UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

February 11, 1981

Dale E. Hollar, Esquire
Debevoise & Liberman
1200 Seventeenth Street, N.W.
Washington, DC 20036

IN RESPONSE REFER
TO FOIA-81-16

Dear Mr. Hollar:

This is in response to your letter dated January 14, 1981 in which you requested, pursuant to the Freedom of Information Act, copies of all documents relating to the possible formation of review panels, task forces, committees, etc. to study the issues raised by the Stratton et al. information.

The documents listed on the appendix are subject to your request.

Documents 1 through 5 are already available for inspection and copying at the NRC Public Document Room (PDR) located at 1717 H Street, N.W., Washington, DC. A copy of each of the remaining documents is enclosed.

Sincerely,

J. M. Felton, Director
Division of Rules and Records
Office of Administration

Enclosures: As stated

Re: FOIA-81-16

APPENDIX

1. Site Evaluation/Reactor Radiological Effects Joint Subcommittee Meeting held May 21-22, 1980 (ACRS-1751).
2. Minutes of 242nd ACRS Meeting held June 5-7, 1980 (ACRS-1756).
3. Report on Draft Final Rule on Emergency Planning 10 CFR 50 and 70 (ACRS-885).
4. Transcript of Site Evaluation/Reactor Radiological Effects Joint Subcommittee Meeting held May 21-22, 1980 (ACRST-754).
5. Transcript of 242nd ACRS Meeting held June 5-7, 1980 (ACRST-759).
6. INFORMATION REPORT, SECY 80-504, to the Commission from H. R. Denton November 13, 1980.
7. Re-Assessment of Accident Source Terms, December 2, 1980 (Personal Record by W. Pasedag prepared for DSI mgt. briefing)
8. Planning Meeting on State of Technology Report on I, December 4, 1980, Summary of Key Points and Actions.
9. Memorandum for William J. Dircks, from Guy Arlotto December 22, 1980.
10. Note to: Denwood F. Ross, Jr., from William E. Kreger, January 1, 1980.
11. Memorandum for Denwood F. Ross from W. F. Pasedag January 9, 1981.
12. Letter to C. Kelber from S. Ebbin, NSOC January 2, 1981.
13. Letter to S. Ebbin from C. Kelber, January 7, 1981.
14. Letter to Levenson, EPRI, from R. Minogue, January 7, 1981.
15. Memorandum to T. Rehm from R. Minogue, January 19, 1981.
16. Letter to Youngdahl, Consumer Power, from R. Minogue, January 26, 1981.
17. Memorandum for J. Carson Mark from John Ahearne, January 14, 1981.
18. Memo to J. Ahearne from R. Minogue, State of Release of Fission Product Iodine, December 22, 1980.

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January 14, 1981
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Mr. J. M. Felton, Director
Division of Rules and Records
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

FREEDOM OF INFORMATION
ACT REQUEST

FOIA-81-16
Rec'd 1-16-81

Re: Freedom of Information Act Request

Dear Mr. Felton:

The Nuclear Regulatory Commission Staff prepared a Staff Technical Analysis of Motion for Reconsideration which accompanied the NRC's Memorandum and Order, CLI-80-40 (December 5, 1980). This Analysis states at 11: "The staff believes that this [Stratton, et al.] information raises generic concerns that require general comprehensive treatment and intends to treat it in that way". Pursuant to the Freedom of Information Act, Debevoise & Liberman requests copies of all documents prepared by the NRC, its Staff and consultants since the issuance of this Analysis relating to the Staff's plans to afford a "general comprehensive treatment" to the Stratton, et al. information. We specifically request copies of all documents relating to the possible formation of review panels, task forces, committees or other entities to study the issues raised by the Stratton, et al. information. Such documents should include any drafts, supporting material, studies, reports, correspondence, minutes of meetings and transcripts regarding plans for such treatment.

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We request that this information be provided with all possible dispatch and in no event later than the 10 working days provided by 10 C.F.R. §9.8.

Very truly yours,

DEBEVOISE & LIBERMAN

By Dale E. Hollar

Dale E. Hollar

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

November 13, 1980

SECY-80-504

INFORMATION REPORT

For: The Commissioners

From: H. R. Denton

Thru: W. J. Dircks, EDO

Subject: IODINE RELEASE DURING REACTOR ACCIDENTS

Purpose: To inform the Commission of the staff's discussions with Drs. W. R. Stratton, A. P. Malinauskas, and D. O. Campbell; to summarize the potential impact of their hypotheses concerning iodine release during reactor accidents; and to propose an agenda for the Commission meeting on this topic on November 18.

Background: In a letter to Chairman Ahearne dated August 14, 1980 (enclosed as Attachment 1) three scientists from Los Alamos and Oak Ridge National Laboratories expressed their belief that current NRC models and Regulatory Guides do not correctly describe the release of iodine during nuclear reactor accidents. The staff invited the three scientists to discuss the technical bases of their letter. On October 22, 1980 Drs. Stratton, Malinauskas and Campbell met with about 40 members of the staff. The minutes of this meeting and the attendees list are enclosed (Attachment 2).

As a result of a request from the three presenters at that meeting, the staff has suggested an agenda for the Commission's meeting on this topic, which is enclosed as Attachment 4.

Discussion: 10 CFR 100 requires the postulation of a Design Basis Accident, "hypothesized for the purpose of site analysis ... that would result in potential hazards not exceeded by those from any accident considered credible." Reg. Guides 1.3 and 1.4 define the assumptions to be made to meet this requirement, which include an assumed release from the fuel into the containment of 100% of the core inventory of noble gases and 25% of the iodine. Because of its relative abundance, its high radiotoxicity, and its assumed release and transport in vapor (elemental or organic compounds) form, radioiodine is nearly always the most significant fission product, from a personnel hazard viewpoint, in design basis accident evaluations.

In their letter to Chairman Ahearne dated August 14, 1980, Drs. W. R. Stratton, A. P. Malinauskas, and D. O. Campbell reported their opinion that current NRC models and Regulatory Guides are in error, and that behavior projected from these models grossly overestimates the public risk resulting from reactor accidents due to the assumption that significant amounts of radioiodine can be released to the atmosphere

DUPLICATE

Contact:
Walter Pasedag, NRR
49-27193 or
Jacques Read, NRR
4[illegible]-27845

Dupe of 8012020353 (6pp)

6

August 14, 1980

Chairman John Ahearne
U.S. Nuclear Regulatory Commission
1717 H Street
Washington, D.C. 20555

Dear Chairman Ahearne:

We wish to bring to your attention a matter that may be a very important development in reactor safety analysis. We believe that sufficient evidence has accumulated to show that the behavior of iodine during nuclear reactor accidents is not correctly described by existing NRC models and Regulatory Guides. Iodine volatility is grossly overestimated by these models for accidents in which substantial amounts of water are present, and escape of iodine to the environment will be extremely small (as it was at Three Mile Island) as long as reasonable containment integrity is also maintained. As a consequence, the risk to the general public presented by iodine is lower than estimated, perhaps by orders of magnitude.

Our concern with this issue originated with our involvement in the several Technical Staff Analyses for the President's Commission on the Accident at Three Mile Island. The mechanism for the behavior of iodine that we propose here was derived from those analyses, from further examination of experimental and theoretical studies involving the chemistry of iodine and cesium fission products in light water reactor fuel and systems, and from the observed behavior of iodine subsequent to fuel failures during accidents and incidents at other reactor sites. We believe that the explanation presented here will change the present concepts of the hazards involved during and subsequent to reactor accidents and, therefore, will require a critical reexamination of how these hazards and risks are calculated, and the criteria to which engineered safeguards are designed and installed.

Although the Three Mile Island (TMI) reactor core inventories of xenon-133 and iodine-131 were comparable, between 2.4 and 13 million curies of xenon escaped to the environment during the accident, while only 13 to 18 curies of iodine similarly escaped! This great disparity was identified as a matter of crucial importance early in the investigation by the President's Commission, and an effort was made to find the explanation. It was clear that we could not claim to understand the accident until this discrepancy (a factor of 10^5 to 10^6) was explained satisfactorily. Further, it was recognized that the physical and chemical conditions during the accident at TMI may not have been unique. (We note that, generally, radioiodine is the controlling fission product species with respect to site safety analysis as well as the design and operation of certain engineered safeguards.)

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The explanation for the very low escape of iodine that developed during the investigation by the President's Commission was that, as the temperature of the core increased, iodine diffused out of the fuel rods through the failed cladding and vaporized. The iodine escaping, if not already in the iodide form, then encountered a chemically reducing environment which converted it to iodide. The iodide subsequently went into solution as iodide ion when it contacted water. It was recognized that additional experimental work was needed to provide a quantitative description of the iodine behavior. Nevertheless, this explanation accounted for the much smaller escape of iodine that was observed at TMI compared to the amount predicted to escape if elemental iodide had been present, as is assumed in the Regulatory Guides.

We believe that this description can be strengthened and made more definitive. Although the present data are not absolutely conclusive, we believe that iodine emerged from the fuel as cesium iodide, already reduced to iodide. The reactor system environment then sustained this chemical state. Furthermore, it would have converted other iodine species, should they have been present, to iodide. Cesium iodide would be expected to condense or "plate-out" when it reached metal surfaces at temperatures at or below 400 to 500°C, and it would finally enter into solution as iodide ion as soon as water or condensing steam was encountered. The reactions of iodine species in water, and the fact that iodide ion is the dominant species, ensure that iodine volatility will be very small (compared to that implied by the Regulatory Guides, for example). A reaction causing oxidation of iodide would be necessary to increase the volatility of iodine. Additional experimental work is required to provide a quantitative description of iodine behavior, but this qualitative picture is consistent with the small escape of iodine observed in a number of incidents when water was present, such as at TMI.

This mechanism is supported by the following observations, as well as by measurements made at TMI:

1. Iodine and cesium are released congruently from PWR leakers during power transients (the iodine spiking phenomenon).

2. Thermodynamic calculations performed at several sites indicate that CsI is the stable form of iodine in LWR fuel. Further, the fission yield of cesium is larger than that of iodine, and cesium is always present in great (about tenfold) excess over iodine.

3. Irradiated fuel has been caused to fail in experiments performed under simulated accident conditions, and the iodine released is recovered predominantly as CsI rather than as molecular I_2.

4. The chemistry of iodine is such that, if water is accessible, iodine will interact with the water so that its concentration in the gas phase will be much smaller than its concentration in the water.

5. In other incidents that have led to the destruction of fuel in water systems (NRX, Spert-1, Snaptran-3, SL-1, MTR, ORR, and PRTR), we understand that a much smaller amount of iodine escaped from the systems than would be projected by the existing models. Data are hard to come by for many of these accidents and experiments, and our investigation is continuing. In marked contrast, a large fraction (20,000 curies) of the iodine escaped to the environment during the Windscale accident, which occurred under oxidizing conditions and in the absence of water.

The significance of this mechanism for iodine escape and transport can hardly be overemphasized. We assert that the unexpectedly low release of radioiodine in the TMI-2 accident is now understood and can be generalized to other postulated accidents and to other designs of water reactors. We believe that an accident involving hot fuel and a water or steam-water environment will have the same controlling chemical conditions as did the TMI-2 core and primary system. The iodine will emerge as CsI (and possibly some other iodides) and enter into the solution as soon as wet steam or water is encountered. It will persist in solution as non-volatile iodide ion as long as oxidizing conditions do not prevail.

Although we feel that the evidence is sufficiently strong to justify this letter, it is important to qualify our position. Iodine chemistry is very complex, and definitive experimental and analytical studies of iodine behavior during and following loss-of-coolant accidents are lacking. Nonetheless, it is clear that the behavior projected from the existing Regulatory Guides is wrong. The current NRC assumption, that elemental iodine is the chemical form of the radioiodine released, is regarded as a conservatism, but in this case the assumption of a wrong chemical form must be regarded as an error which has compounding effects.

If, after due consideration, the NRC is satisfied that our description of iodine behavior is valid, we recommend that an urgent study and assessment be made of all available information, and appropriate actions be undertaken. With due respect we point out four consequences should our position be correct:

1. The frequently quoted fission product escape assumptions (from TID-14844 in 1962 to the more recent Regulatory Guides 1.3 and 1.4, and the Reactor Safety Study, WASH-1400) should be reexamined. The present assumptions grossly overstate iodine release from a reactor site in many types of loss-of-coolant accident, and safety criteria based on these assumptions should be reevaluated.

2. The dispersal of radioiodine in the biosphere may no longer dominate and control consideration of accidents and the design of safety systems.

3. Many, if not most, accident sequences must be reexamined in detail. The iodine risk to the general public may, in fact, be lower than previously estimated, possibly by orders of magnitude. The impact of a reduction of iodine risk on the requirements for evacuation is particularly important at this time.

4. The engineered safeguards designed for iodine control should be reexamined to assure effectiveness and optimization for the actual iodine behavior rather than the behavior currently assumed.

Finally, we realize that a major revision of NRC assumptions relative to accident analyses, dose calculations, and design of safeguards should not take place without an adequate base of technology from both experiment and theory, and especially until the Commission itself is convinced that it is appropriate to accept a revised physical and chemical description of iodine transport from fuel to the environment. On the other hand, the impact of wrong assumptions is so serious that an intensive effort should be made to establish the facts.

We are ready to offer more detailed information or further assistance should the NRC request it. We will be pleased to brief the NRC staff or any review committees you may appoint.

Sincerely,

W. R. Stratton

W. R. Stratton
Los Alamos Scientific Laboratory

A. P. Malinauskas
Oak Ridge National Laboratory

D. O. Campbell

D. O. Campbell
Oak Ridge National Laboratory

cc: G. W. Cunningham, DOE-WASH
D. M. Kerr, LASL
H. Postma, ORNL

ATTACHMENT 2

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

OCT 30 1980

MEMORANDUM FOR: Distribution

FROM: Walter F. Pasedag, Leader, Radiological Analysis Section
Accident Evaluation Branch, DSI

SUBJECT: MINUTES OF MEETING WITH DRS. STRATTON, MALINAUSKAS, AND CAMPBELL

In response to a letter to Chairman Ahearne dated August 14, 1980, by Drs. W. R. Stratton, A. P. Malinauskas and D. O. Campbell, the NRC staff invited the authors to discuss the content and bases of their letter. A meeting was held for this purpose at 9:00 A.M., October 22, 1980 in room P-118 at the Phillips Building.

The first presentation was given by Dr. A. P. Malinauskas. Dr. Malinauskas' main topic was the chemical form of iodine in the fuel rod and during it's release from the fuel during an accident. Dr. Malinauskas reviewed several thermodynamic and post-irradiation fission product release studies. His emphasis, however, was on the Gap Purge Experiments by Lorenz, Osborne, Collins, and Malinauskas. These experiments involved fully irradiated fuel elements from the H. B. Robinson and Peach Bottom plants. In these experiments, iodine released from the fuel gap during heating (up to a maximum of about 1600° C) was deposited along with Cesium in a thermal gradient tube at temperatures between 200 and 900° C, indicating that the iodine form could not have been elemental iodine vapor, but, most likely, was cesium iodide.

Malinauskas also mentioned observations of concurrent release of small quantities of cesium and iodine into the primary cooling system during normal operation ("iodine spiking phenomenon").

In his review of previous experiments, Malinauskas acknowledged that the release of I_2 from LWR fuel was observed, but noted that such releases occurred when the carrier gas included air (intentionally or unintentionally). Another possibility for compromising results can arise from the use of quartz in high temperature test apparatus, which can lead to the formation of cesium silicates and I_2. This reaction, as well as possible air ingress were postulated to have invalidated the results of Castleman et al (1965-1967), who observed elemental iodine releases in steam atmospheres. Similar problems were postulated for experiments conducted in the United Kingdom and Japan. Malinauskas concluded that iodine resides in the fuel as an iodide, which most likely is CsI, not in the volatile elemental form.

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Dr. Campbell followed with a presentation of iodine chemistry in an aqueous environment. He reviewed the chemical species identified in the literature, and discussed the significant volatile species, i.e. molecular iodine (I_2), organic iodides, and other species with some state of positive valance, termed hypoiodous acid (HOI) by some investigators, although the existance of the latter form has never been conclusively proven. He quoted the authoritative work of A. Eggleton, who calculated iodine volatility based on data available in the literature (1967), which he presented in the form of "partition coefficients."

Campbell then discussed the iodine chemistry following the TMI-2 accident. He noted that he believed the value quoted for the iodine concentration (on 4/1/80) in the Kemeny report to be in error by an order of magnitude. The partition coefficient expected at TMI if the iodine were released as I_2 was 5×10^4, which would put about 0.1% of the iodine released into the gas phase. Actual measurements, however, were stated to be lower by about a factor of 10, i.e. 0.007% according to the sample taken on 3/31/79. Sump water samples, however, contained a substantial amount of copper (of unidentified origen), as well as iron, nickel, aluminum, and calcium. The copper and iron of the sump water samples was largely reduced cuprous and ferrous oxides, indicating that any iodine in the sump water would have to exist as iodide. Thus, Campbell concluded that the water in the TMI reactor building was strongly reducing, and, therefore, essentially no oxidation of iodide occurred.

Campbell concluded with a discussion of organic iodides and radiation effects on iodine chemistry. He stated that, although predominant in the pre-Purge atmosphere at TMI-2, organic iodides, as a total, constitute a very small fraction of the iodine introduced into the containment. Concerning radiation effects, he noted C. C. Lin's finding that the OH radical oxidizes iodide, which react further to form iodate at low concentrations, but concluded that I_2 is not a significant reaction product under realistic accident conditions. He concluded that organic iodide formation will be lower than that predicted by Postma and Zavadoski (WASH-1233), since little I_2 is postulated to persevere in the containment atmosphere.

Dr. Stratton concluded the presentation with a discussion of past experience with accidents involving a substantial release of fission products, ranging from the NRX accident in 1952 to the TMI-2 accident in 1979. He divided accidents into two categories, i.e. those with a reducing environment, and those with an oxidizing environment.

In addition to the NRX reactor accident, Stratton listed SNAP, SPIRT, SL1, ETR, and PRTR as examples of accidents with reducing environments, and noted that no iodine was released in these accidents. with the exception of a minor release (0.5%) for the SL1 accident.

In contrast to these accidents, Stratton noted substantial iodine releases in the Windscale and NRU reactor accidents, and the Heater 3 experiments in 1958. Stratton stated that the group strongly recommends that the NRC establish a task force to examine fission product behavior.

Questions by the staff were invited during and following these presentations. In response to staff questions, Malinauskas emphasized that the stated conclusions were not applicable to those accidents in which the fission products are released into an atmosphere containing air. Stratton stated that their remarks were intended to address those accidents where containment integrity is maintained. Stratton also clarified that the phrase "current NRC models" contained in the August 14 letter referred to Regulatory Guides 1.3 and 1.4. The staff pointed out that NRC's current regulatory models are not restricted to Reg. Guides 1.3 and 1.4, and that the iodine partition coefficient models of Eggleton are used by the staff to evaluate the behavior of iodine in aqueous environments.

Other staff comments emphasized the regulatory philosophy, that the design basis accident analyses, as reflected in Reg. Guides 1.3 and 1.4, and TID-14844, was not intended to be a realistic treatment of accidents, but an intentionally conservative treatment of a hypothetical "design basis" event. The three authors of the August 14 letter agreed that the Reg. Guide 1.3 and 1.4 assumptions were indeed conservative, but noted that this conservatism distorts the actual risk to the public as perceived by them.

The meeting concluded with an expression of the staff's appreciation of the willingness of Drs. Stratton, Malinauskas, and Campbell to elaborate on and discuss with the NRC staff the content and basis of their August 14 letter to Chairman Ahearne.

Walter Pasedag

Walter F. Pasedag

Distribution:

See attached list.

cc: H Denton
E Case
D Eisenhut
R Vollmer
S Hanauer
D Ross
B Grimes
B Snyder

ATTACHMENT 3

SEP 12 1980

NOTE TO: Thomas E. Murley, Director
Division of Reactor Safety Research

FROM: R. R. Sherry
Experimental Advanced Safety Technology Branch

SUBJECT: RESEARCH PROGRAMS RELATED TO IODINE RELEASE AND TRANSPORT UNDER ACCIDENT CONDITIONS

This note summarizes our current and planned research programs which provide information related to understanding iodine species behavior (in particular CsI) under accident conditions.

As you are aware, NRC regulatory assumptions related to iodine behavior (within containment) assume the existence of only three physiochemical forms of iodine - molecular (91 percent), organic (4 percent), and particulate (5 percent). However, since about the time of the RSS, a number of investigators have become concerned that the principal form of iodine released under LWR accident conditions may not be I_2, but CsI.

The following paragraphs describe our current and planned research programs which address this question.

Fission Product Release From Defected LWR Fuel - ORNL

This program, which was completed last year, has provided most of the evidence which exists on the chemical forms of fission products released from fuel rods under LWR accident conditions. Under this program, equilibrium thermodynamic calculations, separate effects tests, and heating tests with segments of commercially irradiated fuel rod segments have provided evidence indicating that the principal iodine chemical species released from defected fuel rods into a steam environment is CsI.

Separate Effects Tests for TRAP Code Development - Sandia

The purpose of this program is to measure the vapor pressure of important fission product species at elevated temperature and to investigate the chemical reactions between fission products and (1) steam (and H_2), (2) prototypic RCS surfaces, and (3) other fission products under high temperature (T_{max} = 1000°C) conditions. Tests, so far, using CsI have indicated that CsI is stable at temperatures up to approximately 800°C in nitrogen/steam and nitrogen/H_2 gas mixtures and does not readily react with stainless steel or nickel surfaces. I have asked Sandia to investigate the high temperature stability of CsI in N_2/O_2 and $N_2/H_2O/O_2$ environments. They plan to do this in the near future.

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Fission Product Transport Analysis - BCL

The TRAP code is currently capable of modelling steam phase CsI transport within the primary system (although in the past iodine was assumed to be in elemental form for calculational exercises - e.g., sensitivity studies. It can be expected that TRAP calculations will show that when iodine is in the form of CsI the amount of iodine condensing on primary system surfaces and "washing out" within the RCS will be significantly larger than if the assumed chemical form for iodine is I_2. In addition, CsI that does not condense on a system surface may nucleate (or condense on other particles) to form aerosols. Hence, the iodine form in the containment atmosphere under accident conditions may be primarily particulate CsI (assumming the CsI is not oxidized upon entry into containment) rather than elemental iodine.

Fission Product Release from High Temperature Fuel - ORNL

In this research program we plan to investigate fission product release from LWR fuel rods into a steam environment under severe core damage and core melt temperature conditions (1000°-2800°C). As part of this program, methods (e.g., laser Raman spectroscopy) of determining the chemical form(s) of fission products released from the rods will be investigated.

Fission Product Transport Verification Facility - Undesignated

Plans are currently being developed to conduct integral experiments for validating the large fission product transport codes (e.g., TRAP-MELT, CORRAL, CONTAIN, etc.). In this program (to be conducted in the ORNL/NSPP and/or HEDL/CSTF facilities), it will be possible to determine the transport behavior of CsI under large-scale, near-prototypic conditions and to determine if our current computer models are adequate for describing the transport behavior of CsI.

Iodine and Tellurium Behavior Under Accident Conditions - ORNL

The purpose of this research (which is part of Don Hoatson's coolant chemistry program) is to investigate the chemical species of iodine and tellurium during vapor phase and liquid transport in RCS or containment aqueous solutions as a function of the local thermo-chemical conditions (chemistry, temperature, pressure, etc.). This program will include a determination of the partitioning of these species between the liquid and vapor phases.

Fission Product Source Term Definition for Degraded Core Cooling Conditions - ORNL

The Office of Standards Development has recently requested that RES initiate a short term ($\leq$ 1 year) program to develop fission product source terms for accidents more severe than a design basis LOCA to aid OSD in developing regulatory guides in the areas of biological shielding requirements for fluid systems which penetrate containment (e.g., ECC, letdown) and for preparing interim recommendations for degraded core accident analysis source terms. The primary objective of this effort will be to review and evaluate the existing fission product release and transport data base and to generate source terms applicable to a range of degraded core conditions, accident scenarios, and potential transport pathways. An important aspect of this program will be to provide realistic source terms for the volatile fission products (noble gases, iodine, and cesium).

Rick

R. R. Sherry
Experimental Advanced Safety
  Technology Branch
Division of Reactor Safety Research

ATTACHMENT 4

Suggested Agenda

Commission Meeting on Fission Product Release During Accidents

November 18, 1980

10:00 A.M.

- I. Iodine Release During Accidents
  - 1. Presentation by Drs. Stratton, Malinauskas and Campbell:
    - a) Synopsis of technical bases for their Aug. 14, 1980 letter
    - b) Impact of the perceived excessive safety margin for iodine releases
  - 2. Presentation by F. von Hipple
  - 3. Staff Response to Question

2:00 P.M.

- II. Estimates of Consequences of Accidents
  - 1. Presentations by industry representatives:
    - C. Starr, M. Levinson, I. Wall
  - 2. Comments by Dr. Schikarski
  - 3. Presentations by Dr. H. Kouts
- III. Comments by the Staff
  - 1. Potential Impact on Regulatory Requirements (NRR)
  - 2. Impact on Core Melt Accident Consequence Spectrum (RES)
  - 3. NRC Research Programs Related to Iodine Release (RES)