

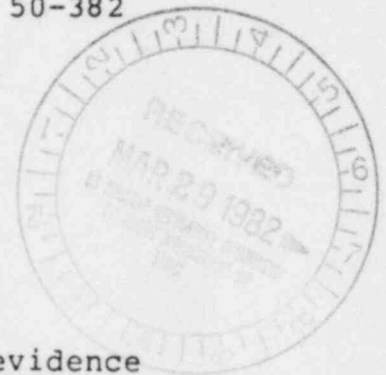
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of)
)
LOUISIANA POWER & LIGHT COMPANY) Docket No. 50-382
)
(Waterford Stea. Electric)
Station, Unit 3,)

APPLICANT'S OBJECTIONS TO
JOINT INTERVENORS' PROPOSED EXHIBITS



Joint Intervenors propose to introduce into evidence in this operating license proceeding 26 documentary exhibits.^{1/} In accordance with the agreements reached in the conference call with Chairman Wolfe on March 12, 1982, Joint Intervenors have served a memorandum setting forth their position on the admissibility of their proposed exhibits. This brief is submitted in response to Joint Intervenors' memorandum. The first section of this brief argues that 16 of the 26 proposed exhibits should not be admitted into evidence because Joint

^{1/} In this brief, Applicant uses the exhibit numbering system set forth in the "List of Exhibits" served by Joint Intervenors on March 17, 1982. Proposed Exhibit No. 28, which is not included in the list, is the prefiled direct testimony of Dr. Samuel Epstein. Joint Intervenors have withdrawn Exhibit Nos. 7 and 19.

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Intervenors failed to identify them during almost three years of discovery. The second section of the brief discusses the substantive admissibility of each proposed exhibit.

I. DOCUMENTS NOT IDENTIFIED DURING DISCOVERY
SHOULD BE EXCLUDED FROM EVIDENCE

It is Applicant's position that Exhibit Nos. 1, 5, 9, 10, 11, 13, 14, 15, 16, 21, 22, 23, 24, 25, 26 and 28 should be excluded from evidence because they were not identified by Joint Intervenors during the extensive discovery conducted during this proceeding.

The Special Prehearing Conference was held in this case on April 26, 1979--almost three years ago. Joint Intervenors' Contention 8/9 had been formulated by that time, and they presumably were in a position to begin collecting documentary support for the contention. On November 12, 1979, Applicant filed its First Interrogatories to Joint Intervenors, which included as Interrogatory No. 8/9-1 a request for identification of all publications and other documents supporting Contention 8/9. On January 16, 1980, Joint Intervenors filed an answer listing numerous references.

Following issuance of the Draft Environmental Statement, Applicant served its Second Set of Interrogatories to Joint Intervenors on June 10, 1981. These interrogatories included several questions seeking identification of the documents

upon which Joint Intervenors relied in support of Contention 8/9. Joint Intervenors' answers identified two additional documents, but the wording was somewhat equivocal, and it was not clear whether Joint Intervenors had identified all of the documents upon which they relied. Accordingly, on September 16, 1981, Applicant filed a motion to compel further answers to the Second Set of Interrogatories on Contention 8/9. Applicant's motion contained the following argument:

Interrogatory 8/9-8 asked Joint Intervenors to identify all documents supporting their assertion that the DES cancer risk estimate is inaccurate. The answer refers to a list of documents set forth in Joint Intervenors' answer to an earlier interrogatory by the NRC Staff. The answer also states that new documents "include" two identified studies. Joint Intervenors' use of the word "include" suggests that the list is not complete and that they are attempting to leave open the possibility of relying upon other unidentified studies or documents to support their contention. Applicant is entitled to a complete list of all documents upon which Joint Intervenors rely so that it can prepare its case at the hearing. As the Appeal Board has held, "interrogatories designed to discover what (if any) evidence underlies an intervenor's own contentions are not out of order". Pennsylvania Power & Light Co. (Susquehanna Steam Electric Station, Units 1 and 2), ALAB-613, 12 N.R.C. 317, 340 (1980). Applicant's interrogatories here are likewise proper and should be answered fully.

Applicant's Report on Agreements with Joint Intervenors and Motion to Compel Answers to Interrogatories by Joint Intervenors, at 6-7 (emphasis added).

On October 15, 1981, the Board entered an order granting Applicant's motion to compel and directing Joint Intervenor to provide "complete and responsive answers" to the interrogatories seeking identification of pertinent documents. On November 2, 1981, Joint Intervenor filed "Revised Answers" to these interrogatories, which listed or referred to numerous documents and quoted at great length from an Issue Paper by Dr. Mortimer Elkind and The Politics of Cancer by Dr. Samuel Epstein. Neither of these works is among Joint Intervenor's proposed exhibits, and we assume that the heavy reliance on them in answers filed just four months ago was not a deliberate attempt to throw Applicant's counsel off the track.

During the course of the above discovery, Joint Intervenor identified or incorporated by reference literally hundreds of documents, which required Applicant to devote large amounts of time reviewing and analyzing the cited material. Yet when we come to the exhibits that are actually to be offered in evidence at the hearing, we find that 16 out of the 26 exhibits are entirely new and have never been identified. Moreover, the 16 new documents were not identified by Joint Intervenor until less than two weeks before the hearing. Some were enclosed with Joint Intervenor's testimony, which was received on March 9, 1982. Some were listed in a conference call on March 12, 1982. Some were not received by Applicant's counsel until March 15, 1982. One exhibit was not

received until March 16, 1982. The last-minute identification of documents by Joint Intervenors has made it impossible for Applicant to review and analyze the proposed exhibits in the same sufficient detail that would be normal for a hearing of this type.

Joint Intervenors' justification for their tardy identification of documents is that they were under no duty to "supplement" their interrogatory answers--presumably the "Revised Answers" given on November 2, 1981--to identify the documents they actually intended to use at the hearing. In addition, Joint Intervenors argue that even if they were under a duty to supplement, the Board should not exclude the exhibits that they failed to identify.

Applicant submits that Joint Intervenors are playing fast and loose with the Commission's discovery rules and this Board's October 15, 1981 Order. The Appeal Board recently explained the critical role of discovery in preparing for a hearing:

The Coalition also appears to consider discovery a means by which an applicant can shift its burden of proof to an intervenor. The Licensing Board had correctly explained to the intervenor, however, that the applicant needs discovery to prepare for trial:

The Applicants in particular carry an unrelieved burden of proof in Commission proceedings. Unless they can effectively

inquire into the position of the intervenors, discharging that burden may be impossible. To permit a party to make skeletal contentions, keep the bases for them secret, then require its adversaries to meet any conceivable thrust at hearing would be patently unfair, and inconsistent with a sound record.

Pennsylvania Power & Light Co. (Susquehanna Steam Electric Station, Units 1 and 2), ALAB-613, 12 N.R.C. 317, 338 (1980). This Board recognized these basic principles when it ordered Joint Intervenors to provide "complete and responsive answers" to interrogatories seeking identification of documents. Indeed, the portion of Applicant's motion to compel, quoted above, specifically requested "a complete list of all documents upon which Joint Intervenors rely so that it can prepare its case at the hearing". (emphasis added). It is now apparent that Joint Intervenors' Revised Answers were not at all complete. Furthermore, Joint Intervenors' reliance on 10 C.F.R. §2.740(e) is misplaced. By its very terms, that regulation only applies to a response that was "complete when made". Here, the Revised Answers were anything but complete. In addition, the document identification at issue here is not the sort of after-acquired information or subsequent occurrence contemplated by section 2.740(e). Rather, the issue is simply a subjective choice by Joint Intervenors as to which documents from the scientific literature they intend to rely upon to prove Contention 8/9. This is information that could and should have been provided in the answers to interrogatories.

Contrary to Joint Intervenors' assertion, there is ample authority for excluding at trial evidence that was not disclosed during discovery. See, e.g., Holiday Inns, Inc. v. Robertshaw Controls Co., 560 F.2d 856 (7th Cir. 1977); Frankel v. Stake, 33 F.R.D. 1 (E.D. Pa. 1963); Barnes v. St. Francis Hospital, 211 Kan. 315, 507 P.2d 288 (1973); 8 Wright & Miller, Federal Practice §2050 (1970). In this case, Applicant has been put at a serious disadvantage because it has had barely a week to analyze and prepare for the voluminous and complex exhibits that are now proposed by Joint Intervenors. Applicant has had minimal opportunity to review this material, and it should be excluded from evidence.

II. JOINT INTERVENORS' PROPOSED EXHIBITS ARE IRRELEVANT,
UNRELIABLE AND OTHERWISE INADMISSIBLE

Set forth below in detail is Applicant's position on each of Joint Intervenors' proposed exhibits. One problem is common to many of the proposed exhibits and will be discussed in general here at the outset.

Thirteen of the exhibits are technical reports and studies by authors who will not be present at the hearing. The exhibits are to be sponsored by witnesses who did not participate in performing the studies or preparing the reports. These reports therefore constitute hearsay and typically would not

be admissible to prove the truth of the matters stated therein. See, e.g., Hickok v. G. D. Searle & Co., 496 F.2d 444 (10th Cir. 1974); Generalla v. Weinberger, 388 F.Supp. 1086 (E.D. Pa. 1974). Even in administrative proceedings, where the rules of evidence are sometimes relaxed, it has been held that scientific studies are inadmissible unless the author is present for cross-examination:

Carter-Wallace complains that in contrast to the examiner's admission of scientific papers offered by the government, a pertinent paper which it sought to introduce was excluded. This unpublished paper was of recent origin. Its author had conferred with Carter-Wallace's attorneys in the town where the hearings were held the night before the session at which the paper was submitted. Carter-Wallace, however, did not call the author as a witness, but instead sought to introduce the paper through its vice-president. Under these unusual circumstances, the examiner did not abuse his discretion by ruling that the paper could not be introduced unless the government had an opportunity to cross-examine the author.

Carter-Wallace, Inc. v. Gardner, 417 F.2d 1086, 1096 (4th Cir. 1969), cert. denied, 398 U.S. 938 (1970) (emphasis added) (review of FDA decision).

The key here is obviously cross-examination. Unless the author of a study is present at the hearing, the parties are likely to be deprived of the opportunity for any meaningful cross-examination on the substance of the conclusions and observations set forth in the study. In fact, it was recognized long ago by the Supreme Court that the more liberal

the practice in admitting evidence, the more imperative it is to preserve the right of cross-examination. ICC v. Louisville & Nashville R.R., 227 U.S. 88, 93 (1913). As will be shown below, certain of the proposed exhibits are of such a nature that they should not be admitted unless the author himself is available for cross-examination.

Joint Intervenors point to 10 C.F.R. §2.743(c) and argue that all their exhibits are admissible even though they constitute hearsay. Joint Intervenors' literal reading is too narrow. In NRC proceedings, documents cannot be admitted if they are unreliable or would deprive a party of the right to effective cross-examination--the basic tenets of the hearsay rule. The very issue raised here was considered at some length by the Licensing Board in Illinois Power Co. (Clinton Power Station, Units 1 and 2), LBP-75-59, 2 N.R.C. 579 (1975).^{2/} The Board held:

It is well established that a newspaper article is hearsay and cannot be admitted to prove the truth of the assertions stated herein. Poretto v. United States, 196 F.2d 392 (5th Cir. 1952); United States v. Jaffe, 98 F.Supp. 191 (D.C. D.C. 1951); see annotation: Admissibility of Newspaper Article as Evidence of the Truth of the Facts Stated Therein, 55

^{2/} On appeal, the decision was affirmed, but the Appeal Board found it unnecessary to pass on the Licensing Board's views on hearsay evidence. ALAB-340, 4 N.R.C. 27 (1976).

ALR 3d 663 (1974). The question remains as to whether newspapers are facts or data of a type reasonably relied upon by experts in a particular field in forming opinions or inferences. It is quite clear that they are not standard or recognized texts within the meaning of that exception to the hearsay rule. And even if newspaper articles constitute this type of data and may be in some fashion relied upon by an expert in expressing an expert opinion, they still would not be entitled to be admitted as evidence to prove the facts asserted within them. See, e.g., United States v. Sowards, 339 F.2d 401 at 402 (10th Cir. 1964) and Hickok v. G. D. Searle & Co., 496 F.2d 444, 445-6 (10th Cir. 1974).

The same is true for academic journals and scientific articles containing the written works of other experts. Clearly such written works are commonly relied upon by experts in forming opinions. But when that is the case, the hearsay objection may be largely obviated by requiring the introduction of the articles through experts in the field who will, themselves, be subject to cross-examination.

. . . .

The ultimate test of a witness's qualification is whether his knowledge of the matter in relation to which his opinion is sought is such that it probab will aid the trier of the question to determine the truth. Where such knowledge is based upon newspaper and magazine articles, there is little if any assurance that the source upon which opinion is based is reliable. As to other excluded source materials on which Dr. Rieber has based

his opinions, the Board has serious reservations concerning whether this witness has sufficient technical qualifications to permit him to fully evaluate the reports he has read referring to the specific matters at issue in this proceeding such as electric utility load forecasts, utility system planning, fuel cycle costs and capital costs of electric generation stations, and thereby determine for himself whether such source materials are reliable.

2 N.R.C. at 587-88 (emphasis added). Under this decision, if a study or report is to be admitted in the absence of the author himself, then at the very least the sponsoring witness must be an expert fully qualified in the field embodied in the exhibit so that there will be some opportunity for effective cross-examination. If the sponsoring witness is unqualified, he can provide no real assistance in determining whether the exhibit is probative and reliable.

With this background, Applicant now turns to the particular exhibits proposed by Joint Intervenors here.

A. The SEER Report
(Exhibit No. 1)

Joint Intervenors' proposed Exhibit No. 1 is a document entitled Cancer Incidence and Mortality in the United States, 1973-1977, published as part of the Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute. It purports to give cancer statistics for various areas of the United States, including New Orleans. The report is

to be sponsored by Dr. Velma Campbell. As discussed below in connection with the Louisiana cancer studies (Section C), it is doubtful whether Dr. Campbell is qualified to establish the reliability of the SEER statistics or to interpret them properly. In the absence of a qualified witness who can respond knowledgeably to cross-examination, the SEER report should be excluded.

B. Exhibit No. 2

Joint Intervenors' proposed Exhibit No. 2 is a document entitled The Environment and Human Health in Louisiana, prepared by Dr. Velma Campbell. The exhibit is nothing more than a literature survey in which Dr. Campbell summarizes in her own words the conclusions reached in some 35 studies by other authors relating to health problems in Louisiana. Applicant believes that this exhibit cannot properly be admitted into evidence to prove the truth of the matters stated therein. The authors of the various studies will not be present to explain their conclusions or to withstand cross-examination. Moreover, 33 of the 35 studies themselves are not being offered into evidence; all we have are Dr. Campbell's highly abbreviated summaries of what the studies conclude. We have no way of knowing from the exhibit what critical in-

formation may have been left out of the summaries, and it is virtually impossible to cross-examine the statements made in the summaries. The exhibit does not meet the test of reliability established for evidence by the Commission's regulations, and it should therefore be excluded.

Exhibit No. 2 should also be excluded because it is largely irrelevant to this proceeding. Of the 35 studies summarized in the exhibit, none deals with synergism or even radiation; only seven deal with cancer. Twenty-eight of the studies cover such diverse subjects as fire ants, lead poisoning, pesticides, asthma, silicosis, bagassosis, cholera, and the 1878 yellow fever epidemic in the Mississippi Valley. Of the seven summaries bearing on cancer, Joint Intervenors are proposing to offer two of the actual studies themselves as exhibits. This subject is discussed in the next section of this brief. Given the lack of reliability of Exhibit No. 2 and its marginal relevance, Applicant submits that it should not be received into evidence.

C. The Louisiana Cancer Studies
(Exhibits 3-6, 8-9)

Joint Intervenors propose to offer a group of six epidemiological studies dealing with the incidence of certain

types of cancer in Louisiana.^{3/} Joint Intervenors have stated that each of the studies will be sponsored by Dr. Velma Campbell, although she was not the author of any of the studies and did not participate in any way in performing the studies. All of the exhibits will apparently be offered as substantive evidence to prove the truth of the matters stated therein. Four of the exhibits (Nos. 3-6) are mentioned in Dr. Campbell's testimony and therefore, according to the statements made by Joint Intervenors' counsel during the March 12, 1982 conference call with Chairman Wolfe, Dr. Campbell will state her familiarity with the studies and they will be offered into evidence. Two of the studies (Exhibits 8 & 9) are not referred to in Dr. Campbell's testimony, and according to Joint Intervenors' counsel, she will therefore take the extraordinary step of adopting the studies as her own testimony.

Applicant's basic objection to all of these studies is

^{3/} These six studies are the following: Exhibit No. 3, Gottlieb, Pickle & Blot, Lung Cancer in Louisiana: Death Certificate Analysis, 63 Journal of National Cancer Institute 1131 (Nov. 1979); Exhibit No. 4, Gottlieb & Stedman, Lung Cancer in Shipbuilding and Related Industries in Louisiana, 72 Southern Medical Journal 1099 (Sept. 1979); Exhibit No. 5, Gottlieb, Carr & Morris, Cancer and Drinking Water in Louisiana: Colon and Rectum, 10 Int'l Journal of Epidemiology 117 (1981); Exhibit No. 6, Pickle & Gottlieb, Pancreatic Cancer Mortality in Louisiana, 70 American Journal of Public Health 256 (March 1980); Exhibit No. 8, Page, Harris & Epstein, Drinking Water and Cancer Mortality in Louisiana, 193 Science 55 (July 1976); and Exhibit No. 9, Harris, Page & Reiches, Carcinogenic Hazards of Organic Chemicals in Drinking Water, in 4A Origins of Human Cancer 309 (1977).

that their authors will not be present for cross-examination and that their sponsoring witness--Dr. Campbell--is not qualified to attest to the reliability of the studies or to respond meaningfully to cross-examination questions about the studies. As noted above, although the traditional hearsay rules are not always rigorously applied in NRC proceedings, it is still critical that evidence be reliable and that the right to effective cross-examination not be compromised. In the case of scientific studies offered as evidence, this means that ideally the author should be present and subject to cross-examination so that the reliability, accuracy and materiality of the study can be probed. At a minimum, the sponsoring witness, if not the author of the study, must be technically qualified in the scientific discipline embodied in the study so that the study can be tested meaningfully on cross-examination. If the sponsoring witness is unqualified, it is essentially impossible to go behind the bare words appearing on the face of the study and ascertain its actual reliability.

Applicant believes that Dr. Campbell is unqualified by training or experience to sponsor these six epidemiological studies. Her prefiled testimony shows that she has received an M.D. degree and specializes in family practice. She states that she has had some special training in occupational and environmental health, but the only example given of such training is participation for one month in the Occupational Medicine

Programs at Cook County Hospital and the Great Lakes Center for Occupational Health. There is no indication that Dr. Campbell has had any training or experience in epidemiology, mathematics or biostatistics. The studies involved here are highly technical works requiring sophistication and expertise in these disciplines. For example, Dr. Gottlieb, the author of four of the studies, holds an M.P.H. degree and is a professor in the Department of Biostatistics and Epidemiology at Tulane University. Dr. Pickle, another author, holds a Ph.D. degree and is employed at the Environmental Epidemiology Branch of the National Cancer Institute. The studies themselves depend heavily on technical concepts such as regression analysis, odds ratios, confidence limits, standard errors, risk and dose-response analysis, dependent and independent variables and statistical modeling. Without training in these areas, Dr. Campbell cannot respond to cross-examination and cannot establish the reliability of the studies. Accordingly, these proposed exhibits should not be received into evidence.

Finally, Applicant does not understand how Dr. Campbell can possibly adopt two of the studies (Exhibits 8 & 9) as her own sworn testimony. She did not perform the studies herself, nor did she write the articles that Joint Intervenor propose to offer as exhibits. She is in no position to testify about the methodologies selected for the studies, the results obtained, or the statistical models created to analyze the

data. It is one thing for a witness to sponsor an exhibit prepared by someone else; it is quite another for the witness to adopt the exhibit as her own direct testimony. Applicant is aware of no precedent for this procedure and submits that it is clearly improper.

D. The Pandit Exhibits
(Exhibits 10-12)

Joint Intervenors propose three exhibits that are to be sponsored by Dr. Hemchandra Pandit and/or Dr. Carl Johnson.^{4/} The first of these (Exhibit 10) sets forth a novel theory for the mechanism of carcinogenesis. It should not be admitted into evidence because its author, Dr. Pandit, is totally unqualified in this field. Dr. Pandit is a Professor of Biology at D'Youville College in Buffalo, New York. His resume shows that his principal training and research experience have been in such areas as the enzymes in the alimentary canal of the Bombay Duck; breeding frogs and toads in captivity; various studies of the cobra, the saw-scaled viper and other venomous

^{4/} These exhibits are as follows: Exhibit No. 10, Pandit, Biophysical Theory of Cancer, unpublished (1979); Exhibit No. 11, Brodsky, A Stochastic Model of Carcinogenesis Incorporating Certain Observations From Chemical and Radiation Dose-Response Data, 35 Health Physics 421 (Aug. 1978); and Exhibit No. 12, Barnett, The Biological Effects of Ionizing Radiation, 43 Connecticut Medicine 75 (Feb. 1979).

snakes; the renal function of reptiles; and the evolution of leprosy lesions. It does not appear that Dr. Pandit has any training or experience that would qualify him to discuss the causes and mechanisms of cancer. Furthermore, Exhibit 10 shows on its face that it is unreliable. The study remains unpublished some three years after it was apparently prepared, and there is nothing to indicate that it has ever been subjected to peer review. Indeed, the last page of the exhibit acknowledges the assistance of the former Director of Public Relations and an Associate Professor of English at D'Youville College in "correcting the manuscript". Under all the circumstances, Applicant submits that Exhibit 10 cannot properly be received into evidence.

Exhibit 11 presents a complex stochastic model of carcinogenesis designed to incorporate certain phenomena regarding sequential interactions of co-carcinogens.—^{5/} Dr. Pandit is clearly unqualified to sponsor the exhibit or to discuss its subject matter. It appears that Dr. Johnson may also be unqualified to sponsor the exhibit, and voir dire will be necessary to probe his qualifications. In any event, Applicant believes that in the case of Exhibit 11, the document should not be admitted unless Joint Intervenors present its

^{5/} The author makes clear in his first footnote that although he is employed by the NRC, the exhibit "is not intended to represent official views or policies of the NRC".

author for cross-examination. Exhibit 11 is one of the few exhibits proposed by Joint Intervenors that actually touches upon the issue raised by Contention 8/9--synergism. For example, the study discusses radiation acting as a cancer promoter in the presence of active chemical initiators. Yet the data presented in the study draw on experiments involving very large doses--in the range of hundreds or thousands of rems. The implications of the stochastic model for the very low dose rates associated with Waterford 3 are not clear. Only the author of the study can explain his views on such questions; no one else will do. Applicant submits that when a proposed exhibit addresses the ultimate issue raised by a contention, and does so by implication, extrapolation and opinion only, it should not be received as substantive evidence unless the author himself is present so that the parties will have an opportunity for meaningful and effective cross-examination.

Exhibit 12 is a general summary of the health effects of radiation. Dr. Pandit is clearly not qualified to sponsor the exhibit; Dr. Johnson may be unqualified. In addition, the generality of Exhibit 12 leads Applicant to question whether it is truly material to Contention 8/9. The exhibit would simply increase the size of the record without substantially assisting the Board in disposing of the contention.

E. The Plutonium/Uranium Studies
(Exhibits 13-16)

Joint Intervenors propose to offer four exhibits dealing generally with the effects of exposure to plutonium and uranium at two sites in Colorado.^{6/} Each of these studies is entirely irrelevant to this proceeding and Contention 8/9, and each should be excluded from evidence. Three of the studies (Exhibits 13, 14, & 16) deal with exposure in areas surrounding the Rocky Flats Nuclear Weapons Plant. One of these (Exhibit 16) discusses the effects of inhaling plutonium dust. Another (Exhibit 14) deals with exposure to plutonium in the exhaust plume from the Rocky Flats plant. Exhibit 13 is a one-page summary of what we assume to be a longer paper; it deals with inhalation exposure to plutonium and also makes passing reference to radium 228 and thorium 29. Exhibit 15 is concerned

^{6/} These four exhibits are: Exhibit No. 13, Johnson, An Investigation of Brain Cancer, Melanoma and Other Neoplasms in Employees of Rocky Flats Nuclear Weapons Plant in Jefferson County, Colorado, unpublished (Nov. 1981); Exhibit 14, Johnson, Cancer Incidence in an Area Contaminated with Radionuclides Near a Nuclear Installation, 10 Ambio, No. 4 (1981); Exhibit No. 15, Johnson, Contamination of Several Public Water Districts with Uranium by Liquid Waste Discharges from an Uranium Mine, unpublished (Nov. 1981); and Exhibit No. 16, Johnson, Plutonium Hazard in Respirable Dust on the Surface of Soil, 193 Science 488 (Aug. 1976).

with a uranium mine in Colorado that, according to the author, discharges into Ralston Creek large amounts of water contaminated with uranium 238 and radium 226.

These studies have no bearing whatsoever on the present case. Waterford 3 is not a uranium mine or a nuclear weapons plant, nor does it emit plutonium, uranium, radium or thorium in its anticipated routine low-level releases. Certainly the fact that it is harmful to inhale plutonium does not contribute anything to the proper disposition of Contention 8/9. Exhibits 13-16 say nothing about synergism between chemical carcinogens and the radiation emitted during normal operation of a light water reactor. The studies are completely irrelevant; they would be a total waste of the Board's time; and they should be excluded from evidence.

Joint Intervenors' only argument in support of these exhibits is that they reflect the "hazard inflicted" by "levels of radiation asserted by regulatory authorities to be within permissible radiation release limits". Joint Intervenors' Brief, at 6. The limits imposed on uranium mines and nuclear weapons facilities are hardly relevant to this case. Furthermore, if Joint Intervenors are attempting by these exhibits to demonstrate that the NRC's Appendix I limits are unacceptably high, then they are plainly embarking on an impermissible attack on the Commission's regulations. See Southern California Edison Co. (San Onofre Nuclear Generating Station,

Units 2 and 3), ALAB-268, 1 N.R.C. 383, 400 (1975).^{7/} There is no legitimate purpose for Exhibits 13-16 in this proceeding.

F. The Synergism Studies
(Exhibits 17, 18 & 20)

Among Joint Intervenors' proposed exhibits are three studies purporting to show a synergistic effect between radiation and other carcinogenic agents.^{8/} All three exhibits are to be sponsored by Dr. Carl Johnson, although he is not the author of any of them. Since none of the exhibits is mentioned in his prefiled testimony, he will apparently follow the procedure of adopting the studies as his own sworn testimony. For the reasons stated above in connection with Dr. Campbell, Applicant believes that Dr. Johnson cannot properly

^{7/} The Board's September 12, 1979 Order stated with respect to Contention 8/9 that "[w]e do not understand that the Joint Petitioners are challenging the Appendix I dose limits". Order, at 3.

^{8/} These studies are: Exhibit No. 17, DiPaolo, In Vitro Transformation: Interactions of Chemical Carcinogens and Radiation in Biology of Radiation Carcinogenesis 335 (1976); Exhibit No. 18, Greenstock & Ruddock, Radiation Activation of Carcinogens and the Role of OH and O₂, 28 Photochemistry and Photobiology 877 (1978); and Exhibit No. 20, Segaloff & Maxfield, The Synergism Between Radiation and Estrogen in the Production of Mammary Cancer in the Rat, 31 Cancer Research 166 (Feb. 1971).

adopt an article written by someone else as his own testimony given under oath. Moreover, it is not at all clear that Dr. Johnson possesses the requisite qualifications in chemistry, biophysics and the other disciplines necessary to act as a sponsoring witness for these studies. In the absence of the author or a qualified sponsoring witness, cross-examination will be essentially futile, and there will be no way to test the reliability of the studies or to assess their relevance to Waterford 3 and Contention 8/9.

In addition to the cross-examination problem, Applicant submits that Exhibits 17, 18 and 20 should be excluded because they are basically irrelevant to this proceeding. Each of the studies reported in these exhibits involved enormous doses of radiation, many orders of magnitude higher than the 0.01 mrem per year average dose that is expected to result from Waterford 3 releases. For example, the hamsters in Exhibit 17 were subjected to doses ranging from 150 rem to 1000 rem, and the doses in Exhibit 18 are measured in thousands of rads. The rats in Exhibit 20 received 169 rem per minute, which amounts to approximately 89 billion mrem per year. This is approximately 13 orders of magnitude higher than the doses expected from Waterford 3. The synergistic effects reportedly observed at these doses and dose rates have no probative value in assessing the synergistic effects, if any, that may result from Waterford 3.

Joint Intervenors claim that these exhibits are necessary to controvert testimony by Applicant's witnesses "that they do not perceive the existence of a synergistic effect". Joint Intervenors' Brief, at 7. This is not true. Applicant's testimony of Leonard Hamilton specifically points out that synergistic effects have been experimentally observed at enormous doses and dose rates. See Hamilton testimony, at 13-14. The question here is whether the minute doses to be given by Waterford 3 will have any detectable synergistic effect with the chemical pollutants in the Southeastern Louisiana area. On this issue, the proposed exhibits tell us nothing, and they should be excluded.

G. Exhibit 21

Joint Intervenors' proposed Exhibit 21 is Upton, Radiation Effects in 4A Origins of Human Cancer 477 (1977). Joint Intervenors quote the following passage from Dr. Upton's article in attempting to show why it should be admitted into evidence:

[I]t should be noted that radiation may act synergistically with other influences, e.g., the excess of lung cancers in U.S. uranium miners who are also cigarette smokers is larger than would be predicted if the separate carcinogenic effects of mining alone and cigarette smoking alone were merely additive (Lundin, et al. 1969;

Doll 1970). Another example, involving synergistic effects of X radiation and urethane in the induction of lymphomas in C57BL mice, was interpreted as evidence for a multistage mechanism of carcinogenesis in this instance, with radiation serving as an initiating agent and urethane as a promoting agent (Berenblum and Tranin 1960).

Joint Intervenor's Brief, at 7. This is a perfect example of why an article like this, which goes to the heart of Contention 8/9, should not be admitted into evidence unless its author is present for cross-examination.^{9/} Dr. Upton makes a general statement that radiation may act synergistically with other influences. Apparently, Joint Intervenor's intend to use the statement as substantive evidence in support of their case. Yet without Dr. Upton on the stand, there is no way to probe the basis and parameters of this conclusion. No one else can read the author's mind. No one else can say whether he would extend his conclusion to very low doses and dose rates or whether, to the contrary, he would testify on cross-examination that the radiation released by Waterford 3 will not have any detectable synergistic effect. There is no indication that any of Joint Intervenor's witnesses

^{9/} Joint Intervenor's have not advised us who will sponsor Exhibit 21. It was first disclosed when Applicant's counsel received it on March 15, 1982, in a package from Joint Intervenor's counsel also containing some thirteen other documents. None of their witnesses mentions it in the prefiled testimony. Presumably one of the witnesses will attempt to "adopt" Dr. Upton's article as his own direct testimony.

has ever met, talked to, or worked with Dr. Upton, much less discussed with him his opinion on this particular subject. It would be unfair and improper if Joint Intervenors were permitted to use general statements on synergism by Dr. Upton as direct evidence without affording Applicant an opportunity through cross-examination to ascertain whether the conclusions are truly applicable to Waterford 3.

H. The Bross Exhibits
(Exhibits 22-27)

Joint Intervenors propose to offer a group of six exhibits all authored by Dr. Irwin Bross.^{10/} None of the exhibits should be admitted into evidence.

Exhibit 22 should be excluded because it is unreliable on its face. The document is unpublished and presumably has never been subjected to peer review. It is covered with handwritten notations, additions and deletions so that it is often

^{10/} These exhibits are: Exhibit No. 22, Bross, A Simple Mechanism for Synergism in Genetic Damage from Low-Level Radiation or Chemical Mutagens, unpublished (1982); Exhibit No. 23, Bross, Why the Assurances that the Water Is "Safe" Have No Scientific Validity, unpublished (Nov. 1981); Exhibit No. 24, Bross, Letter to the Editor of Health Physics (Sept. 16, 1981); Exhibit No. 25, Bross & Driscoll, Direct Estimates of Low-Level Radiation Risks of Lung Cancer at Two NRC-Compliant Nuclear Installations, unpublished (May 1981); Exhibit No. 26, Bross, A 1980 Reassessment of the Health Hazards of Low-Level Ionizing Radiation, unpublished (Oct. 1979); and Exhibit No. 27, Bross, Ball & Falen, A Dosage Response Curve for the One Rad Range: Adult Risks from Diagnostic Radiation, 69 American Journal of Public Health 130 (Feb. 1979).

difficult to determine what the text is supposed to say. In some cases words are apparently left out and replaced by "xxxxx". For example, page 7 of the exhibit includes the following sentence: "The included allergies, xxxxx, xxxxx, xxxxx, etc." The document repeatedly refers to an unidentified "Tri-State Survey" and to an unspecified "report" in Science. The references have been left out of the exhibit, and it refers to graphs that are not attached. This is not the sort of document that could possibly constitute scientific evidence in an NRC proceeding.

Exhibit 23 is defective in that it relies on an "Attachment A" which is not identified and not attached. More important, the exhibit is wholly irrelevant to this proceeding. It deals for the most part with the Niagara River and Niagara Falls, with occasional references to Love Canal and the Portsmouth Naval Shipyard. At bottom the document is simply a diatribe against public officials in general and the reliability of government health standards in particular. The exhibit has no bearing on Contention 8/9. If it were in any sense applicable to Waterford 3, it would simply be a general attack on the wisdom of Appendix I. As noted above, any such attack in this proceeding is impermissible.

Exhibit 24 should be excluded because it is irrelevant. It is a letter by Dr. Bross to the Editor of Health Physics

commenting on an earlier article that discussed the genetic effects of the atomic bombs dropped on Japan during World War II. Dr. Bross' letter deals with the "doubling dose" for infant mortality among children of parents exposed to the atomic bombs. Dr. Bross believes that the doubling dose should be about 1 rem rather than the 156 rem suggested by the authors of the article. It is difficult to see how this exhibit is relevant or material to Contention 8/9. The exhibit does not address cancer or chemical carcinogens, and it does not address synergism between chemical carcinogens and low level radiation of the sort released by Waterford 3. The exhibit has little or no probative value on the matters that are at issue in this proceeding, and it would simply confuse and clutter up the record. It should be excluded from evidence.

Exhibit 25 should likewise be excluded because it is irrelevant. The exhibit deals with the effects of occupational exposure to radiation at Portsmouth Naval Shipyard and the Hanford Reprocessing Plant. Dr. Bross' study states that the doubling dose for lung cancer is less than the occupational dose limit set by the NRC for these facilities. Dr. Bross therefore concludes that the NRC should reduce its occupational dose limit to below 0.5 rem per year. This exhibit has nothing

to do with synergism, and it focuses on occupational exposure, which Joint Intervenorors have agreed is outside the scope of this hearing. See Joint Intervenorors' Answer to Applicant's Interrogatory No. 8/9-1 (second set) (Sept. 1981). Moreover, the basic point of Exhibit 25 is that the NRC's occupational dose limits are inadequate, which again amounts to an impermissible attack on the Commission's regulations. Accordingly, Exhibit 25 should be excluded.

Exhibit 26 is much like Exhibit 25. It attacks what the author refers to as the "radiation protection community" for disagreeing with his estimate of 3-5 rads as the doubling dose for leukemia. This leads Dr. Bross to argue again that the NRC's limit for occupational exposure is inadequate. The exhibit says nothing about synergism or the health effects of the extremely low doses and dose rates associated with Waterford 3. In addition, the article is basically designed to be an attack upon the Commission's regulations. Exhibit 26 should not be admitted into evidence.

Finally, Exhibit 27 should be excluded because it appears on its face to be unreliable and because it is largely irrelevant to Contention 8/9. The first page of Exhibit 27 includes the following editor's note:

EDITOR'S NOTE: The Journal is not given to publishing articles which are not subject to the peer review process. However, the above paper by Dr. Bross and his colleagues is an exception. Its subject matter is of great importance to the public health, yet Dr. Bross stands virtually alone in defense of his data and the interpretations he places on them. Because Dr. Bross has been a respected investigator whose statements are frequently quoted by the press, and because published critiques of his analysis have been rare in both professional journals and the press, the Journal chose to publish the paper he submitted together with a critique of it, p. 137, this issue, thus allowing Journal readers to draw their own conclusions. See also Dr. Carl Johnson's Letter to the Editor, p. 181.

(emphasis added). This note clearly shows that the exhibit has not been subjected to peer review and that the American Journal of Public Health is doubtful as to its reliability. As a result, the Journal took the extraordinary step of publishing Dr. Bross' paper together with the above disclaimer and a critique of the paper. See Boice & Land, Adult Leukemia Following Diagnostic X-Rays?, 69 American Journal of Public Health 137 (1979). Significantly, Joint Intervenors have omitted the critique from Exhibit 27. Applicant believes that the exhibit should be entirely excluded because of its unreliability. However, if the exhibit is to be admitted at all, Joint Intervenors should be required to include the critique as part of the exhibit. If anything is clear, it is that the Journal did not think it appropriate to publish

the paper without the critique. As a matter of fairness and completeness, the same procedure should be followed in this proceeding.

Applicant also believes that Exhibit 27 should be excluded because it is irrelevant. As with Exhibits 25 and 26, this exhibit does not touch upon synergism and is simply an attempt to demonstrate that radiation in doses below 5 rads poses a health risk. Again, the study is in large part an attack upon the NRC's dose limits and for that reason alone is not properly admissible.

I. The Epstein Testimony
(Exhibit No. 28)

Joint Intervenors' last proposed "exhibit" is the prefiled testimony of Dr. Samuel Epstein. Dr. Epstein was to be one of Joint Intervenors' witnesses. He is apparently unable to attend, however, and Joint Intervenors are now proposing to get his direct testimony into evidence as an "exhibit" sponsored by one of their other witnesses. Applicant strenuously objects to this peculiar procedure, which is entirely unprecedented and clearly improper. If witnesses cannot appear at the hearing for cross-examination, they cannot testify. Joint Intervenors should not be permitted to circumvent this basic rule of due process and fundamental fairness by the

imaginative device of offering direct testimony as an "exhibit" to the testimony of some other witness.

If learned treatises and scholarly studies are sometimes admitted into evidence in the absence of the author, it is only because they are thought to be reliable. This reliability stems from the fact that they are subjected to peer review, published by reputable periodicals, and written in a neutral scientific atmosphere for the advancement of knowledge, not for the advancement of a particular party's interests in an adjudicatory proceeding. All of these hallmarks of reliability are missing in Exhibit 28. It has not been published, has not been subjected to peer review, and was written as direct testimony for one of the parties in this case. It is clearly inadmissible as evidence in the absence of its author.

Finally, given the statements made in Exhibit 28, cross-examination of its author is clearly necessary. For example, the following question and answer appear in the exhibit:

20. Can you make a statement with regard to the health risk from low level radiation in emissions from Waterford Three as it affects a population already at risk from high levels of chemical carcinogens?

Answer. The introduction of low level radiation into an environment high in chemical carcinogens places the population at a much higher risk than a population without these chemicals. The two carcinogens act synergistically to produce higher cancer incidence than would be expected as a result of each one acting independently.

This kind of conclusory, unsupported opinion on the ultimate issue in the case cries out for cross-examination of the author. If Exhibit 28 is admitted in the absence of Dr. Epstein, Applicant will be denied the right to effective cross-examination and will be seriously prejudiced in the presentation of its case. Exhibit 28 should be excluded.

CONCLUSION

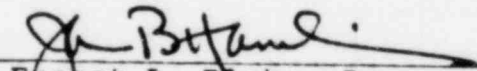
For all the reasons stated above, Applicant submits that Joint Intervenor's proposed exhibits should not be admitted into evidence.

Dated: March 23, 1982.

Respectfully submitted,

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BY:



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3/23/82

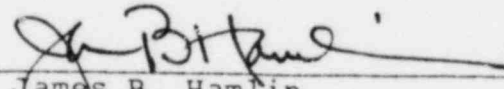
UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

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| In the Matter of |) | |
| |) | |
| LOUISIANA POWER & LIGHT COMPANY |) | Docket No. 50-382 |
| |) | |
| (Waterford Steam Electric |) | |
| Station, Unit 3) |) | |

CERTIFICATE OF SERVICE

I hereby certify that true and correct copies of the foregoing APPLICANT'S OBJECTIONS TO JOINT INTERVENORS' PROPOSED EXHIBITS were served this 23d day of March, 1982, by First Class Mail, postage prepaid, on those persons listed on the attached Service List, except those persons designated by an asterisk (*), who were served by hand delivery this day.



James B. Hamlin
Counsel for Applicant

DATED: March 23, 1982.

3/23/82

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SERVICE LIST

- | | |
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