

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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,
Units 1 and 2)

Dockets 50-400 OL
50-401 OL

Wells Eddleman's General Interrogatories and *Interrogatories on*
to Applicants Carolina Power & Light et al. *Continuations 75, 80, 83/84*
(THIRD Set) *64f and 67*

Under 10 CFR 2.740, 2.741 and the Board's 9-22-82 Memorandum and Order, Wells Eddleman requests Applicants to answer separately and fully in writing, under oath or affirmation, each of the following interrogatories, and to produce a permit inspection and copying of the original or best copy of all documents identified in response to interrogatories as set forth below.

These interrogatories are intended to be continuing in nature, and I request each answer to be promptly supplemented or amended as appropriate under 10 CFR 2.740(e), should CP&L, NCFMPA, any other or any contractor or consultant to any, some or all of those, Applicant, or any employee of any or some or all of them, or any individual acting on behalf of any or some of all of them, obtain or create any new or differing information responsive to these *(where "Them" refers to the preceding listing(s))* general interrogatories. The request for production of documents is also continuing and requests Applicants to produce promptly if not immediately any additional documents the Applicants and others acting on their behalf or employed by them, as listed in the previous

sentence, obtain which are responsive to the request(s) for production of documents below.

Where identification of a document is requested, please briefly describe the document (e.g. book, notebook, letter, memo, report, notes, transcript, minutes, test data, log, etc.) and provide the following information as applicable: document name, title, number, author(s), date of writing or of publication or both, addressee, date approved, by whom approved, and the name and address of the persons having normal custody of the document, and name and address of any person other than the preceding having actual possession of the document. When identifying documents in response to these interrogatories and requests, please state the portion or portions of the document (e.g. sections, chapters, pages, lines) upon which Applicants rely or which Applicants swear or affirm is/are responsive to the applicable interrogatory or request.

DEFINITIONS herein:

"Harris", "Harris Plant", "SHNPP", or "plant" where not specified otherwise, all mean the Shearon Harris Nuclear Power Plant.

"Applicants" means all of the persons, employees, consultants, contractors and corporations as listed in the first sentence of the second paragraph on page 1 of this document, above.

"FSAR" means the Harris Final Safety Analysis Report.

"ER" means the Harris Environmental Report.

"Document(s)" means all writings and records of every type, including electronic and computer records, in the possession, control or custody of Applicants or any individual(s) acting on Applicants' behalf, including, but not limited to: reports, books, memoranda, correspondence, notes, minutes, pamphlets, leaflets, magazines, articles, surveys, maps, bulletins, photographs, speeches, transcripts,

voice recordings, computer printouts, information stored in computers or computer peripheral devices such as disks, drums, etc., voice recordings, microfilm, microfiche and all other writings or recordings of any kind(s); and copies of any of the preceding even though the original(s) are not in the possession of Applicants or in their custody or control. Document(s) shall be deemed to be within the control of Applicants or ^{any} individual(s) acting on their behalf if they have ownership, possession, or custody of the document(s) or a copy thereof, or have the right to secure the document(s) or a copy thereof, from any person or public or private entity having physical possession thereof.

Each definition given above applies within all other definitions above.

GENERAL INTERROGATORIES

G1 (a) Which contentions of Wells Eddleman do Applicants agree are now admitted in this proceeding, NPC Dockets 50-400/401 O.L.?

(b) for each such contention, provide for any answers to interrogatories by Wells Eddleman which Applicants have previously or presently received (except those suspended by Board order, if any), the following information:

(c) Please state the name, present or last known address, and present or last known employer of each person whom Applicants believe or know (1) has first-hand knowledge of the facts alleged in each such answer; or (2) upon whom Applicants relied (other than their attorneys) in making such answer.

(d) please identify all facts concerning which each such person identified in response to G1(c)(1) above has first-hand knowledge.

(e) please identify all facts and/or documents upon which each person identified in response to G1(c)(2) above relied in providing information to respond to the interrogatory, including the parts of such documents relied upon.

(f) Please identify any other document(s) used ^{or relied upon} by Applicants in responding to the interrogatory.

(g) Please state which specific fact each document, identified in response to G1(e) and G1(f) above, supports, in the opinion or belief of Applicants, or which Applicants allege such document supports.

(h) Please state specifically what information each person identified in response to G1(c)(1) or G1(c)(2) above provided to or for Applicants' affiant in answering the interrogatory. If any of this information is not documented, please identify it as "undocumented" in responding to this section of General Interrogatory G1.

G2.(a) Please state the name, present or last known address, title (if any), and present or last known employer, and economic interest (shareholder, bondholder, contractor, employee, etc.) if any (beyond expert ^{or other} witness fees) such person holds in Applicants or any of them, for each person you intend to call as an expert witness or a witness in this proceeding, if such information has not previously been supplied, or has changed since such information was last supplied, to Wells Fiddleman. This applies to Fiddleman and Joint Contentions as admitted, or stipulated by Applicants.

(b). Please identify each contention regarding which each such person is expected to testify.

(c) Please state when you first contacted each such person with regard to the possibility of such person's testifying for Applicants, if you have contacted such person.

(d) Please state the subject matter, separately for each contention as to which each such person is expected to testify, which each such person is expected to testify to.

(e) Please identify all documents or parts thereof upon which each such witness is expected to, plans to, or will rely, in testifying or in preparing testimony.

(f) Please identify any other document(s) used ^{or relied upon} by Applicants in responding to the interrogatory.

(g) Please state which specific fact each document, identified in response to G1(e) and G1(f) above, supports, in the opinion or belief of Applicants, or which Applicants allege such document supports.

(h) Please state specifically what information each person identified in response to G1(c)(1) or G1(c)(2) above provided to or for Applicants' affiant in answering the interrogatory. If any of this information is not documented, please identify it as "undocumented" in responding to this section of General Interrogatory G1.

G2.(a) Please state the name, present or last known address, title (if any), and present or last known employer, and economic interest (shareholder, bondholder, contractor, employee, etc.) if any (beyond expert ^{or other} witness fees) such person holds in Applicants or any of them, for each person you intend to call as an expert or expect witness or a witness in this proceeding, if such information has not previously been supplied, or has changed since such information was last supplied, to Wells Eddleman. This applies to Eddleman and Joint Contentions as admitted, or stipulated by Applicants.

(b). Please identify each contention regarding which each such person is expected to testify.

(c) Please state when you first contacted each such person with regard to the possibility of such person's testifying for Applicants, if you have contacted such person.

(d) Please state the subject matter, separately for each contention as to which each such person is expected to testify, which each such person is expected to testify to.

(e) Please identify all documents or parts thereof upon which each such witness is expected to, plans to, or will rely, in testifying or in preparing testimony.

G3(a) Please identify any other source(s) of information which Applicants have used to respond to any interrogatory identified under G1 above, stating for each such source the interrogatory to which it relates, and what information it provides, and identifying where in such source that information is to be found.

(b) Please identify any other source(s) of information not previously identified upon which any witness identified under G2 above, or other witness, has used in preparing testimony, ^{or exhibits} or expects to use in testimony or exhibits, identifying for each such source the witness who is expected to use it, and the part or part(s) of such source (if applicable) which are expected to be used, and, if not previously stated, the fact(s) or subject matter ^(or both) to which such source relates.

G4(a) please identify all documents, ^{and which} pages or sections thereof Applicants intend or expect to use in cross-examination of any witness I call in this hearing. For each such witness, please provide on a timely basis (ASAP near or during hearings) a list of all such documents, the subject matter Applicants believe they relate to, and make the document(s) available for inspection and copying as soon as possible after Applicants decide or ~~intend~~ ^{form intent} to use such document in cross-examination.

(b) please identify any undocumented information Applicants intend to use in cross-examination of each such witness for me.

G5 (a) for each contention Applicants state or admit is an admitted Eddleman contention under G1(a) above, or an admitted joint intervenor contention, please state whether Applicants have available to them experts, and information, on the subject matter of the contention.

(b) If the answer to (a) above is other than affirmative, state whether Applicants expect to be able to obtain expertise in the subject matter, and information on it, and if not, why not.

G-6(a) for each document identified in response to any interrogatory herein, or referenced in response to any interrogatory herein, please supply all the following information which has not already been supplied:

- (i) date of the document
 - (ii) title or identification of document
 - (iii) all authors of the document, or the author
 - (iv) all qualifications (professional, technical) of each author of the document
 - (v) the specific parts, sections or pages, if any, upon which Applicants rely of the document,
 - (vi) the specific information each part, section or page identified in response to (v) above contains.
 - (vii) identify all documents used in preparing the document, to the extent known (and also to the extent not identified in the document itself)
 - (viii) state whether Applicants possess a copy of the document
 - (ix) state all expert opinions contained in the document, upon which Applicants rely, or identify each such opinion.
 - (x) identify the contention(s) with respect to which Applicants rely upon (a) the expert opinions (b) the facts identified ~~with~~ ~~in~~ in the document
 - (xi) state whether Applicants now employ any author(s) of the document, identifying each such person for each document.
 - (xii) state whether Applicants have ever employed any author(s) of the document, identifying each such person for each document.
 - (xiii) identify all sources of data used in the document.
- Answers to all the above may be tabulated or grouped for efficiency.

G-7(a) Please identify all documents which Applicants plan, expect or intend to offer as exhibits (other than for cross-examination) with respect to each Eddleman contention admitted in this proceeding which (i) is included in your current response to G1(a), or (ii) is the subject of interrogatories in this set; please state for which contention or contentions each exhibit will be or is expected to be offered.

(b) Please identify all documents which Applicants plan, expect or intend to use in cross-examination of any other parties' witnesses or joint intervenor witness in this proceeding, with respect to (i) Eddleman contentions identified under G-7(a)(i) (or G1-(a)) above, or any other Eddleman contention which is the subject of interrogatories in this set; (ii) each Joint contention now admitted in this proceeding; (iii) per our agreement of 4-8-83, each contention of each other party to this proceeding which is currently admitted. Please identify for each such document the witnesses, or witness, and all contentions with respect to whom (or which) that document is planned, expected, or intended to be offered or used.

(c) Please identify which of the documents identified in response to (b) above will be offered into evidence by Applicants, and (ii) which of the same documents Applicants expect to offer into evidence or intend to offer as evidence or exhibits in this proceeding.

G8 (a) Please identify, for each Eddleman contention which is the subject of this or an earlier set of interrogatories, all information not previously identified which was (i) used or relied on in preparation of Applicants' responses to that contention and all contentions superseded by it (per transcript of July 1982 special prehearing conference, the Board's September 1982 order admitting contentions, or stipulation by Applicants or W.E.), with respect to any facts alleged therein, identifying for each such fact the specific source(s) of information used or relied upon.

G-8(b) Please identify all persons who supplied information relied on or used in Applicants' response to each contention for which information is requested in G -8(^a) above. (i) Please identify for each such person what information was supplied, and with respect to which contention(s) ~~xxxx~~ information supplied was used. (ii) Please state all known qualifications of each such person with respect to the subject matter of the ~~xxxxxxxxxx~~ each contention for which that person supplied information.

G-9(a) Please identify all information not identified in response to the above general interrogatories, including all documents, which Applicants rely on or ⁿintend to use in making their case or carrying their burden of proof in this proceeding, ~~...~~ with respect (i) to each Eddleman contention which is the subject of this or an earlier set of Eddleman interrogatories to Applicants; (ii) with respect to each joint contention on which discovery is now open under the Board's March¹⁰ 1983 order, or on which discovery has been open under said order establishing a discovery schedule. (The phrase "or on which discovery has been open" is intended to keep this interrogatory current and continuing for information and documents which Applicants rely on or form intent to use after the formal close of discovery. I interpret Applicants' continuing interrogatories to apply continuously from their date of submission to me, and I intend these to apply likewise.)

Eddleman interrogatories to Applicants (2d set, 1st round). Please note that the general interrogatories supplied with the first set are continuing, as written, and apply to contentions as discovery on them comes open under the Board's 3-10-88 order; however I am supplying a copy of the general interrogatories (revised per my 4-8-83 discussion with Applicants' attorneys O'Neill and Carrow) at Applicants' request here "because (they) don't like to compare documents" and intend to continue to do so, assuming thereby that the general interrogatories and first group of ~~the~~ other interrogatories on a given contention together comprise the "first round" under that order. I therefore assure responses to the general interrogatories in a set are not due until the responses to given other interrogatories (first group on a given contention) are due, and hereby grant that time to Applicants to respond even if I should inadvertently fail to insert the general interrogatories in any future set of interrogatories. Please note that nothing here affects or impairs the continuing effectiveness of my general or other interrogatories to Applicants.

FURTHER INTERROGATORIES (2d set, 1st round, environmental contentions and those on which Applicants seek summary disposition):

NE as used below, "monitor" includes the meanings "detector" and "detection device".
29-1(a) Please identify all radioiodine monitors at Harris which will continuously sample levels of any radioactive isotope of iodine, or any combination of such isotopes, which is located (i) on the upstream side of any filter or device which is designed, or claimed by Applicants, to remove radioiodines from a gas or air stream at the Harris plant; (ii) directly on the downstream side of any such filter or device per (i) above; (iii) on the downstream side of any such filter or device per (i) above before such stream of gas or air (including any contaminants and radioactive materials) merges or mixes with any other vent, duct, room, space or other stream or source of air or gas which originates within the Harris plant containment, spent fuel building, auxiliary building, or other area into which the FSAR or ER contemplates or states that radioiodines can be present during normal operation (including by leaks or accidental transport which does not cause the plant to cease operation); (iv) at any other point downstream of any such filter or device per (i) above but before the release of the air or gas stream (including any contaminants or radioactive material it may include) to the environment; (v) located outside any enclosure or building or vent at Harris but within 10 meters of any designated release point for radioiodines per the FSAR or ER as currently revised; (vi) located more than 10m but less than 100 m from any designated release point per (v) above; (vii) located more than 100 meters from any designated release point per (v) above; (viii) located between two or more such designated release points per (v) above or within 100 meters of more than one release point, giving for each such continuously sampling monitor its distance from each release point it is within 100 meters of; (ix) located outside the exclusion area for Harris; (x) located at the boundary of the Harris exclusion area.

Further specific interrogatories to Applicants, third set. This ends the first round for Eddleman 64f, 67, 75, 80 and 83/84, all of which are environmental contentions except 67. Applicants and I have agreed to serve our second sets of interrogatories on Eddleman 29 and 37B on each other July 20, 1983. With agreement of Applicants' counsel Baxter and Flynn, Staff counsel Barth, and Judges Bright and Carpenter, this set of interrogatories may be filed as late as July 2, 1983 and still be considered timely.

INTERROGATORIES RE 64(f)

64-10(a) Does the consolidated safety analysis report (CSAR) for the IF-300 series cask consider the possibility of the valve box (i) being crushed (ii) being sheared (iii) being sheared off (iv) being penetrated by a solid object (v) being penetrated by a long object being impacted, such as a steel beam, rail, or reinforcing bar (vi) having the cask roll over onto it, causing damage?

(b) for each part of (a) above for which your answer is affirmative, please state at what pages the CSAR considers such possibility, and state all additional views Applicants hold concerning such possibility (which aren't in the CSAR), stating in detail the technical or other basis for each such view and all facts that underly it, identifying all documents in which such view or the basis for it or part of the basis for it is contained. (c) Do Applicants agree that if the valve box were open to the outside or without integrity (e.g. due to events such as are inquired about in (a) above), the valve could be directly exposed to flammable fluids in an accident? (d) If your answer to (c) above is other than affirmative, please state in detail all basis for your view, identifying all documents and expert opinions upon which you rely in holding such view.

64-11(a) Are there any other methods for providing cask internal pressure relief, besides a pressure relief valve, currently approved by NRC for use with the IF-300 cask? (b) If your answer to (a) is affirmative, please list each such method, describe it in detail, and reference the CSAR pages and any other documents which describe such method. Please also cite and identify each NRC document which approves each such method.

64-12(a) Has the integrity of the pressure relief valve on the IF-300 cask ever been tested under (i) actual (ii) simulated accident conditions? (b) If your answer to (a)(i) or (a)(ii) is affirmative, for each such affirmative answer please state the following: (i) all conditions of such test or accident, including internal cask heat generation rate, whether a fire burned outside the cask, the temperature and duration of each such fire, whether the valve box was crushed during the accident/test, whether the valve box was penetrated during the accident/test, the speed of impact if any, whether the cask rolled over, whether the valve seating was positively known at all times during the accident/test (and if not, for what times it was known), whether the valve unseated during the accident or test, the maximum temperature inside the cask during the test/accident, the maximum pressure inside the cask during the test/accident, whether any fission products were inside the cask during the test/accident, whether anything was released from the cask during the test/accident, what any such released material was released from (if known), the date of such test, the conductors of such test, the date of such accident, all documents containing report(s) or analysis of such test/accident, and whether any persons working for CP&L were involved in the test or accident in any way (and if so, how).

64-13(a) What is the melting point of the Rulon material used in the IF-300 pressure relief valve (i) at 1 atmosphere pressure (ii) at 375 psig? (b) what is the modulus of elasticity of Rulon (i) at 1 atm pressure and 20°C (ii) at 375 psi pressure (gauge) and 400°F (iii) at any other pressure and temperature at which its modulus of elasticity has been determined? (c) what is the modulus of compressibility of Rulon (i) at 1 atm and 20°C (ii) at 375 psig and 400°F (iii) at any other temperature and pressure for which its modulus of compressibility (bulk modulus) has been determined? (d) what is the shear modulus of Rulon? (e) has the shear modulus of Rulon ever been tested at a temperature over 100°F? If so, what temperature was it tested at and what was the shear modulus -- please list the results of all such tests known, and all shear moduli determined for Rulon at elevated temperatures. (f) Is Rulon embrittled by (i) neutron exposure (ii) gamma radiation (iii) heat (iv) continuous pressure on it? (g) for any part of (f) for which your answer is affirmative, please state the conditions and degree of embrittlement which have been found. (h) If Rulon has not been tested for embrittlement under each agent identified in (f) above, please so state, for (i) neutrons (ii) gamma radiation (iii) heat (iv) pressure. (j) does intermittent pressure embrittle Rulon to any extent? How much, under what pressure and conditions of intermittency? (k) please identify all documents which contain information concerning the above-asked properties of vulnerabilities of Rulon, stating for each which response above it relates to, and what facts it contains that are responsive to each part of each question above, if any.

64-14(a) If a rupture disk were used on the IF-300 cask, and it ruptured, would there be any valve that could be used to stop the escape of materials from the cask cavity through the broken rupture disk? (b) please identify any such valve, its CSAR reference if any, all documents describing such valve, and what would have to be done to use it to close off the escape of material through a ruptured rupture disk on the IF-300 cask.

interrogatories on E-67

67-5(a) please identify every item which Applicants expect or

believe will be disposed of from the Harris plant as low-level radioactive waste (LLRW). A description will suffice for items that cannot now be identified, e.g. cleaning materials, contaminated parts removed in repairs, etc. (b) Are Applicants willing to have a license condition on Harris (in the operating license) that restricts disposal of the items identified as LLRW in response to (a) above so that they can only be disposed of as LLRW or as high-level waste under NRC rules? (c) If answer to (b) is other than affirmative, please state in detail all reasons for your answer, and state if there are any items not included in response to (a) above which may be disposed of as LLRW from Harris, and list all such items. (d) For each item identified in response to (a) above, please state (i) the expected average, (ii) the expected maximum, and (iii) the maximum allowed (under tech specs as proposed, NRC regulations, or any other limitation known to Applicants): (aa) weight (bb) volume (cc) content of each radionuclide in 10 CFR part 20 and its appendices, as a minimum and a maximum, in (cc-a) curies per unit volume (cc-b) curies per unit weight (cc-c) total curies (cc-d) curies per unit of the item (cc-e) mass of such radionuclide (cc-f) any other terms which Applicants have used to characterize the radioactivity of such item. (NOTE, milli, micro, nano, pico curies etc can be used in answers to this part -- it doesn't ask recalculation into curies); (dd) number of such items per year in normal operation (ee) number of such items to be disposed of over the lifetime of (i) one Harris unit (ii) both units; (ff) number of such items which Applicants plan to dispose of as LLRW (ff-a) per year of operation per Harris unit (ff-b) over the lifetime of each Harris unit (ff-c) over the operating lifetime of both Harris units (ff-d) as a result of accidents and other events beyond normal maintenance (ff-e) as a result of repairs to Harris unit 1 (ff-f) as a result of repairs to Harris unit 2; (gg) maximum limit, if any, of such items which can be disposed of from Harris as LLRW, in (gg-a) number of items (gg-b) quantity of radioactive material contained in such items, listing the number of such items, and the radioactivity of each radionuclide contained in each item or the total (maximum) number of items; (hh) a description in full of the storage or care of each item from the time it becomes radioactive or is contaminated with radioactive material, to any on-site storage, to shipment to any offsite disposal site (including packaging)(and loading), the arrangements made by Applicants to monitor such material when produced, when identified as LLRW, when it has not yet been stored as LLRW at Harris, while in storage as LLRW at Harris, during packaging for shipment off-site from Harris, during loading for such shipment, during such shipment, at the receiving site, and at disposal; any arrangements made by Applicants to contain the radioactivity of such material during any of the preceding states ("when produced ... and at disposal") listed above, including the equipment used, its method of containing such radioactivity, its efficiency (hh-a) by test (hh-b) as calculated, giving in full all supporting calculations and information, and identifying all documents wherein such information is found or such calculation(s) have been made (hh-c) in actual operation, identifying the site of such operation, the method of assessing such efficiency, all reasons for the choice of such method of assessing efficiency, and identifying all documents which include information on the test requested in (hh-a) above, or the actual operation from which determination was made.

67-5(d)(hh) continued

"Efficiency" as used herein means either "% containment of each radionuclide, or the total curies of all radionuclides, in the LLRW (items or aggregate)" or "any measure of the amount contained, the amount trapped, or the amount released" of radioactivity in LLRW, known to Applicants and applied by them to such method of containing the radioactivity of LLRW. (hh-d) Do Applicants know of any information requested above in part (hh) and its subparts, or any part thereof, which was determined or is known to someone other than Applicants? (hh-e) If answer to hh-d above is affirmative, please identify all documents Applicants possess that contain such information, and identify all other such information. (hh-f) Please state which part(s) of part(hh) above each item of information or document identified in response to (hh-e) above contains information responsive to, stating the information if possible. (jj) Are there any facilities at Harris for storage of such item, i.e. dedicated to storing that item only: (kk) Are there any facilities at Harris for storage of such item together with other LLRW? (ll) Are there any facilities at Harris for storage of such item (aa) with other radioactive wastes or spent fuel (bb) with nonradioactive items (cc) with other radioactive materials, e.g. fresh fuel, radioactive items in smoke detectors etc in use at the plant, radioactive items in instruments in use at the plant ("in use" includes items stored for possible use at Harris or for use elsewhere, if such storage is at Harris), "medium level" radioactive wastes? (mm) for each facility identified in response to any of jj, kk, ll above, please state (aa) the location of such facility (bb) the maximum volume of waste (LLRW) which can be stored in such facility (cc) the maximum volume of items other than LLRW which can be stored in such facility while it contains any LLRW (dd) the volume of such facility (dd-a) internal (dd-b) external (ee) whether the facility is continuously monitored for radiation levels, and if so how, identifying all instruments used for such and their locations and how they are read (ff) whether the facility is continuously monitored for levels of each radionuclide listed in 10 CFR part 20 and its appendices, in air in the facility, in water or liquids in the facility, or in any other content of the facility including the LLRW itself, stating for each nuclide monitored continuously the forms it may take (particle, gas, dust, solid, liquid, solution, etc) the method and instrumentation used for such monitoring, how such monitors are read, who reads them, and how often such reading is required (gg) whether the facility is monitored in any way other than continuously for radiation (hh) if answer to (gg) is affirmative please state the identify and location of all such monitoring equipment, the nuclides and/or forms of radiation such monitoring equipment can detect, the lower and upper thresholds of such detection, how such monitoring equipment is read, how often, by whom, and how often it is required to be read, and whether it determines the radionuclides present in LLRW stored in or passing through the facility (jj) what monitors or methods are used to detect radioactive material escaping from such facility (a) along expected routes of removal, e.g. through air ducts, drains, vents, etc (b) through leaks or abnormal escapes or along routes other than those radioactivity is expected to escape through (c) through unauthorized removal of radioactive material by persons (d) through removal of radioactive material by other living creatures, e.g. mice, rats; identifying for each such monitor its location, alarming levels if any, and its method of detecting such radioactive material release/removal and its sensitivity to such release/removal for each form of radiation

67-5(d)(mm) continued

and for each radionuclide to which it is sensitive or which it can detect. (end of (mm))

(nn) Please identify any other control, monitoring, or containment methods for Harris LLRW not identified in response to the above questions or parts. For each, please state where and how it is used, describe it, and state whether it can detect or prevent LLRW at Harris being released to the environment, giving the basis of such response in detail and identifying all documents containing such information or supporting this response or any part of it.

(oo) Please state exactly what technology for storage and containment of LLRW is used for each facility identified in response to (jj) (kk) or (ll) above (not part jj under part mm) by Applicants, what sites other than Harris Applicants know the same technology is used at, what sites other than Harris Applicants know that similar technology is used at, whether there have been any releases of radioactive material into the environment from LLRW at each such site (stating the time, date, and amount released if known, identifying which site the release was from if known).

(e) Do Applicants contend that landfills will not leak within the (i) half-life (ii) 20-half-life period (iii) 30 half-life period of (aa) Cesium-137 (bb) Sr-90 (cc) plutonium-239 (dd) nickel - 59 (ee) niobium - 94 (ff) Iodine-129, if radioactive waste (LLRW) containing any or all of such materials is disposed in them.

(f) please answer all parts of (e) above assuming a rainfall of 50 inches per year of water on the landfill and a clay cap

(g) please answer all parts of (e) above assuming a rainfall on the landfill of 50 inches per year and a clay cap and a plastic cover below that, over the landfill.

(h) please state whether there is any level of rainfall less than 50 inches per year that would change your answers to either (f) or (g) above, stating what changes would result at which level of rainfall on the landfill:

(i) please state whether there is any kind of landfill liner in commercial use for which your answer to any part of (e) above would be affirmative, stating for each such liner its manufacturer(s), what it is made of, the longest it has been used in any LLRW landfill, whether any landfill using such liner leaks, to the present date, (this is a continuing interrogatory, of course: later leaks should be noted when Applicants learn of them), which part(s) of (e) above are answered affirmatively for such liner, and identifying all basis for such answer including all documents, studies and information which support your answer.

(j) please state whether there is any combination of landfill location, liner, cover, filling procedure, or other landfill characteristics (and/or the preceding characteristics) which in Applicants view guarantee that a LLRW landfill will not leak (i) during its operating life (ii) within 100 years (iii) within 500 years (iii iv) within 1000 years (v) within 20 half-lives of Pu-239; (vi) within 20 half-lives of I-129 (vii) within any other specific time period.

(k) If answer to (j) above is affirmative, please state the combination of landfill characteristics required, in detail, and give all basis, analysis and information which supports your answer, identifying all documents which contain such information or analysis, studies, etc.

(m) please list all violations or deviations or noncompliances with packaging regulations or other regulations for the transport of LLRW which CP&L (i) has been caught in by NRC (ii) has committed but not previously reported to NRC (iii) has been caught in by someone other than NRC (iv) reported to NRC (v) reported late to NRC, etc.

67-5(m) continued

beyond the required notification deadline for such violation, deviation or noncompliance.

(n) please state the maximum number of curies of LLRW which CP&L has ever shipped for disposal as: one item (i) one shipment (ii) total shipped through 12-31-82 from all CP&L nuclear facilities: (iv) total shipped to date.

(o) Has CP&L ~~been~~ shipped any radioactive material (LLRW) which arrived at a disposal site or other authorized receiver (i) leaking (ii) with a radioactivity level at or at a given distance from its surface in violation of transport regulations for LLRW or in excess of that permitted for the type of shipment (I, II, III, etc) made?

(p) If answer to (o) above is affirmative, please list each such and state the condition it arrived in.

(q) has any shipment from CP&L to any LLRW site ever been rejected for disposal in such site?

(r) If answer to (q) is affirmative, please list each such shipment, the reason given for its rejection, and where and how such shipment was disposed (or where it is now stored), describing its contents and radioactivity in as much detail as CP&L knows (i) at the time of shipment (ii) at arrival at the site (iii) at the time of rejection (iv) at present, if known.

67-6(a) Do Applicants have any plans for (i) LLRW storage at Harris (ii)

other options for LLRW disposal, ~~or~~ (iii) reducing the amount of LLRW produced at Harris, which they have (aa) considered (bb) planned (cc) adopted for use in the event that the State of NC does not ratify a compact with other states for LLRW disposal or fails to develop its own LLRW disposal site while having not ratified a compact with another State or States for LLRW disposal?

(b) please list each such plan, state which (if any) of the following it involves: (i) LLRW storage (ii) expanded LLRW storage areas (iii) LLRW incineration (iv) LLRW pulverization (v) LLRW compaction (vi) reducing the amount of LLRW produced, (vii) disposal of LLRW at sea (viii) disposal of LLRW in other countries (ix) other options for disposal of LLRW, identifying each such.

(c) please state whether each plan listed in response to (b) above is (i) now adopted (ii) proposed for adoption (iii) something CP&L or Applicants have considered (iv), an option for CP&L or Applicants (v) considered too expensive, listing cost (vi) considered to engender citizen opposition.

(d) Has CP&L considered any illegal methods of LLRW disposal for use at Harris? If so, please state each such and whether it was approved or rejected, by whom, and when, giving the amount of LLRW disposed thereby, if any.

(e) Does CP&L or Applicants have any arrangement or agreement or understanding with any other utilities for storage, incineration or disposal of LLRW by the other utilities (of any of them) for Harris LLRW _____?

(f) If answer to (e) is affirmative, please list each such arrangement, agreement or understanding, all other parties to it, what it provides for, what conditions it comes into effect under, and how much LLRW can be handled under the arrangement, agreement or understanding (by volume, curies, or any other measure involved in such arrangement, agreement or understanding). If there is no upper limit on the amount of LLRW involved, please so state. (g) does CP&L have any plan or arrangement for disposal of LLRW other than shipment to an approved site for disposal, and the ones listed in response to interrogatories and parts thereof above? If so, please identify each such plan or arrangement, all documents containing such plan or arrangement, and specify all details of such plan or arrangement. (h) please identify all documents containing information inquired about in parts (a) through (f) above (or any part or subpart thereof), stating which subpart(s) each has information about in it.

INTERROGATORIES ON EDDLEMAN 75

75-6(a) Has the Brunswick nuclear plant ever experienced any difficulty with its RHR system which resulted from organisms growing inside a heat exchanger? (b) If answer to (a) is affirmative, please describe ~~the~~ each such incident in detail and identify all documents in CP&L's possession which (i) describe such incident (ii) deal with its causes (iii) deal with its safety significance (iv) deal with measures to prevent its recurrence (v) deal with costs associated with such incident (vi) describe repairs made or to be made as a result of such incident, for each such incident. (c) Did failure to chlorinate have anything to do with any incident of organisms growing in heat exchangers at Brunswick? (d) If answer to (c) is affirmative, please identify each such incident, its date, all documents CP&L has sent to NRC concerning such incident, all documents relating to chlorination as it applies to such incident, and how long chlorination was not performed prior to the discovery of the growing organisms in each such incident. Please list incidents applicable to Unit 1 and incidents applicable to Unit 2 separately unless the incident involved both units, in which case so state, please. (e) For each incident identified in response to (d) above or any other part of this interrogatory above, please state (i) whether CP&L had a chlorination plan before the incident, which plan included water in which the organisms were found growing (ii) whether CP&L had any other biofouling control plan for the equipment involved in the incident, before the incident, and (iii) state all details of each such plan and identify all documents which detail or include such plan. (f) for all instances in which chlorination was not performed prior to an incident listed in response to (d) or (e) above, please state all known reasons why the chlorination was not performed, and please state if failure to perform such chlorination violated any CP&L plan (including any identified in response to (e) above), policy or procedure at Brunswick. (This can be answered Yes or No unless you're not sure, for the last part, i.e. whether any plan, procedure or policy was violated by failure to chlorinate.)

75-7(a) Does CP&L plan to use any methods besides chlorination to prevent Corbicula from living in the Harris plant? (b) If answer to (a) is affirmative, please identify each such method, state how it will be used or is planned to be used, state how it prevents Corbicula from living in the Harris plant, and identify all documents and state all expert opinions (including source of same) which support your answer, and identify all documents which contain descriptions of each such plan or any such plan.

75-8(a) Does CP&L believe that it is possible to prevent Corbicula from living in the Harris cooling lake? (b) Does CP&L believe that it is possible to prevent Corbicula from living in the Harris auxiliary cooling lake? (c) Does CP&L agree that Corbicula are present in the Cape Fear River near their site for a Harris pumping station? (d) does CP&L agree that Corbicula are present in Buckhorn Creek below the main dam for the Harris main lake? (e) does CP&L know of any way to absolutely assure that Corbicula do not get into (i) the main Harris lake? (ii) the auxiliary Harris lake? (iii) the Harris cooling system? (f) If your answer to either (a) or (b) above is affirmative, please state for each such affirmative answer all reasons, authorities and information you rely on to support each such answer. Please identify all documents which contain such information, name any expert whose opinion you rely upon to support such answer or any part of it, state all qualifications of such expert, state whether such expert is employed by CP&L or Applicants, and describe in detail the reasoning you use to support your answer from such information, authorities or expert opinion, identifying each specific fact you rely on and its source.

INTERROGATORIES ON EDDLEMAN 80

80-4(a) To Applicants' knowledge, for how long has lack of ability to model rainout accurately been acknowledged to be a problem with radiation dispersion (or diffusion) studies (i) for reactor accidents (ii) for routine operation of reactors where radioactive material is being released? (b) Do Applicants know of any modeling techniques or computer programs which can model/rainout (i) dry deposition of radioactive material (iii) snow deposition of radioactive material (iv) entrainment of radioactive material in hail (v) deposition of radioactive material in any other form(s) of precipitation? (c) identify each model you know of for each part of (b) above for which your answer is affirmative. Please list for each such model its author(s), title, date and what it models. Please state for each such model whether you know of any determinations of the accuracy of that model versus any test data, and if so, what test data, identifying all documents in which the test data or the determination of accuracy of the model is contained.

80-5(a) For each document previously made available to wells Eddleman re contention 80, please state (i) whether CP&L or Applicants rely on any facts or fact in the document (ii) identify each such fact, and on what page(s) it appears in the document (iii) whether Applicants rely on any opinion expressed or quoted in the document (iv) identify each such opinion and the page(s) on which it appears. (b) Please answer each part of (a) above for the document "Dispersion in the Vicinity of Buildings" (your response to 1st set of interrogatories, p.24) when you locate it.

80-6(a) Do Applicants know of any atmospheric diffusion or dispersion tests where the results were within 1% of those predicted by any model? (b) please identify each such test, its date, and all documents containing the model predictions and/or the results of each such test. (c) please state for each such test whether it was done at the site of (i) a nuclear power plant (ii) a nuclear facility of any kind (iii) a CP&L plant (iv) a CP&L nuclear plant, where CP&L plants include those co-owned with NCEPA and/or others.

80-7(a) What is the accuracy of prediction of atmospheric diffusion models relied on by Applicants, compared to actual tests of diffusion? Please identify the numerical accuracy (plus or minus percent) of each such model, which test established such accuracy, and how such accuracy was calculated and whether it applies to all predictions of such model. (b) Do Applicants know any reliable way to assess the accuracy of atmospheric diffusion or dispersal models ~~other~~ as compared to actual test results? (c) If answer to (b) is affirmative, describe each such way, identify what model it is applicable to, what test results such way is applicable to for each such model, and whether CP&L uses the model in question, ~~or~~ and whether NRC Staff uses the model in question -- "model in question" meaning any model you identify a way as applicable to. If a way is applicable to more than one model, answer each part of (c) for each such model; if more than one way exists, please list models to which each way applies, separately under each way. Then for each such model answer each part of (c) above. (d) for each way of assessing accuracy of models identified above, please give all reasons and opinions you rely on for your statement that this way (i) is accurate (ii) is applicable to each model for which you say it is applicable (iii) is accurate for each such model.

80-8(a) Have (i) Applicants (ii) anyone working for Applicants (iii) NRC (iv) anyone else known to Applicants (state who if identity is known) actually tested (1) any gases (2) Kr-85 (3) non-radioactive tracer gases (4) non-radioactive particles (5) radioactive particles (6) radioactive gas other than Kr-85 (7) non-radioactive aerosols (8) radioactive aerosols ~~from~~ released from (aa) the Harris plant site (bb) the Harris cooling tower (cc) the Harris 1 turbine deck (dd) the area of the Harris turbine (ee) the Harris steam vents (ff) the Harris radwaste stack (gg) the Harris containment (hh) any other part of the Harris plant -- please specify in detail which part -- (jj) any part of CP&L's Brunswick plant (kk) any part of the Robinson plant at Hartsville SC?

(b) for each part of (a) above for which your answer is affirmative, please list each such test, the date, location of release (each location if more than one release point) what was release from each release point, who did the test, who collected the data from the test, what protocols, plans, and measurements were used in making the test, what sampling equipment was used, where it was located, all specifications for test methods, releases and sampling equipment used in the test, and identify all documents containing the test plan, test results, specifications of equipment used during the test, including sampling and detection equipment, protocols for data collection, sampling or detection of material dispersed, and the duration of the test.

(c) identify each person known to Applicants who performed a each test identified in response to (b) above, state their qualifications, what each such person did concerning the test, whether that person evaluated any test data (and if so, when), and state how such evaluation was performed.

(d) For each test identified in response to (b) above please state whether the test results were compared with the predictions of any model, and if so, what model, what predictions, what the results of the comparison were; please also identify all documents for each test in which such comparison(s) are made, and all documents which contain the prediction(s) of the model which were compared, and all documents which contain the specifications of the model which made those predictions. Please give the date of each such document, for each model and for each comparison, if known.

80-9(a) Have Applicants or anyone working for them made any study of rainout of radionuclides, or any investigation into rainout of radionuclides?

(b) If answer to (a) is affirmative, identify please all the documents in which such study or investigation is contained, each author of each such document, the date of each, indicate whether Applicants possess a copy, and state the opinions or facts in each such document on which Applicants rely, if any.

(c) Are Applicants aware of any other studies or investigations into rainout of radionuclides other than those identified in response to (b) above?

(d) If answer to (c) is affirmative, please identify each such study, or investigation, all documents which contain each such study or investigation, and specify all information and all opinions therein upon which Applicants rely. Please also indicate if Applicants possess a copy of each such document.

80-10(a) Are Applicants aware of any study or investigations of entrainment of radioactive gases in rain, snow, hail, thunderstorms or other precipitation?

(b) if answer to (a) is affirmative, please identify all documents containing each such study or investigation, its results, its author(s), and state what facts or opinions therein Applicants rely upon, if any.

INTERROGATORIES ON EDDLEMAN 83/84

83/84-8(a) Have Applicants or anyone working for them made any study of trihalomethane (i) concentrations (ii) formation (a) in the Cape Fear River (b) in water supplies drawn from the Cape Fear River, or in chemical treatment thereof for use as drinkable water (c) in the Harris cooling lake (d) in the Harris plant cooling system as now designed, taking account of the chlorination to be done in it (e) in the Harris plant cooling system taking account of additional chlorination to control Corbicula (f) that ~~could~~ could or might be formed in the Harris cooling lake due to Harris plant chlorine releases into that lake? (b) for each subpart of (a) above for which your answer is affirmative, please list the date and title of such study (if workpapers, or untitled, so state), identify all documents containing such study (or workpapers), identify all information sources used in making such study, all documents containing such information sources for each such study, all qualifications of each author of each such study, and all facts in such study upon which Applicants rely. (c) Are Applicants aware of any studies or investigations by anyone else which address trihalomethanes (concentration or formation) in any of the places asked about in subparts (a) through (f) or any of them, as set out in 8(a) above? (d) If answer to (c) is affirmative, please identify all documents containing each such study, state whether it deals with trihalomethane concentrations, formation, or both (state "both" if it is both, "concentrations" if only that, "formation" if only that), state whether Applicants possess a copy of such document, state which of the waters or water systems (subparts a through f of (a) above) it deals with, and identify each specific fact or opinion therein on which Applicants rely, for each such document. (e) Are Applicants aware of any other studies of trihalomethanes (i) at nuclear plants (ii) in nuclear plant effluents (iii) in NC water supplies (iv) in water supplies (v) as regards their toxicity (vi) as regards their carcinogenicity? (f) for each part of (e) above for which your answer is affirmative, identify please all documents which contain such studies, state whether Applicants possess a copy of such document, give the author(s) and all qualifications of each author that you know, and state specifically which facts and which opinions, if any, therein you rely upon.

83/84(9)(a) Have Applicants made any study of the effects of chlorination on (i) metals (ii) ionization of metals (iii) carcinogenicity of metals (aa) in the Cape Fear River (bb) in the Harris plant condenser(s), (cc) in the Harris cooling water piping (dd) in the Cape Fear River? (This question is for each part separately, i.e. there are 12 parts to answer, 1-4, re metals in aa thru dd, 5-8 re ionization of metals in aa thru dd, and 9-12 re carcinogenicity of metals in aa thru dd. *83/84-8(a) above is designed in the same way, and has 12 parts (2x6)) (b) for each subpart of (a) above for which your answer is affirmative, identify please all documents which contain such study, and identify all facts and opinions therein on which you rely, for each such document. (c) Have Applicants made any study of the effect of (i) acid rain (ii) acid precipitation (iii) emissions from the Cape Fear power plant on (aa) the pH of the Harris cooling lake (bb) chlorine reactivity in the Harris cooling lake (cc) chlorine reactivity in the Cape Fear river (dd) chlorine reactivity due to lower pH resulting therefrom? (d) Are Applicants aware of any study by anyone else which addresses any of the matters inquired about in (a) or (c) above or any subpart thereof? (e) for each affirmative answer to (d) or any subpart of (c) above, identify please all documents in which such study is contained, state whether Applicants possess a copy of each, state which matter(s) the study deals with, and state which specific facts or opinions in each such study Applicants rely upon.

FURTHER INTERROGATORIES ON EDDLEMAN 67

67-7(a) Do Applicants agree that NC may withdraw from the radioactive waste compact if it is ratified (SE compact)? (b) Is there a provision in the NC compact legislation that provides for such withdrawal if another state refuses to take a site for LLRW disposal? (c) Is there any other ~~such~~ provision in the legislation for NC ratifying the compact which permits withdrawal by NC? (d) for each answer to any of a, b or c above which is other than affirmative, please state in detail all reasons for your answer and all facts which support your answer, giving the source of each such fact or opinion or reason. (e) please state all contingency plans Applicants have if NC withdraws from the SE compact, or identify all documents containing such plans, giving the title, author and date of each. (f) does CP&L have any plans to reduce LLRW generation at Harris (i) if NC does not ratify the SE LLRW compact (ii) if NC withdraws from such compact at a future date? (g) for each affirmative answer to any part of (f) above, please identify all documents which include such plan(s), the author(s), title and date of each. (h) Does CP&L have any plans to prevent NC from withdrawing from the SE LLRW compact? (j) If so, please identify any documents containing such plans or information about such plans.

REQUEST FOR PRODUCTION OF DOCUMENTS

I hereby request that Applicants make available to me, within 30 days of the date hereof (7-2-83) for inspection and copying, the original or best copy of each document identified in response to the above interrogatories, at a place and time mutually agreeable, and that I be given the option of borrowing documents to copy them at my expense and return same within 24 to 48 hours, in the same way that I am making documents available to CP&L.


Wells Eddleman

2 July 1983

GPU Nuclear

GPU Nuclear
P.O. Box 388
Forked River, New Jersey 08731
609-693-6000
Writer's Direct Dial Number:

June 30, 1983

Mr. Dennis M. Crutchfield
Operating Reactors Branch #5
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

50219

Dear Mr. Crutchfield:

Subject: NUREG 0737 Items
II.F.1.4 Containment Pressure Monitor
II.F.1.5 Containment Water Level Monitor
II.F.1.6 Containment Hydrogen Monitor

The purpose of this letter is to forward the additional information requested in your telecopy of June 1, 1983, to Jim Knubel, Manager of BWR Licensing. In this submittal we are providing, as requested, error information for mild environment, even though the instruments installed in accordance with these NUREG 0737 items are for post accident monitoring. Should you require any further information, please contact Jim Knubel at (201) 299-2264.

Very truly yours,



Peter B. Fiedler
Vice President and Director
Oyster Creek

PBF:jal
Enclosure

cc: Regional Administrator
Region I
U. S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

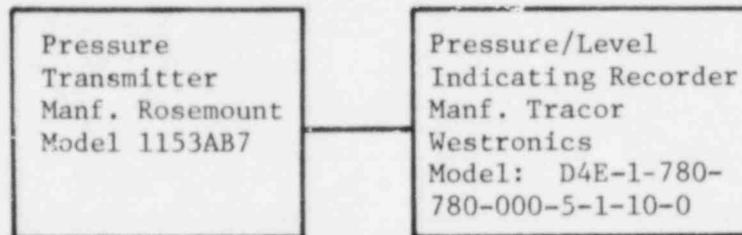
NRC Resident Inspector
Oyster Creek Nuclear Generating Station
Forked River, NJ 08731

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P PDR

The response to NRC request for information is presented by items listed in the NRC letter.

- (1) GPU Nuclear does not take any exception to NUREG 0737 items II.F.1.4, II.F.1.5 and II.F.1.6 for Oyster Creek Nuclear Generating Station.
- (2) II.F.1.4 - Pressure Monitoring System (PMS)
- (2a) The PMS block diagram with important data is given below. The redundant loops are identical, therefore the following applies to both the loops.



Location:	Rx Bldg. e1. 51'3"	Control Room
Span Limits:	0-50/0-300 psia	N/A
Time Const.:	0.20 secs.	0.352 secs.*
Cal. Span:	0-260 psia	0-260 psia

Post Accident Errors

Radiation 2.2×10^7

Rads TID:	$\pm 8.0\%$ URL	N/A (Located in mild environ.)
LOCA/HELB:	\pm (4.5% URL + 3.5% cal. span)	N/A (Located in mild environ.)
Stability:	\pm 0.25% URL for 6 Mos. **	None
Accuracy:	Incl. in LOCA/HELB	\pm 0.5%

* The time constant for Westronics recorder has been computed from the actual trace furnished by the vendor for D4E series recorders.

**The PMS transmitters will be calibrated every six months.

- (2b) The parameters which describe the uncertainty in the transfer functions of the modules in PMS system, are listed in item (2a) above.

- (2c) The parameters of item (2a) above, are combined to get overall system uncertainty, using ROOT-SUM-SQUARES (RSS) method.

The overall system error for post accident condition is $\pm 12.69238\%$ of the full scale display.

NOTE: The overall system error analysis is performed using the transmitter errors reported after irradiations to 2.2×10^7 rads TID and LOCA/HELB exposure to Temperature Pressure conditions shown in the Temperature Pressure Profile of Figure 1. However, the worst case post accident radiation and the maximum temperature at the transmitter location are 6.0×10^5 rads TID @ 10.0 rads/hr. and 223°F, respectively. Therefore, the overall PMS error will be much less than the value given above.

The error analysis for the transmitter location accident conditions could not be performed because the transmitter error information for these conditions is not available.

The overall system error for mild environment condition is $\pm 0.6291\%$ of full scale display.

- (2d) The time constants for both the modules are listed in item (2a) above.

The response time analysis is performed using the method outlined in Mr. Peter S. Kapo's memorandum to Mr. Walter R. Butler, Chief, Containment Systems Branch, DSI dated April 12, 1982.

A computer code is developed and used for the time constant analysis. A listing of the computer code is included in Appendix A.

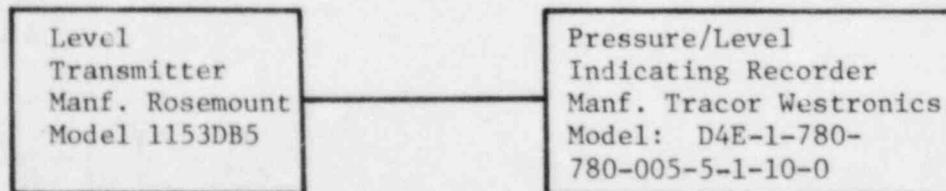
The response time analysis is performed assuming both the transmitter and the recorder to be first order systems.

The overall time constant of the PMS is 0.5861. A copy of the computer run is included in Appendix A-1.

- (2e) GPUN has developed their own computer code and the results given in item (2d) above.

(3) II.F.1.5 - Water Level Monitoring System (WLMS)

- (3a) The WLMS block diagram with important data is given below. The redundant loops are identical, therefore, the following applies to both the loops.



Location:	Rx Bldg E1 (-) 19'6"	Control Room
Span Limits:	0-125/0-750 inches of H ₂ O	N/A (Located in mild environ.)
Cal. Span:	12-204 inches of H ₂ O	12-204 inches of H ₂ O

Post Accident Errors

Radiation	2.2 X 10 ⁷	
Rads TID	± 8.0% URL	N/A (Located in mild environ.)
LOCA/HELB	±(4.5% URL + 3.5% span)	N/A (Located in mild environ.)
Stability	± 0.25% URL for 6 mos***	None
Accuracy	Incl. LOCA/HELB	± 0.5%

*** The WLMS transmitters will be calibrated every six months.

- (3b) The parameters which describe the uncertainty in the transfer functions of the WLMS modules, are listed under item (3a) above.
- (3c) The parameters of item (3a) above, are combined to get overall system uncertainty, using ROOT-SUM-SQUARES (RSS) method.

The overall system error for post accident condition is ±37.710124% of the full scale display.

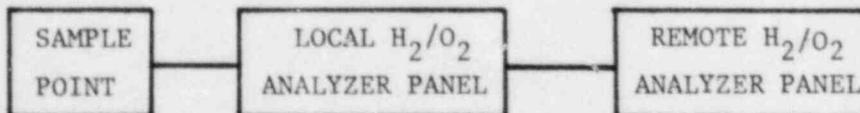
NOTE: The overall system error analysis is performed using the transmitter errors reported after irradiation to 2.2 X 10⁷ rads TID and LOCA/HELB exposure to temperature pressure conditions shown in the Temperature Pressure Profile of Figure 1. However, the worst case post accident radiation and the maximum temperature at the transmitter location are 5.6 X 10⁵ rads TID @ 10 rads/hr and 160^oF, respectively. Therefore, the overall WLMS error will be much less than the value given above.

The error analysis for the transmitter location accident conditions could not be performed because the transmitter error information for these conditions is not available.

The overall system error for the mild environment condition is ±1.1252% of full scale display.

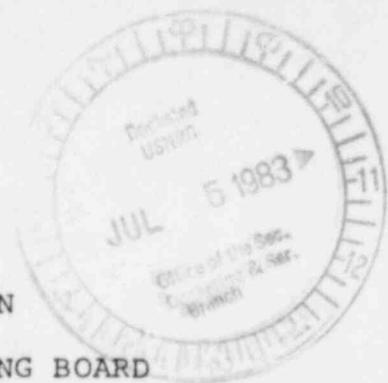
(4) 11.F.1.6 - Hydrogen Monitor System (HMS)

- (4a) The HMS block diagram is given below. The redundant loops are identical, therefore, the following applies to both the loops.



Location:	Top of Dry- Rx Bldg E1 75'-3"	Control Room
	Well Dome	

- (4b) The Hydrogen Monitoring System is procured as a packaged system and error information is furnished by the vendor for the entire system. The system vendor is COMSIP, Inc.
- (4c) The overall system error for a reading at the recorders is $\pm 5.0\%$, and that at the indicators is $\pm 6.0\%$.
- (4d) There is one sample point for each of the HMS systems. Both the sample points are located on the top part of the drywell dome as indicated in Figure 2.
- (4e) There are no obstructions which would prevent the Hydrogen escaping from the core from reaching the sample points quickly. Due to the fact that Hydrogen is a light gas, the possibility of it accumulating in the top part of the drywell dome is highest. However, the drywell air recirculation fans will always keep the drywell air thoroughly mixed.



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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of ARIZONA) Docket Nos. STN 50-529
PUBLIC SERVICE COMPANY, et) STN 50-530
al.,)
)
(Palo Verde Nuclear Generating)
Station, Units 2 and 3))
_____)

Joint Applicants hereby respond to West Valley
Agricultural Improvement Council's, Inc.'s Request for Produc-
tion of Documents as follows:

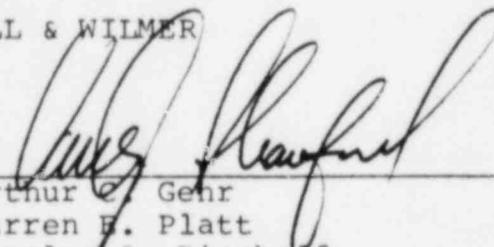
1. The documents requested in Request No. 1, i.e.,
those identified by Joint Applicants in response to West
Valley's First and Second Set of Interrogatories, along with
those documents identified in Supplemental Responses to such
Interrogatories, will be provided to West Valley on or before
July 15, 1983, except to the extent that the documents identi-
fied include proprietary documents which were identified as
such in response to the Interrogatories. Joint Applicants object
to the production of those proprietary documents.

2. Joint Applicants object to Request No. 2 on the
grounds that any documents not identified in response to West
Valley's First and Second Set of Interrogatories, or in Supple-
mental Responses thereto, were not identified because they
constitute attorney work product. As such, those documents are

1 not subject to production. Joint Applicants identified all
2 documents, including proprietary ones, which are not attorneys'
3 work product.

4 DATED this 1 day of July, 1983.

5 SNELL & WILMER

6
7 By 

8 Arthur E. Gehr
9 Warren F. Platt
10 Charles A. Bischoff
11 Vaughn A. Crawford
12 3100 Valley Center
13 Phoenix, Arizona 85073
14 Attorneys for APS
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
)
ARIZONA PUBLIC SERVICE) Docket Nos. STN 50-529
COMPANY, et al.) STN 50-530
)
(Palo Verde Nuclear)
Generating Station,)
Units 2 and 3))
_____)

CERTIFICATE OF SERVICE

I hereby certify that copies of "Joint Applicants' Response to West Valley's Request for Production of Documents" have been served upon the following listed persons by deposit in the United States mail, properly addressed and with postage prepaid, this 1st day of July, 1983.

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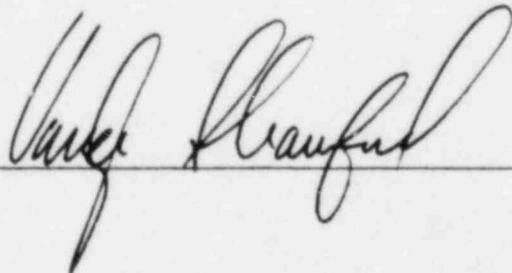
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A handwritten signature in cursive script, appearing to read "Charles R. Kaufman", is written over a horizontal line.