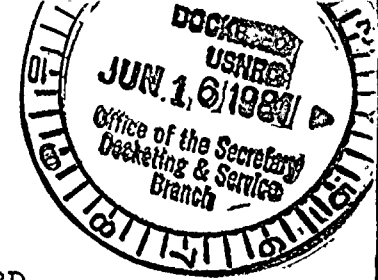


6/12/81  
UNITED STATE OF AMERICA  
NUCLEAR REGULATORY COMMISSION



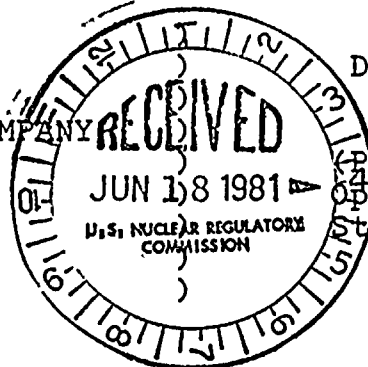
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the matter of

FLORIDA POWER & LIGHT COMPANY

(Turkey Point Nuclear  
Generating Units Nos. 3  
and 4)

Docket Nos. 50-250-SP  
50-251-SP



(Proposed Amendments to Facility  
Operating Licenses to Permit  
Steam Generator Repairs)

INTERVENOR'S POSITION AS TO ACTION THE BOARD SHOULD  
TAKE REGARDING THE DISPOSAL OF THE SOLID WASTE RESULTING  
FROM THE STEAM GENERATOR REPAIRS

Pursuant to the Memorandum and Order of the Atomic Safety  
Licensing Board dated May 28, 1981 at page 43, paragraph 4, Mark P.  
Onccavage files the following position as to whether the Board can or  
should take any action regarding solid waste resulting from steam  
generator repairs at Turkey Point, including the imposition of license  
amendment conditions.

Statement of Facts

There is presently on site at Turkey Point facility  
approximately 400 drums containing solid waste with low level radio-  
activity. The Final Environmental Statement states that the estimated  
amount of radioactive solid waste generated from the steam generator  
repair ranges from 1100 cubic meters to 2300 cubic meters per unit.  
This estimate excludes the lower assemblies that will be removed during  
the repairs and the normal amount of solid waste from operations which  
amounts to approximately 575 cubic meters per unit per year. (See  
affidavit of Douglas King on Contention for Board). The FES also  
shows that the waste limitation for Turkey Point waste at the Barnwell,  
South Carolina disposal site is 57 cubic meters per month, starting in

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G

DS03  
50/11



October, 1981.

Given the limited disposal allocation at the Barnwell site, the licensee will not be able to ship the solid waste generated from the steam generator repairs to its normal disposal facility. This creates a unique question as to what will happen to the solid waste resulting from the steam generator repairs, as the Board has recognized in its May 28, 1981 Order.

10 C.F.R. Sec. 20.301 says:

"No licensee shall dispose of licensed material except: a) by transfer to an authorized recipient as provided in the regulations in Part 30, 40 or 70 of this chapter, whichever may be applicable; b) as authorized pursuant to Sec. 20.302; c) as provided in Sec. 20.303 or Sec. 20.304, applicable respectively to the disposal of licensed material by release into sanitary sewerage systems or burial in soil, or in Sec. 20.106 (radioactivity in effluents to unrestricted areas). [25 FR 10914, Nov. 17, 1960, as amended at 39 FR 27121, July 25, 1974]"

At present the Florida Power & Light Turkey Point facility does not have an "authorized recipient" for the solid waste generated by units 3 and 4. The Steam Generator Repair Reports provides no procedure or release into the sanitary sewerage system as set forth in 10 C.F.R. Sec. 20.303 or for disposal by burial in soil as set forth in 10 C.F.R. Sec. 20.304 or release in effluents areas as provided for in 10 C.F.R. Sec. 20.106. The only remaining permissible procedure is that set forth in 10 C.F.R. Sec. 20.302, which describes the method for obtaining approval for proposed disposal procedures.

10 C.F.R. Sec. 20.302 says:

"Any licensee or applicant for a license may apply



to the Commission for approval of proposed procedures to dispose of licensed material in a manner not otherwise authorized in the regulations in this chapter. Each application should include a description of the licensed material and any other radioactive material involved, including the quantities and kinds of such material and the levels of radioactivity involved, and the proposed manner and conditions of disposal. The application should also include an analysis and evaluation of pertinent information as to the nature of the environment, including topographical, geological, meteorological, and hydrological characteristics; usage of ground and surface waters in the general area; the nature and location of other potentially affected facilities; and procedures to be observed to minimize the risk of unexpected or hazardous exposures.

b) The commission will not approve any application for a license to receive licensed material from other persons for disposal on land not owned by the Federal Government or by a State government.

c) The commission will not approve any application for a license for disposal of licensed material at sea unless the applicant shows that sea disposal offers less harm to man or the environment than other practical alternative methods of disposal. [25 FR 10914, Nov. 17, 1960, as amended at 26 FR 352, Jan. 18, 1961; 36 FR 23138, Dec. 4, 1971]"

Given the requirements of this regulation and the restrictions on disposing the solid waste at the Barnwell, South Carolina facility, the Intervenor takes the following positions on the disposal of the solid waste resulting from the steam generator repairs at Turkey Point:

#### POSITION I

The licensee should submit to the Commission for its approval an application that sets forth its proposed disposal procedures. This application should include a description of the radioactive material involved, including the quantities and kinds of such materials, and the levels of radioactivity involved. It should include the proposed manner



and conditions of disposal and an analysis of the nature of the environment into which the material will be disposed along with a description of the nature and location of other potentially affected facilities.

#### POSITION II

All parties to this case and all other interested persons should be given a fair opportunity to comment on the licensee's application to dispose of this material.

#### POSITION III

A. The Board should direct the NRC staff to prepare an environmental impact statement pursuant to the National Environmental Policy Act of 1969, 42 U.S.C. Sec. 4321 and pursuant to the Nuclear Regulatory Commission regulation 10 C.F.R. Part 51 relative to the generic solid low level waste disposal issue. The handling, transporting and disposition of the solid waste which will be generated by the repair is a major federal action that may significantly effect the human environment, or

B. The Board should delay the repair and appoint the EPA as the lead agency for preparing the Environmental Impact Statement on the waste issue. The staff of the Nuclear Regulatory Commission has shown a predisposed bias and prejudice toward conducting these repairs and could not under NEPA do a fair and impartial evaluation of the environmental impact of the solid waste issue. (See Section 103, NEPA) This is shown by the staff's total disregard for the waste issue in the environmental impact statement. This is further shown by the staff's and licensee's disregard for the safety aspect of allowing hundreds of fifty-five gallon drums of radioactive waste to stand in an open dump without any security whatsoever.



#### POSITION IV

The Board should rule that the Environmental Impact Statement (FES) prepared by the staff is inadequate for its failure to discuss the environmental impact of the handling, transporting, and disposition of the solid waste which will be generated by the repair. The impact of the waste issue was not addressed in the Environmental Impact Statement.

#### POSITION V

The Board should direct the NRC staff to send the Environmental Impact Statement back to the agencies for comment on the solid low level waste issue. The agencies, whose comments are attached to the Final Environmental Impact Statement, had no information concerning the low level waste issue, and therefore, did not have the opportunity to comment on this issue.

#### POSITION VI

Any issuance of an amendment to the license should be delayed until such time as an environmental impact study is done concerning the low level waste issue and/or until such time as the present Final Environmental Impact Statement properly addresses the waste issue. These repairs should be delayed until the NEPA requirements are followed including sufficient time to comment on the waste issue and an appropriate public hearing is held concerning the waste issue.

#### POSITION VII

The Board should direct the staff to contact the appropriate State of Florida agencies and allow the State of Florida to complete studies that are presently being taken concerning the issue of the disposal of the solid waste. Attached to this filing are



documents which would reflect that the University of Florida is presently studying the low level waste issue. A solution has not been found to the problem of the disposal of low level waste generated in the State of Florida exclusive of the waste that will be generated by the repair itself.

#### POSITION VIII

The repair should be delayed until the NRC completes its review of the disposal of low activity bulk solid waste. The NRC is presently studying the issue in advance of instituting 10 C.F.R. Part 61. The Board should direct Florida Power & Light to reveal in the record whether Florida Power & Light intends to apply for a license amendment relative to becoming a waste recipient or in the alternative whether they intend to petition the NRC for an exception authorized by 10 C.F.R. Sec. 30.11-20, Sec. 40.11-14, and/or Sec. 70.11-14

#### POSITION IX

The Board should direct the staff to require Florida Power & Light to determine that all solid radioactive waste leaving the reactor site for burial contains no detectible free liquids as defined by Appendix II of NSI-ANS 55.1-1979.

#### POSITION X

The Board should reject the amended license application and prohibit the repair because the licensee under the existing regulations has no legal manner in which to dispose of the low level waste which will be generated by the repair. The land on which Turkey Point is situated is privately owned land and therefore the licensee could not obtain a license as a low level waste storage facility.

POSITION XI

The Board should require the staff and licensee to examine the low level waste disposal capacity of Turkey Point for the life of the plant.

POSITION XII

The Board should allow the Intervenor the right to reopen Discovery on the Solid Low Level Waste Issue. The Board itself realized that there has not been sufficient time to develop a record on this issue. ( See May 28, 1981 Order at p. 40).

## JURISDICTIONAL ISSUE

The environmental impact of maintaining the reactor site as a Nuclear Waste disposal site during the license term has never been considered by this Board, nor by the commission. The Licensee plans to construct a facility at Turkey Point which will be suitable for temporary storage of low dose rate LLW containers in the event it becomes necessary to retain LLW on site. (See University of Florida LLW Report at p. 71.)

The Commission has under study whether an off-site storage solution for Nuclear Waste will be available by the years 2007-2009 and if not whether wastes can be stored on sites beyond those years, until an off-site solution becomes available (Notice of the proposed rule making regarding the storage and disposal of nuclear waste (44 FR 61373, Oct. 25, 1979)). If that were the issue in our case then the Board could not consider it as the Commission has decided that that issue should not be addressed in an individual license proceeding.

The Board is not being asked to consider the environmental impacts that are associated with the storage of LLW after the expiration of the operating license. The Intervenor asks that the Board consider the environmental impact that will be associated with the on site storage of low level waste in 1981 and the balance of the life of the plant. The term "on site" storage is significant because Florida in an agreement



State. (See Article II of Agreement between the State of Florida and NRC.) "On Site" storage vests jurisdiction in the NRC and this Board (See Letter attached dated March 31, 1981.)

CONCLUSION

The Intervenor has couched the action he feels the Board should take in alternative positions. He is not privy to the Licensee's plans concerning the waste issue and will not have any information until June 15, 1981. The decision this Board makes concerning radioactive waste disposal will effect Dade County and the State of Florida for generations. Any one or more of the positions may be applicable after the licensee's plans are revealed. The Intervenor should be given the opportunity to pursue discovery after the Licensee files their documents on June 15, 1981. The discovery cut-off did not contemplate this additional issue. A public hearing should be held. Public debate is the only manner in which these vital decisions can be fully aired.

DATED this the 12th day of June, 1981.

LAW OFFICES OF NEIL CHONIN, P.A.  
Attorneys for Intervenor  
Suite 1400 Amerifirst Bldg.  
One S. E. 3rd Avenue  
Miami, Florida 33131  
Telephone: 377-3023

By

  
\_\_\_\_\_  
Neil Chonin



U.S. DEPARTMENT OF ENERGY  
NOTICE OF GRANT AWARD

Under authority of Public Law 95-224 and subject to pertinent legislation, regulations and policies applicable to  
(Cite legislative program title): Federal Grant & Cooperative Agreement Act of 1977  
41 U.S.C. 501 et. seq.

1. PROGRAM TITLE (Cite specific program title)

In-State Storage of Low Level Radioactive Waste

2. GRANTEE (Name, address, ZIP code)

State of Florida  
Dept. of Health & Rehabilitative Services  
1317 Winewood Blvd., Tallahassee, FL 32301  
TELEPHONE

904-487-1004

3. GRANT NO.

DE-FG07-80ID12149

4. AMENDMENT NO.

5. BUDGET PERIOD

From: Date of Award Thru: 9-30-80

6. TOTAL PROGRAM PERIOD

From: Date of Award Thru: 7-1-81

7. CONGRESSIONAL DISTRICT

II

9. TYPE OF GRANT AWARD

X a. New d. Revision  
b. Continuation e. Supplement  
c. Renewal

8. STATE, CITY, COUNTY

Florida, Tallahassee, Leon

10. NAME OF GRANTEE PROJECT DIRECTOR

Uray Clark

11. ADDRESS OF GRANTEE PROJECT DIRECTOR

Same as Block 2

12. GRANTEE TYPE

☒ STATE ☐ LOCAL GOVERNMENT ☐ NON-PROFIT ☐ OTHER AUTHORIZED GRANTEE

13a. APPROPRIATION SYMBOL

89X0220.91

14. ALLOTMENT SYMBOL/FUND CLASS

ID-00-91/250

15a. EMPLOYER I.D. NUMBER

1596001874

b. S & R Number

820201007

b. Vendor Code

16. AWARD COMPUTATION (Federal funds only)

a. Amount awarded prior budget periods \$ -0-  
b. Amount previously awarded current budget period \$ -0-  
c. Current fiscal year funds, this award \$ 35,000.00  
d. Total amount awarded for program period \$ 59,862.00

17. CURRENT BUDGET PERIOD INFORMATION

a. Federal share of approved budget \$  
b. Non-Federal share of approved budget \$  
c. Total approved budget \$

18. This grant award, consisting of Part I-Budget Plan and Part II-Conditions, attached hereto, will be administered in accordance with the following documents which are hereby incorporated by reference:

- a. Grant application dated April 21, 1980, as negotiated.  
b. Program guidelines applicable to this grant:  
(Title) None (Date)  
c. DOE Assistance Regulations, 10 CFR 2-600, as amended, subparts A & B  
d. Other documents as applicable: OMB Circular A-102 and Federal Management Circular (FMC 74-4)

19. SPECIAL CONDITIONS APPLICABLE TO THIS GRANT AWARD

Part III, General Provisions, is attached and made a part of this Grant.

20. REMARKS:

21. GRANTEE ACCEPTANCE

(Signature of authorized grantee official)  
Staff Director Health Program Office  
and State Health Officer  
(Title of authorized signing official)

NAME OF GRANTEE ORGANIZATION

State of Florida  
Dept. of Health & Rehabilitative Services  
1317 Winewood Blvd.  
Tallahassee, Florida 32301

22. AWARDED

by (Signature) (Date)  
(Title)

22. AWARDED

(Signature) (Date)  
Grants Officer  
(Title)

1. AWARDING OFFICER



PROPOSAL

TO

State of Florida

Headquarters Health and Rehabilitative Services

Tallahassee, Florida

for a study of

IN-STATE STORAGE OF LOW-LEVEL RADIOACTIVE WASTE

By

Department of Environmental Engineering Sciences

University of Florida

Gainesville, Florida

February 21, 1980

In State Storage of Low-level Radioactive Wastes

Proposal Outline  
by

Department of Environmental Engineering Sciences

Principal Investigator:  
W. Emmett Bolch

Co-Investigator:  
Charles E. Roessler

110 A. P. Black Hall, University of Florida  
Gainesville, Florida  
32611  
(904) 392-0836 or (904) 392-0842

INTRODUCTION

It is becoming increasingly evident that a plan for storing low-level radioactive wastes (LLRW) in the State of Florida, in lieu of out-of state storage, may be required. The purpose of this proposal is to establish a framework upon which a sound, low-level radioactive waste storage policy can be based.

The Florida Department of Health and Rehabilitative Services has been assigned the lead in developing this plan for the State of Florida. The basic objective of this proposal is to provide HRS with approximately 24 man-months expertise and consulting on this subject. An expected product is a completed written record of all inputs, considerations, alternatives and criteria used in the development of the State's plan. The final document should provide the cornerstone upon which legislative and/or regulatory action can be based.

## RELATED RESEARCH

There is a myriad of data sources and studies on fragments and special phases of the LLRW problem. The Department of Energy is the lead Federal agency and has offered technical assistance. The major LLRW generators of the state have indicated a willingness to assist in solving this problem. The project will be expected to centralize the flow of information, sort and separate the inputs, and generate summaries applicable to Florida's unique situation.

Dr. Bolch is chairman of the University of Florida's Ad hoc Committee on Campus Low-level Radioactive Waste Management. That committee along with the help of Dr. Bolch's winter class of graduate students in Radioactive Waste began to investigate the campus problem in late December, 1979. Dr. Roessler is chairman of the University's Radiation Control Committee and principal investigator of several studies dealing with the radiation hazards associated with phosphate mining in Florida.

## OBJECTIVES

The specific objectives can be associated with nine fundamental tasks. They are as follows:

TASK 1 is to develop a background document. This document will basically identify and interpret the problem at hand. It will include a historical perspective (past and recent) as well as an analysis of LLRW generation in Florida (present and future) and possible consequences of discontinued generation.

TASK 2 is to consider the degree to which the actual generation of initial volumes can be reduced. The radioactive waste collection and disposal system historically been a catch-all for considerable volumes of either "de minimus" "potentially", "chemically" or "biologically" contaminated wastes. Thus, some of the initial volume may be reduced by publishing strict but workable guidelines.



for the generator. On-site "releases" need to be carefully re-examined. Certain products, procedures, and techniques may need to be discontinued, either temporarily or permanently.

TASK 3 is to review the current processing and waste treatment options available. This review is intended to start at the site of generation and continue through all phases of the low-level radioactive waste. Options within each generator facility will be investigated. Commercial options will be reviewed from pick-up to reprocessing to final deposition. Every volume reduction alternative will be listed along with advantages and disadvantages.

TASK 4 is to develop a cooperative liaison between state, generators and Federal agencies. This task is essential to the completion of the other tasks and as such will represent a continuing effort. One major goal will be to organize an information clearing house which will serve to facilitate data exchange between the agencies and generators.

TASK 5 is to develop a state plan for LLRW. This segment of the study will essentially serve as a general overview of possible solutions to the prospect crisis. Major factors, such as economics, intrinsic to the evolution of a state plan will be reviewed. In addition, a timetable for solutions will be presented.

TASK 6 is to develop specific strategies for interim emergencies. Temporary measures, for example, volume reduction, for each generating facility will be proposed as well as an assignment of priority to each generator so that if necessary, some production of LLRW may be curtailed.

TASK 7 is to develop an inventory of and to characterize available sites for LLRW storages. A search for possible sites in cooperation with state agencies will be conducted; the sites will then be evaluated according to the parameters developed for that purpose.

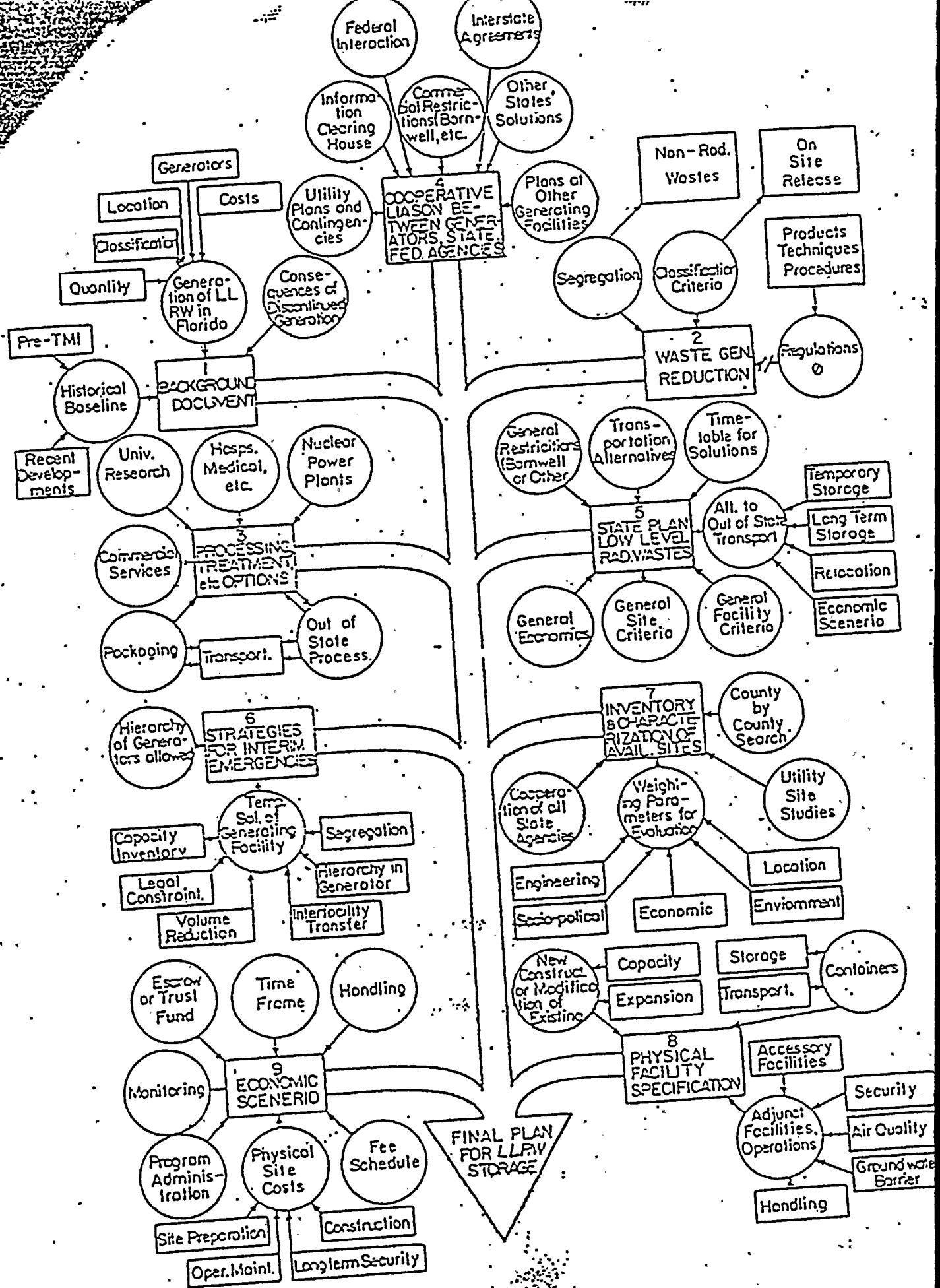


TASK 8 is to develop specifications for the physical facility. Feasibility studies for modification of existing facilities or the construction of new facilities will be made. Specifications for the facility and accompanying facilities and operations will be prescribed.

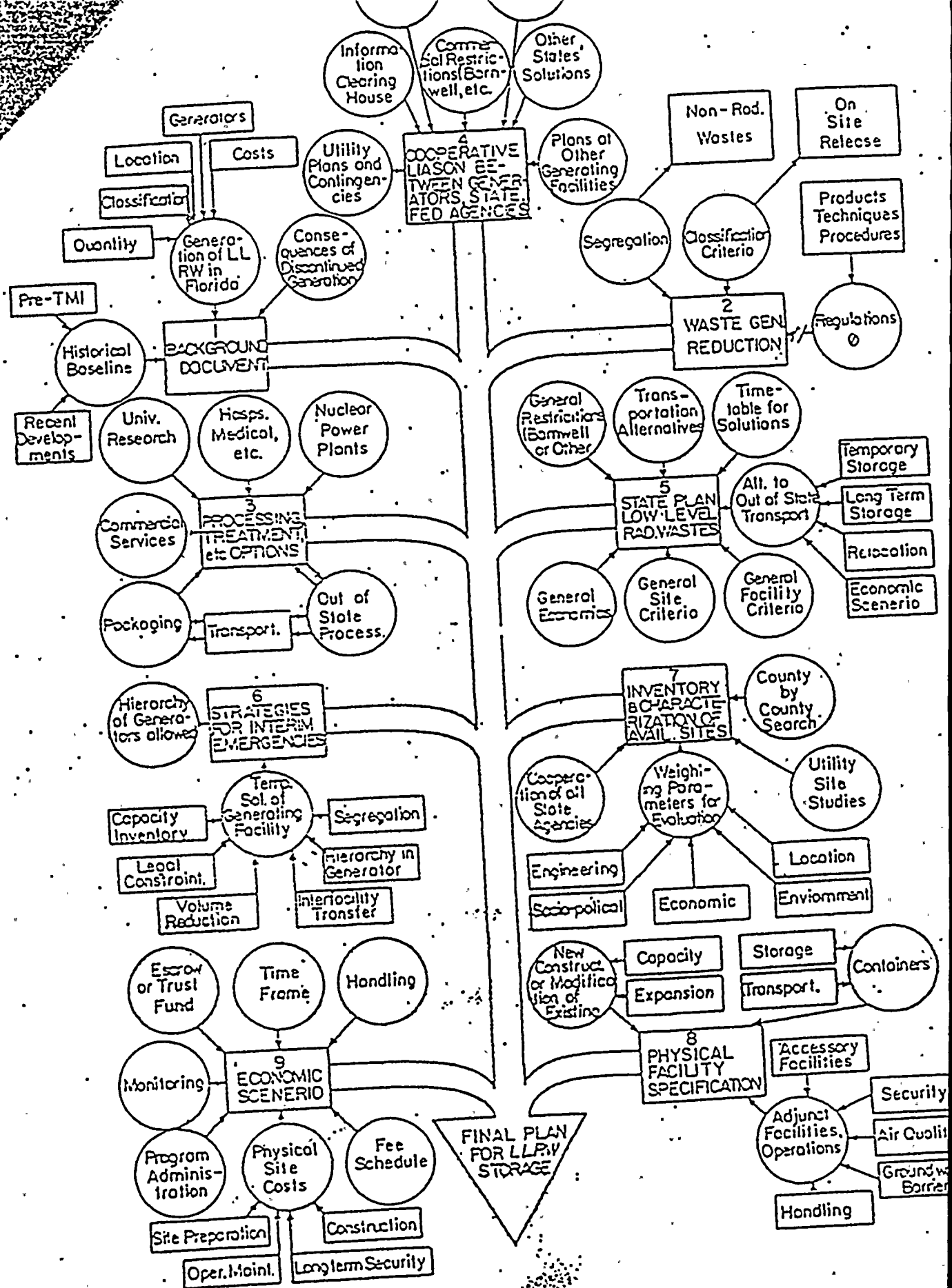
TASK 9 is to develop an economic scenario. The task will involve detailing the economics of the LLRW storage program, and will result in a synthesis of physical site costs, program administration, fee schedules, punitive fines and an escrow or trust fund.

A final objective will be to integrate the information obtained from each task into a LLRW storage plan upon which state policy may be implemented.











## PERSONNEL

### A. Principal Investigator

Dr. W. Emmett Bolch will be responsible for overall supervision and organization of the project, liaison with HRS and compilation of all reports.

### B. Faculty Investigators

Dr. Charles E. Roessler will supervise graduate students and provide editorial assistance. A third faculty may be supported in an area of needed expertise.

### C. Students

One graduate student will serve as project manager. The other three students will be selected for a degree of competence in areas needed for accomplishment of tasks.

### D. Staff

Other staff needs include part-time, undergraduate assistants and secretarial help.

## REPORTS

The Principal Investigator will be responsible for submitting required reports and special reports in a format compatible with the needs for HRS. The anticipated reports are scheduled on the time-line figure.

## LIAISON

The main line of communication and interaction will be between the Principal Investigator, Dr. Bolch, and Mr. Uray Clark of HRS. Other exchange of information, ideas and suggestions between various investigators and other HRS personnel is encouraged; however, Mr. Clark and Dr. Bolch should be informed of such communication.

## BUDGET

The breakdown of salaries among professors, staff and graduate students is an estimate of optimal distribution of personnel required to achieve the assigned tasks. The principal investigator may change this distribution as dictated by available personnel and their professional qualifications. Monies may not be transferred between categories (Salaries, Equipment, Expenses, Travel, and Indirect Charges) without written approval of a representative of HRS.

## TIME FRAME

Every effort will be made to complete the various phases of this project as soon as possible. The attached figure is a proposed time line with scheduled reports for the different tasks.

## BUDGET

TWELVE MONTHS

A. Salaries

|                                |              |          |
|--------------------------------|--------------|----------|
| 1. P.I., W. Emmett Bolch       | 20%          | \$ 7,000 |
| 2. C.P.I., Charles E. Roessler | 12.5%        | 4,300    |
| 3. TBA Faculty                 | 8%           | 2,800    |
| 4. Secretarial                 | 50%          | 4,500    |
| 5. Graduate Assistants         | 2-1/3, 2-1/2 | 29,500   |
| 6. Hourly Employees            |              | 2,300    |
| 7. Fringe Benefits             |              | 3,750    |
| SUBTOTAL                       |              | \$54,150 |

17% of total salaries

B. Equipment

File Cabinet, Office, Drafting, etc. \$ 300

C. Expenses

Office, xerox, telephone, computer printing reprints, books, etc. \$ 2,500

Travel: Tallahassee, In-state and out-of-state meetings upon recommendation of HRS 3,800

\$ 6,300

## TOTAL DIRECT COSTS

\$60,750

D. Indirect Costs

15% of items A, B, and C as negotiated with state agency.

\$ 9,112

## TOTAL REQUESTED

\$69,862

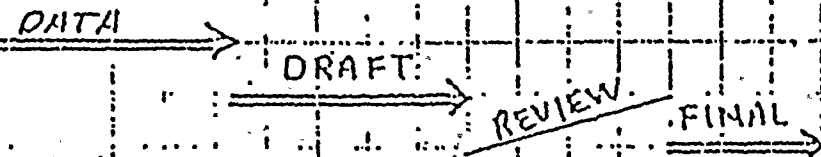
contacted DHEW, Atlanta & they stated  
 off should be at 44%. They recommended  
 we accept the 15%.

K  
 5-1-80

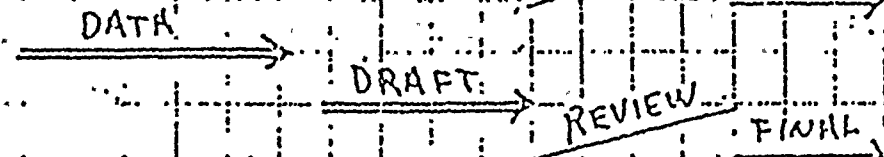
# MONTH OF CONTRACT

1 2 3 4 5 6 7 8 9 10 11

TASK 1



TASK 2



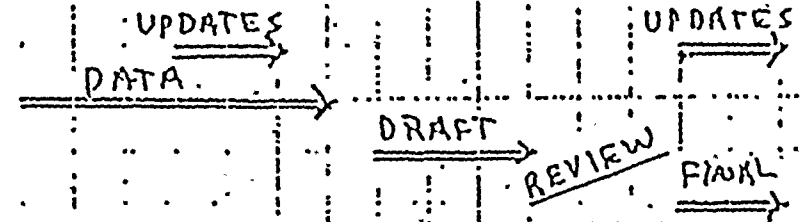
TASK 3



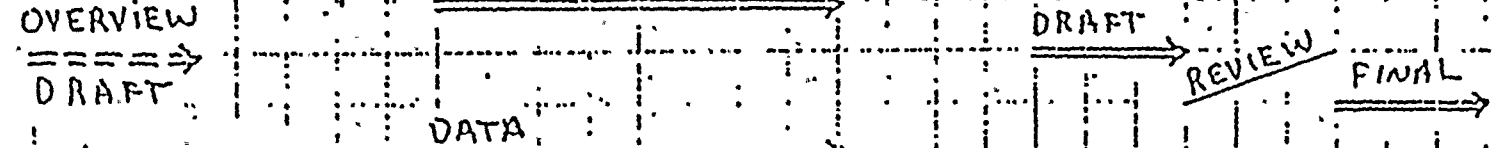
TASK 4

CONTINUING EFFORT

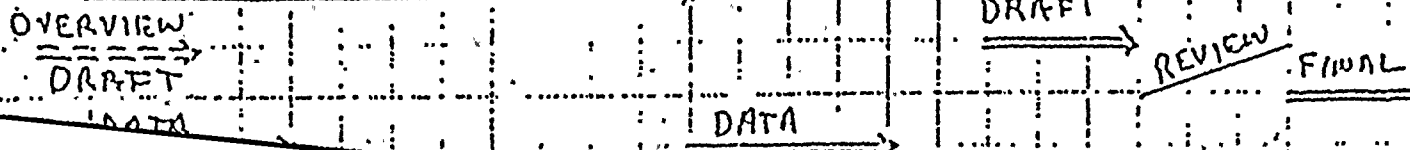
TASK 5



TASK 6



TASK 7



PERSONAL RECORD

Date of Birth: October 27, 1936  
Marital Status: Married

Place of Birth: Lenoir, North Carolina  
Children: Two

SCHOLASTIC TRAINING

1959 University of Texas, Austin, TX; Bachelor of Science in Civil Engineering  
1964 University of Texas, Austin, TX; Master of Science in Environmental Engineering  
1967 University of California, Berkeley, CA; Doctor of Philosophy, Major Engineer, Minors; Radiological Health, Chemistry-chemical engineering

EXPERIENCE

1959-62 First Lt., Sanitary and Industrial Hygiene Engineer, U.S.A.F. Aerospace Lackland, TX.  
1956-70 Assistant Professor, University of Florida  
1970-77 Associate Professor, University of Florida  
1972- Associate Professor, University of Florida (Courtesy, Dept. of Nuclear Engineering)  
1973- Consultant, Florida Power Corporation, St. Petersburg, Florida  
1974- Consultant, Tennessee Valley Authority, Chattanooga, TN  
1975-76 Consultant, PEDCO-Environmental, Inc., Cincinnati, OH  
1977- Consultant, Nuclear Safety Associates, Bethesda, Maryland  
1977- Full Professor, University of Florida

SOCIETIES AND ORGANIZATIONS

American Nuclear Society; American Public Health Association; Chi Epsilon; Conference on Radiological Health; Florida Chapter of the Health Physics Society; Florida Chapter of the American Nuclear Society; Health Physics Society; International Radiation Protection Association; Sigma Xi, Tau Beta Pi, Omicron Delta Kappa

AWARDS, CITATIONS AND BIOGRAPHICAL MANUALS

American Men of Science, 1969; Who's Who in the South and Southwest, 1969

FIELDS OF INTEREST

Radiation protection, radiotracer techniques, industrial and radioactive waste environmental surveillance and radioecology.

PUBLICATIONS

Monographs: Author-one chapter, Co-author-one chapter

Referred Publications: 17, Examples: Health Physics, Bioscience, J. Sanit. Div. ASCE, Anal. Chem., Environ. Res., Amer. J. Publ. Health and Nat. Res. Environ. III.

Other Papers: 42, Examples: Proceedings of Health Physics Society Midyear Meeting, Contract Reports to Florida Power Corporation, Contract Reports to EPA, and Contract Reports to Florida Phosphate Council.

Presentations not Published in Proceedings: 22, Examples: Health Physics Society Annual Meetings, American Nuclear Society Annual Meetings, and State Meetings of Local ANS or HPS Chapters.

Consulting Reports: 20, Examples: Environmental Impact Statements, Radiological Assessments and Radioanalytical Results of Interpretation.



RECORD

Birth: May 1, 1934  
 Marital Status: Married

Place of Birth: Elysian, LeSueur County, Minn., USA  
 Children: Seven

EDUCATION

AB Mankato State College, Mankato, Minnesota (Biology, Chemistry) 1955  
 MS Univ. of Rochester, Rochester, N.Y. (Radiat. Biol.) 1956 (AEC Rad. Physics Fellow)  
 MPH Univ. of Pittsburgh, Pittsburgh, PA (Occup. Health) 1959 (AEC Ind. Hygiene Fellow)  
 PhD Univ. of Florida, Gainesville, FL (Environ. Engr.) 1967 (USPHS Rad. Health Trainee)

PROFESSIONAL EXPERIENCE

June 1956 - Aug. 1956 AEC Radiological Physics Fellow, Brookhaven National Lab.  
 Sept. 1956 - Aug. 1958 Health Physicist, Res. Div., Curtiss-Wright Corp.  
 July 1959 - Jan. 1965 Radiological Physicist, Fla. State Board of Health (FSBH)  
 Sept. 1967 - June 1972 Assist. Prof., Radiation Biophysics, Dept. of Radiology, Univ. of Florida  
 July 1972 - June 1973 Assist. Prof., Dept. of Environ. Engr. Sci., Univ. of Florida  
 July 1973 - Assoc. Prof., Dept. of Environ. Engr. Sciences, Univ. of Florida

PROFESSIONAL & SCIENTIFIC ORGANIZATIONS

Health Physics Soc. (Charter Member, Bd. of Directors 1974-1977); Fla. Chapter, Health Physics Soc. (Charter Member, Pres. 1969); Am. Public Health Assoc.; Am. Assoc. for the Advancement of Science; Am. Ind. Hygiene Assoc.; Fla. Sect., Am. Ind. Hygiene Assoc.; Am. Conf. of Industrial Hygienists; Soc. of the Sigma Xi.

AWARDS, CITATIONS AND BIOGRAPHICAL MANUALS

Certified by the Am. Bd. of Health Physics, 1961; Member of Am. Bd. of Health Physics; Am. Men & Women of Science; Who's Who in the South and Southeast; Personalities of the South.

FIELDS OF INTEREST

Health Physics; Environmental Radiation; Natural Radioactivity; Radiological Technics; Instrumentation; Occupational Health.

SELECTED PUBLICATIONS

- C. E. Roessler, G. S. Roessler, and B. G. Dunavant, "Unusual Behavior of Cesium in the Florida Biosphere," Jour., Fla. Academy of Sciences, 32, March 1969, No. 1, 1-11.
- C. E. Roessler, W. E. Bolch, J. F. Gmable and W. B. Johnson, Jr., "A Utility-Sponsored Environmental Surveillance and Radioecological Research Program for a Coastal Nuclear Power Plant" A. J. Pub. Health, 62, Oct. 1972, No. 10, pp. 1379-1386.
- C. E. Roessler, D. G. Price and D. S. Spencer, "A Hospital Plan for Emergency Handling of Radiation Accident Cases," Health Physics in the Healing Arts, (Symposium Proceedings DHEW Publication (FDA) 73-8029, pp. 517-527, March 1973.
- C. E. Roessler, W. E. Bolch, Jr. and C. Groome, "Uranium and Radium-226 in the Limestone Environment of Florida Phosphate Regions." Natural Radioactivity in Man's Environment (Proceedings, Tenth Midyear Topical Symposium, Health Physics Society, Oct. 1977).
- C. E. Roessler, B. G. Dunavant, and T. R. Turk, "An Occupational Health and Safety Program for a Major University," J. of Chem. Ed., 54, Page A77, Feb. 1977.
- C. E. Roessler, R. Kautz, W. E. Bolch, Jr., and J. A. Wethington, Jr., "The Effect of Land Reclamation on the Radiological Characteristics of the Terrestrial Environment of Florida's Phosphate Region." The Natural Radiat. Environ. III, (Symposium Proceedings, Health Physics Society, Oct. 1977).



UNSOLICITED PROPOSAL SUBMITTED  
TO THE DEPARTMENT OF ENERGY

BY

FLORIDA DEPARTMENT OF HEALTH AND  
REHABILITATIVE SERVICES

RADIOLOGICAL HEALTH SERVICES  
1309 Winewood Boulevard, Building 6  
Tallahassee, Florida 32301

PURPOSE: A STUDY BY THE UNIVERSITY OF FLORIDA UNDER CONTRACT WITH PROPOSER TO PREPARE A CONTINGENCY PLAN FOR "INTERIM" LOW LEVEL RADIOACTIVE WASTE (LLW) STORAGE, I.E., TEMPORARY STORAGE OF LLW THAT EXCEED THE DISPOSAL LIMITS OF EXISTING FACILITIES, UNTIL SUCH TIME THAT AN ADDITIONAL REGIONAL FACILITY FOR DISPOSAL OF THESE WASTES IS ESTABLISHED.

PROPOSED DURATION: TWELVE (12) MONTHS

AMOUNT REQUESTED: \$69,713.00

REQUESTED STARTING DATE: JULY 1, 1980

STATE GOVERNMENT AGENCY

PRINCIPAL INVESTIGATOR:

ULRAY CLARK  
ADMINISTRATOR, RADIOLOGICAL HEALTH SERVICES  
(904) 487-1004

BUSINESS CONTACT:


CHRIS MOORE  
GRANTS MANAGEMENT  
(904) 488-9490

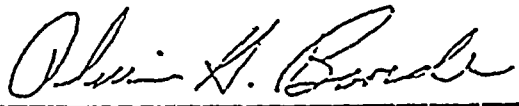
DATE OF SUBMISSION:

APRIL 1, 1980

OTHER FEDERAL, STATE OR LOCAL GOVERNMENT AGENCIES TO WHICH THIS PROPOSAL HAS BEEN SUBMITTED AND/OR THOSE FUNDING THE PROPOSED EFFORT: NONE

THIS PROPOSAL MAY BE SUBJECTED TO EXTERNAL REVIEW.

  
SIGNATURE OF PRINCIPAL INVESTIGATOR  
ULRAY CLARK  
ADMINISTRATOR  
RADIOLOGICAL HEALTH SERVICES

  
SIGNATURE OF AUTHORIZED OFFICER  
OLIVER H. BOORDE  
DIRECTOR  
CENTRAL OPERATIONS SERVICES

3-27-80  
DATE:

3-27-80  
DATE:



PLAN OF LOW LEVEL RADIOACTIVE WASTE

PURPOSE AND SCOPE: The attached is an unsolicited proposal for the preparation of an in-depth study by the University of Florida of In-State storage of Low Level Radioactive Waste under contract with proposer. The study will include a plan for "interim" low level radioactive waste (LLW) storage, i.e., temporary storage of LLW that exceeds the disposal limit of existing facilities, until such time that an additional regional facility for disposal of these wastes is established.

BACKGROUND INFORMATION: The events of the past several months regarding the closing of two of the three LLW disposal sites and the volume restrictions placed upon the major site serving Florida have precipitated a potential crisis, a similar situation faced by a number of other states. Inability to dispose of nuclear waste materials threatens to negate the benefits available to the public from the use of nuclear technology. Not have these benefits been more evident than in the field of nuclear medicine and research. Countless lives have been saved as a result of valuable contribution that radiopharmaceuticals have made toward improved diagnostic and therapeutic procedures. Also of great significance, is the substantial part being played by nuclear power electrical generating stations in supplying about 20% of the electrical needs of Florida.

Nuclear power reactors produce the greatest bulk of LLW generated in Florida. This waste consists of spent resins, filter sludges, evaporator bottoms and dry waste, such as contaminated clothing, paper and tools. Waste produced by medical and academic research facilities is composed of contaminated protective clothing, paper, equipment, and animals sacrificed after being injected with radioactive materials. Industrial LLW, in addition to contaminated materials previously mentioned, include left-over scrap material from manufacturing and mining recovery operations.

In most cases, LLW or nuclear waste, must, at present, be disposed of burial at one of the three waste facilities licensed by the States of Nevada, Washington, and South Carolina.

In July 1979, the Governors of the three States notified the Nuclear Regulatory Commission (NRC) of the serious and repeated disregard for rules governing the shipments of LLW to the burial facilities. Last October, the Washington and Nevada LLW facilities were temporarily closed by the Governors of those States in response to a series of such incidents. Both have reopened, but are threatened to be closed again if problems continue. In addition, the State of South Carolina has decided to impose volume restrictions on all shipments to the Barnwell site. South Carolina currently leases the Barnwell disposal site to Chem-Nuclear, Inc. Chem-Nuclear was advised by South Carolina that they must reduce annual shipments to the facility 50% by 1981. The shipments accepted were reduced from 200,000 to 189,000 cubic feet per month in November 1979 and will be reduced to 100,000 cubic feet per month by December 1981. The percentage



of reduction may not be applied equally for each state. It is not yet clear where Florida ranks in this regard.

In February 1980, the Department of Health and Rehabilitative Services learned that the Todd Shipbuilding Company in Texas had stopped receiving shipments of LLW for storage. This has added to the problem since it is estimated that some 6,000 to 12,000 cubic feet per year had been shipped to Todd from Florida. Several of our major universities will have to store LLW on campus until other arrangements are made.

The attached tables give a description of the total LLW generated in Florida.

In regards to capability of Florida Licensees to meet South Carolina's volume reduction requirements, Florida's four operating nuclear power reactors produce about 70% of the LLW generated in Florida. Both companies operating reactors are compacting LLW and at the present time have reduced volume as far as possible.

The Florida Power and Light Company (FPL), the operator of three reactors, produces approximately 3,500 cubic feet per month and has a 1,700 cubic foot allotment at Barnwell for February. FPL is currently making a study of their LLW and has reported that even if they do store on site they will not have a storage capacity in excess of 18 months. +

Florida Power Corporation (FPC) generates about 1,000 cubic feet of LLW per month when not in an outage. Outages produce about 4,500 cubic feet per month. The FPC Barnwell allotment is 1,400 cubic feet for February. FPC reports that they can store in two locations - inside the plant and just outside the plant fence. The company has plans ready for construction of a building to store their LLW.

Contracts with Florida Medical Licensees have indicated that, in general larger hospitals have the ability to store low level radioactive waste (LLW) on site for periods ranging from one month to twelve months. Since the radioisotope of choice in the majority of diagnostic procedures is technetium 99m, which has a half-life of six hours, the bulk of LLW can be decayed and disposed of as non-radioactive trash. The majority of the smaller hospitals have difficulty in storing LLW. Informants have stated that the waste storage situation in the Miami area has reached a critical state. Although hospitals and clinics are now making efforts to reduce volume, storage room is limited.

The majority of Florida's universities have used Rad Services, Inc. as their agent for disposal of LLW. Rad Services shipped the material to Todd shipyard in Texas where it remained in storage. In mid February Todd announced that it would no longer accept LLW for storage and on February 28, Rad Services reported to the Department of Health and Rehabilitative Services that they would no longer handle LLW of any kind.

Since Universities had not been using the Barnwell burial site, they did not receive an allotment and at the present time must ship

to the Hanford, Washington, or the Beatty, Nevada, site. This very expensive disposal method would force the universities to curtail research using radioactive materials. The universities are now storing LLW on campus and can continue to do so as long as space is available. They do not consider this method of storage desirable.

Industrial LLW accounts for about 15% of the total waste generated in Florida. These wastes are generally of long half-life but can be stored on company property. Industrial users have not expressed any immediate waste storage problems.

CONCLUSION: The Florida Department of Health and Rehabilitative Services has been assigned the lead agency role for developing a state plan for LLW emergency and temporary storage and disposal. It is proposed that the Department contract with the Department of Environmental Engineering Sciences, University of Florida, to conduct a study consisting of nine elements:

- 1) Background document
- 2) Analysis of the degree to which generation of initial volumes of LLW can be reduced
- 3) A review of current processing and waste treatment options
- 4) Protocol for liaison between generators and Federal agencies
- 5) Comprehensive State Plan for LLW storage and disposal
- 6) Specific strategies for emergencies
- 7) Inventory of available sites
- 8) Physical specifications for interim storage facilities
- 9) Economic scenario

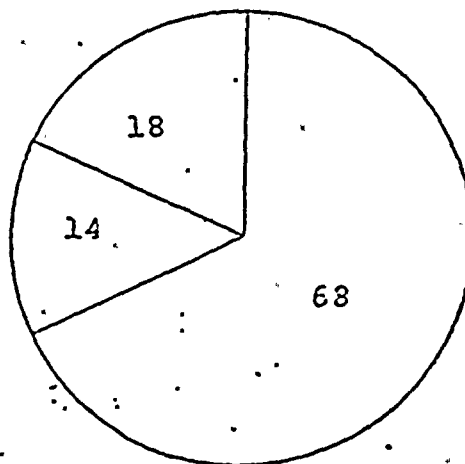
A final objective of the study is to provide a sound basis for promulgation of a State policy on LLW.

Total Low Level Radioactive Waste Generated  
Within the State of Florida  
(Percentages by Source)

Medical Facilities  
and Universities.  
18%

Commercial Power  
Reactor Wastes  
68%

Industrial Wastes  
14%



| Commercial Power Reactor Wastes                              |                   |        | (No. of Installations 3)           |
|--|-------------------|--------|------------------------------------|
| Waste Form   | cubic<br>feet/yr. | Ci/yr  | Typical<br>Radionuclides Half-Life |
| Spent resins, filter<br>sludges, and evap-<br>orator bottoms | 47,033            | 2,563  | <sup>51</sup> Cr 27.8 days         |
|  |                   |        | <sup>54</sup> Mn 313 days          |
|  |                   |        | <sup>59</sup> Fe 45 days           |
| Dry compressible<br>waste and contam-<br>inated equipment    | 45,091            | 477    | <sup>58</sup> Co 71.5 days         |
|  |                   |        | <sup>60</sup> Co 5.26 years        |
|  |                   |        | <sup>65</sup> Zn 243.7 days        |
| Irradiated com-<br>ponents                                   | 883               | 38,200 | <sup>134</sup> Cs 2.06 years       |
|  |                   |        | <sup>136</sup> Cs 13 days          |
|  |                   |        | <sup>137</sup> Cs 30.2 years       |
|  |                   |        | <sup>140</sup> Ba 12.8 days        |
| Total  | 93,007            | 41,240 | <sup>141</sup> Ce 32.53 days       |

| Medical Facilities & Universities  |                   |       | (No. of Installations 81)          |
|------------------------------------|-------------------|-------|------------------------------------|
| Waste Form                         | cubic<br>feet/yr. | Ci/yr | Typical<br>Radionuclides Half-Life |
| Biological<br>Scintillation Vials  | 2,013             | 8     | <sup>3</sup> H 12.3 years          |
|                                    |                   |       | <sup>14</sup> C 5730 years         |
| Solidified and<br>Absorbed Liquids | 10,487            | 40    | <sup>32</sup> P 14.3 days          |
|                                    |                   |       | <sup>35</sup> S 86.7 days          |
| Dry Trash                          | 1,660             | 6     | <sup>51</sup> Cr 27.8 days         |
|                                    |                   |       | <sup>67</sup> Ga 78.2 hours        |
| Total                              | 9,887             | 37    | <sup>99m</sup> Tc 6.007 hours      |
|                                    |                   |       | <sup>125</sup> I 59.7 days         |
|                                    |                   |       | <sup>131</sup> I 8.1 days          |
| Total                              | 24,046            | 91    |                                    |



FLORIDA

Industrial Wastes

(No. of Licensees N/A)

|  | <u>cubic</u><br><u>feet/yr</u> | <u>Ci/yr</u> | <u>Typical</u><br><u>Radionuclides</u> | <u>Half-Lif</u>  |
|--|--------------------------------|--------------|--|--|
| Estimated State Total                  | 119,209                        | unknown      | U 238<br>H 3<br>C 14<br>Pm 147         | $4 \times 10^9$<br>12.3 year<br><del>5,730</del><br>2.6 year |
| Total Volume Generated<br>Within State | 136,261                        |              |  |  |