-shift and (at 60 minutes) additional radwaste operator(s) and mechanical maintenance personnel as required in NUREG-0654 Table B-1, vs. "Fact" 10 and Black affidavit # 9

List of Facts In Dispute -- Contention 154

1. Contrary to Applicants' "Facts" 8,9,10,11,12, and 13 and any Staff Approval thereof, there is no evidence to show that Harris plant operators in fact are qualified to perform dose assessment calculations. These, Applicants admit, must be performed to confirm recommendations to emergency planning authorities ("Fact 4"). One must presume that if the operators had passed all this training, and if it was claimed that this training did qualify the operators to make these dose assessments even under the pressure of actual accident conditions ( a matter Staff and Applicants do not address)(see discovery response 154-6, end, for inclusion of this concern in contrn 154), they would have brought out proof of the training and claim. They do neither (indeed the "Facts" 8 thru 13 above are just a list of requirements the operators will have to pass, given in general as well as some specifics). They can't, because Annex B says that health physics people should make the dose assessments -- see responses 154-2(a), 154-4(c), 154-6(a)(b)(c),154-8 -- Applicants and Staff can't say they didn't know this, since these responses are on pp 10 and 11 of responses served Sept 07 1984).

2. Contrary to "facts" 1,2,3,5,6, and 7 the "no judgment" idea and associated procedures do not demonstrate that the operators are in fact qualified to perform dose assessments. Annex B of the SHNPP onsite plan says health physics personnel should make the assessments. (So did I, e.g. in answer to interrogatory 154-8 and others cited under #1 above). Neither Applicants nor staff address these points.

3. There are judgments involved even in the alleged "cookbook" procedures, e.g. PEP-341. Complex judgment underlies the assumptions of the last paragraph of section 5.1 on p.5 for example. The release pathway assumptions of sections 5.2.2 and 5.2.3 (p.6) do not tell what to do if these assumptions (or the assumption of containment leakage<sup>note</sup> in 5.2.1) are not valid. The projections may be invalid, e.g. as in section 7.2, but there are no guides for making accurate projections in this case. *Continued*

Contention 154 matters in dispute, continued

4. There is insufficient evidence establishing that the Harris operators have the mathematical experience and sophistication to make calculations involving exponential notation (e.g. as required by PEP 341) under the pressure of actual accident conditions. Only perfect, repeated performance under other stresses can simulate that ability reasonably. Operators need only be high-school graduates as now planned as I understand it.
5. The procedure PEP-341 is complex and involves many steps and defaults and requires 5 typewritten single-spaced pages just to list the steps and some data in them. Then there follow 8 attachments for reference of use in the procedure. The defaults are a problem because if new information comes in that was not previously available, what is the operator to do? Go back and recalculate with the preferred information (e.g. wind speed item 1 or 2 in step 9.2, source term info in other steps, etc), or go forward with the calculation? The procedure does not say what to do. This obviously requires thought or judgment contrary to Applicants' "Facts" 2, 7, and 6.
6. A similar problem is that the procedure for manual calculation at step 9.3 requires determination of the activity concentration (and then dose) for "one release pathway" but doesn't tell the operator how to determine which pathway to use first, next, etc. This very obviously requires judgment. The procedure doesn't explain "step by step" when, if ever, the doses calculated for other pathways involved, should be figured.\* This problem also contradicts "Facts" 2, 6 and 7 from Applicants. \*step 9.11 requires judgment as to which other pathways are suspected
7. Section 9.5 of the procedure requires selection of Thyroid and Whole Body dose conversion factors, "using attachment 1 as an aid." But attachment 1 is just a diagram of waste streams to normal vent stacks. Other leaks are not included and the procedure gives no other guidance on how to judge this except to "using the best available information on the type of accident", make the selection. This obviously requires judgment and is not step by step, contrary to "Facts" 2, 6 and 7.
8. Section 9.2 subitem 3 on weather observation gives no guidance as to how to determine wind speed and oversimplifies. As noted by the text there, I believe this is an inadequate and should specify a method, e.g. observing a flag, wind sock, etc to determine wind velocity. Also the 4 mph (light/calm) and 9 mph (moderate/strong) numbers oversimplify the dispersion factors. 9 mph is not a good representative of strong winds for a site with an average wind velocity of nearly 8 mph. This might be an instance of requiring the operator to not use common sense judgment, but it does require determinations without giving steps or a method or any assurance of reasonably accurate estimates. Again, a health physicist trained in dose assessment, who has experience in making such estimates, could much better handle the kinds of judgments and uncertainties involved. This again contradicts "facts" 2, 6 and 7.
9. No training re any of the above matters is directly demonstrated to have occurred in Applicants' affidavits or Staff's supporting the motion for summary disposition on 154.
10. Other estimates, e.g. duration of release, are unclear. How the operator is supposed to estimate release duration is not established (other than use of the default value of one hour)
11. The ERFIS and other computers are not safety-grade and may not be available during an accident. This nullifies the use of "Facts" 4 & 5 and in any event the operators have to be qualified to use PEP 341 in case it is needed.



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Shearon Harris Nuclear Power Plant, Unit 1 )

Docket 50-400  
O.L.

CERTIFICATE OF SERVICE

Wells Eddleman's Response to

I hereby certify that copies of

Summary Disposition Motion(s) on Contentions 144 and 154 w/Lists of matters in dispute on both Contentions

HAVE been served this 19 day of November 1984, by deposit in

the US Mail, first-class postage prepaid, upon all parties whose names are listed below, except those whose names are marked with an asterisk, for whom service was accomplished by

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