

REPORT AND EVALUATION OF THE
GEORGIA RADIATION CONTROL PROGRAM
FOR THE PERIOD
JULY 15, 1980 TO NOVEMBER 25, 1981

12th REGULATORY PROGRAM REVIEW

STAFF REPORT AND EVALUATION OF THE
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The twelfth Regulatory Program Review meeting with Georgia RCP representatives was held during the period November 9-10, 1981 in Brunswick, Georgia, and November 11-25, 1981 in Atlanta, GA. The State was represented by Bobby G. Rutledge, Carol Connell and Jerry Morris from the Department of Human Resources (DHR), and Jim Setser and William Cline from the Department of Natural Resources (DNR). Richard L. Woodruff was the reviewer representing the NRC from the Region II office in Atlanta. The reviewer conducted a visit to the DHR Brunswick, GA office on November 9-10, 1981; accompanied two DHR inspectors on November 17, 1981, and conducted a review of the DHR files during the period November 16-24, 1981. A review of the DNR support of the program was conducted on November 25, 1981. A summary meeting regarding the results of the administrative aspects of the DHR regulatory program review was held with Andy Cardin, Scott Sprinkle, and Bobby Rutledge on November 23, 1981.

Conclusions

The Georgia program for control of agreement materials is adequate to protect the public health and safety but a finding regarding compatibility cannot be made pending adoption of the newly revised "Rules and Regulations for Radioactive Materials" becoming effective.

The Georgia program is deficient in the following areas:

1. The regulations in use have an effective date of 1975. The "Rules and Regulations for Radioactive Materials" were in the process of being revised during the previous review and still have not received an effective date from the Secretary of State.

This comment relates to a Category II indicator "Updating of Regulations" and is a significant problem.

2. The program has had several Directors over the past two years and the program was reorganized under the Office of Regulatory Services in July of 1981; however, the Director's position has not been made permanent. This impacts on all phases of the program.

This comment impacts on a Category I indicator "Status of Inspection Program" and is significant.

3. Technical committees, Federal Agencies, and other resource organizations should be used to extend staff capabilities for unique or technically complex problems. During the review, management stated that a "Radiological Health Advisory Committee" was being established; however, specific details as to the committee function, membership, length of appointments, and meeting frequency were not available.

This comment relates to a Category III indicator, "Technical Advisory Committees", and is minor.

4. Operating funds should be sufficient to support program needs such as: staff travel to conduct routine and special inspections; responses to incidents and other emergencies; instrumentation and equipment to support the program; and, administrative cost of program support and salaries. The possibility of a program budget cut was discussed during the review and management stated that consideration was being given to the development of a "fee" system. In view of the increased cost of travel and the need to reduce the number of overdue inspections, we believe the budget must be maintained and strengthened in every way possible.

This comment relates to a Category II indicator, "Budget", and is of significance.

5. During the review, the program director stated that he had plans to develop a policy manual for each of the program sections. We believe that internal guides and policy memoranda are necessary to assure that the staff performs its duties as required and to provide a high degree of uniformity and continuity in regulatory practices, especially where regional offices are utilized. These procedures should, as a minimum, address internal processing of license applications, inspection policies and procedures, decommissioning, interagency or interdepartmental procedures, enforcement actions, public relations and policy on press releases.

This comment relates to a Category II indicator, "Administrative Procedures"; however, it is a minor comment.

6. The program director stated to the reviewer that he had planned to computerize licensing, inspection and compliance statistical data within the next two or three months. The staff supports this method for management to assess program trends and needs, and to receive periodic reports on the status of regulatory actions. The current manual "card" system in use is accurate, but is a time consuming means of data management.

This comment relates to a Category II indicator, "Planning"; however, the comment is minor.

7. It was noted during the review that the time devoted to staff training was approximately 8% of the total available time. This overall staff level of training effort is normal; however, a considerable amount of this time was by one individual who attended the ten-week course at Oak Ridge Associated Universities. It was noted that only one staff member has completed the

core courses in Orientation, Radiography, Medical Uses, and Inspection Procedures, and no staff member has attended the Seminar on Calibration of Teletherapy Machines.

This comment relates to a Category II indicator, "Training"; however, the comment is minor.

8. The program has an established inspection priority system that is compatible with the priority system used by the NRC; however, the number of licenses overdue for inspection has increased to 21%. The Southern Region has 30% of the licenses overdue for inspection, but most of these overdues are in the lower priority categories. The overdue inspections are directly related to the staff time available for inspection activities.

This comment relates to a Category II indicator, "Inspection Frequency", and is significant.

9. During the visit to the Regional Office, it was noted that velometers and smoke tubes were not available for the inspector's use. During the inspection accompaniments, it was noted that the nuclear medicine facility was not evaluated to determine if the facility engineering controls were adequate to control potential airborne releases.

This comment is related to a Category II indicator, "Independent Measurements"; however, the comment is minor.

10. In general the staff should be commended on the quality of their inspections; however, during the accompaniments, the reviewer noted that considerable time was utilized at the beginning of the inspection for a records review. After the entrance interview, the inspectors should:
(a) conduct a tour of the operations and facilities to observe security, housekeeping, availability of safety equipment, posting and labeling, etc.;
(b) observe operations to determine if protective equipment is being utilized; and
(c) interview selected workers and auxiliary personnel to determine the level of instruction and training provided to the workers. The inspection should assess the effectiveness of management's role in the radiation safety program, particularly management's awareness of the safety program, reports to management, internal audits, the corrective actions taken, and the ALARA program. The record system must be evaluated to determine if the system is working, if the records are reviewed by the RSO and management and to document compliance.

This comment relates to a Category II indicator, "Inspection Procedures"; however, the comment is minor.

These conclusions are based on the review of the technical and administrative aspects of the State's regulatory program for controlling agreement materials. Included in this review were examinations of selected license and inspection files, the program indicators specified in the NRC "Guide for Evaluations of

Agreement State Radiation Control Programs", the accompaniments of State inspectors, the review of all licenses issued by Georgia since July 15, 1980, and our continuing exchange of information program.

Summary of Discussion with Representatives of Commissioner Joe Edwards, Ph.D

A summary meeting to present the results of the regulatory program review was held with Andy Cardin, and Scott Sprinkle on November 23, 1981 in Atlanta, GA. Bobby Rutledge, Acting Director, Radiological Health Section attended the meeting.

The following comments and recommendations were made to Messrs. Cardin, Sprinkle and Rutledge:

1. It was noted that the 1975 revision of the Georgia "Rules and Regulations for Radioactive Material" were being revised during the previous review in 1980, and still had not become effective. It was stated that the reviewer could not offer a finding of compatibility until the regulations became effective.
2. The agreement materials program presently has a staffing level of 0.8 person-years per 100 licenses which is below the NRC recommended range of 1.0 - 1.5 person-years per 100 licenses, and is beginning to affect the compliance program, specifically the ability to maintain the inspection schedule. Overall, 21% of the licenses are overdue for inspection and 30% of the Southern Region licenses are overdue. It was recommended that an inspection schedule be developed that will reduce the number of overdue inspections.
3. It was noted that the program has had several Directors over the past two years and that the program was reorganized under the Office of Regulatory Services in July of 1981; however, the Director's position had not been made permanent and the reviewer recommended that the position be made permanent as soon as possible.
4. It was stated that the reviewer was still evaluating some of the license and compliance files and that the technical comments would be summarized with Mr. Rutledge and his staff. The Commissioner would receive a letter confirming our summary discussions along with a copy of the technical comments that would be sent to Mr. Rutledge.
5. It was noted to Mr. Cardin that the reviewer was pleased to learn that management had been holding staff meetings with the Southern Region and reviewing their activities for uniformity. The reviewer also acknowledged that management had initiated plans for the (a) computerization of licensing and inspection data, (b) establishment of a Radiation Advisory Committee, (c) preparation of a policy manual to identify goals and priorities, and (d) was considering asking the legislature for a fee system. In response to the representatives' comments, Mr. Cardin stated that they would be awaiting our letters and that the comments would be given prompt consideration.

Program Changes Related to Previous NRC Comments and Recommendations1. Comment to Dr. Edwards, Commissioner, DHR

It was commented that to make the State program fully compatible with the Commission's program, the State needed to update its regulations for agreement materials. This was noted in the previous two reviews.

Recommendation

It was recommended that the State update their Regulations for Radioactive Materials and establish a frequency for reviewing and updating the regulations in the future.

State Response

Dr. Edwards responded that the regulations for agreement materials were currently undergoing revision by the staff and should be completed by September 1, 1980. A review period frequency was established for every two years.

Present Status

The final draft of the updated regulations had not been officially approved with an effective date, as of this review.

2. Comment to Dr. Edwards, Commissioner, DHR

It was commented that the program director's position was still vacant and that filling this position would provide other staff members more time to devote to the day-to-day licensing and compliance functions.

Recommendation

It was recommended that the program director's position be filled as soon as possible by an individual with strong credentials in the technical aspects of the program as well as administrative capabilities.

State Response

Dr. Edwards responded in a letter dated August 28, 1980, that the Merit System had a "freeze" on that position, but he was requesting the "freeze" be lifted and that the position would be filled as soon as the freeze was lifted and the proper person found.

Present Status

The Radiological Health Section was administratively reorganized under the Office of Regulatory Services, and an administrative person was assigned as Acting Director of the Radiological Health Section.

3. Comment to Dr. Edwards, Commissioner, DHR

It was commented in part that there seems to be some difference of opinion or understanding as to the responsibilities of DHR and DNR staff regarding investigations of incidents.

Recommendation

It was recommended to Dr. Edwards that the responsibilities (of DHR and DNR staff) should be clearly defined before misunderstandings contribute to the seriousness of any incident being investigated.

State Response

Dr. Edwards responded in his letter of August 28, 1980, in effect, that he was directing his staff to investigate the question and to take the necessary steps to resolve the matter.

Present Status

The staffs of DHR and DNR have an agreement that emergency notifications will all go first to DNR and if DHR licensees were involved, then DHR will be notified and DHR will have the responsibility of handling the incident.

4. Comment to Mr. Schuman, Acting Director, RCP

It was commented that there was some lack of understanding among program staff as to who in the Radiation Control Unit could issue emergency orders, and it was noted that a listing of phone numbers was available to the staff of persons to call for assistance on issuing emergency orders. However, these persons of the State's legal staff could not be identified by name.

Recommendation

It was recommended that the persons that could issue "emergency orders" be identified in the "Enforcement Manual", and that individuals who could be called for assistance be added to the phone list.

State Response

The State responded that the legal question regarding authority in the Radiological Health Unit to issue orders was being addressed by the Department's legal staff. Also, appropriate members of the State's legal staff and their telephone numbers were being identified and this information would be included in the emergency telephone list.

Present Status

The State has added home and office phone numbers of the Commissioner and Deputy Commissioner to the emergency telephone directory.

5. Comment to the Acting Director, RCP, Mr. Schuman

It was commented in part, that the Brunswick office operations were performed with a minimal amount of direction, but there was a need to establish more direct administrative control over the regional office and that oversight functions by the Atlanta office should be performed through periodic review of selected licensing actions, and inspection and investigation reports. Several recommendation actions were made as follows:

Recommendation A

It was recommended that more direct administrative control be established over the Brunswick office operations.

State Response

The State responded in part that the Brunswick office enjoyed the same technical and administrative control that the professional staff in the Atlanta office enjoyed, that a higher degree of administrative control would be established should the Brunswick office expand beyond a one-man operation, and that filling of the vacant Director's position would allow expansion of the administrative control to physical on-site visits to the Brunswick office on at least an annual basis.

Present Status

The Brunswick office remains a one-man office; however, the materials section chief makes an onsite visit to the Brunswick office on a quarterly basis to review license and compliance files. The Brunswick office also submits copies of licenses and inspection and investigation reports to the Atlanta office on a routine basis.

Recommendation B

It was recommended that a guide or directive be developed which instructs the Regional office of its responsibilities and directs how the office will operate in all aspects of regulatory matters.

State Response

A directive will be developed which will instruct the Brunswick office of its responsibilities and direct how it will operate in all aspects of regulatory matters. This will occur after the vacant Director's position is filled. The State also responded that the lack of formal directive had not appeared to be a problem in the past.

Present Status

The present Acting Director has been on the job a few weeks and he stated that a formal policy manual was in preparation.

Recommendation C

Oversight functions by the Atlanta office should be performed through periodic review of selected licensing actions and inspection and investigative reports.

State Response

Onsite reviews of the Brunswick office will be made annually and will complement the regularly established communications. The Brunswick office would also review the Atlanta office.

Present Status

The present section chief visits the Brunswick office at least on a quarterly basis for the purpose of reviewing selected license files, investigation and inspection reports.

Recommendation D

It was recommended that minutes of meetings, between members of the two offices be prepared and placed on file in both offices.

State Response

Minutes of meetings between members of the Atlanta office and the Brunswick office will be prepared and placed on file in both offices.

Present Status

Record of the meetings and office visits and correspondence are on file in both offices.

Recommendation E

It was recommended that copies of license and compliance files as well as license applications should be maintained at the Atlanta office.

State Response

The State did not believe that the cost of a duplicate set of documents was justified, but a centralized computer file would be maintained containing key information such as licensee name and address, responsible individual, expiration date, inspection due date, and violations disclosed during previous inspections.

Present Status

The computer file is being updated to include additional information and the work is scheduled for completion by early 1982.

6. Comment to Mr. Schuman, Acting Director of the RCP

It was commented during the file review that the NRC staff noted some tendencies towards periodic weaknesses in licensing and incident investigation procedures.

Recommendation

It was recommended that the State should prepare and use licensing check-off sheets for each type or category of license, and prepare a written set of instructions or procedures for conducting investigations of incidents.

State Response

The state responded that licensing check-off sheets will be prepared and used, using NRC sheets already on file as a guide, and that assistance had been requested from the conference of Radiation Control Program Directors for written investigative procedures.

Present Status

The technical staff has preferred to use the licensing guides rather than check-off sheets for quality control, and investigative guides were developed in outline form.

7. Comment to Mr. Schuman, Acting Director of the RCP

Details of the inspector accompaniments were discussed with Mr. Simanis and it was noted that the new inspectors would also be involved in the licensing process.

Recommendation

It was recommended that the two new inspectors that were accompanied enroll in NRC's inspection procedures course and in other NRC courses.

State Response

The inspectors have been enrolled in the inspection procedures course and one attended the orientation course in regulating practices and procedures.

Present Status

The State continues to enroll their inspectors in the NRC courses as the courses become available.

ORGANIZATION

Legal Authority

There have been no changes in the statutory authority designating State radiation control agencies during this review period. The Georgia Radiation Control Act of 1964 was amended in 1976 and 1979. Copies of this Act and the amendments are located in the files. The 1979 amendment to the Radiation Control Act amended the code Section 88-1306 and Section 88-1306.1. Section 88-1306 provided for power and duties assigned to the Department of Human Resources and Section 88-1306.1 provided provisions for the establishment of Radioactive Waste Facilities within the State.

After the amended act of 1976, a Memorandum of Understanding (MOU) was developed between the Environmental Protection Division of the Department of Natural Resources (DNR) and the Department of Human Resources (DHR) to establish a cooperative mechanism between DNR and DHR with respect to the control of radioactive materials whereby regulatory programs can be maintained to prevent any harmful affects of radiation on the health and safety of the public. This document sets forth policy and responsibilities of each of the respective departments. The MOU was modified and amended on July 18, 1979, in order to facilitate implementation of an executive order from the Governor dated April 5, 1979, that transferred primary responsibility for peace time radiological emergency response from DHR to DNR. In essence, the MOU and the Radiation Control Act establishes DNR as the lead agency for developing radiological emergency response capabilities and for coping with any radiological emergency at any major fixed nuclear facility or a transportation incident involving radioactive material which may affect or threaten to affect the State of Georgia. DHR will respond and handle all emergencies associated with its licensees and DNR will provide environmental field monitoring services and laboratory support of radiological incidents to DHR on an as-required basis.

Location of Radiation Control Program Within the State Organization

The RCP is located in the Department of Human Resources under the Office of Regulatory Services. This is a change in organization from that reported during the last review. The RCP was formerly located in the Division of Physical Health which is also part of DHR. The Commissioner of DHR is Dr. Joe Edwards, who reports to the Board of Human Resources, who in turn, report directly to the Governor's Office. The Office of Regulatory Services is headed by Mr. Scott Sprinkle. Mr. Sprinkle has three other sections in his department in addition to the radiological section. These sections are Standards and Licensure, Child Care Licensure, and Laboratory Licensure. Organizational charts showing the Department of Human Resources, the Office of Regulatory Services, and the Radiological Health Section are provided in Appendix A.

The Department of Natural Resources organization will be discussed under the Environmental Surveillance Section. The Department of Natural Resources is in a parallel organization respective to the Department of Human Resources.

Internal Organization of Radiation Control Program

The Radiological Health Section, located in the Office of Regulatory Services is comprised of three units. One unit is a data management unit and has one person, another unit made up of six people comprises the x-ray unit and is responsible for the registration and regulation of all machine producing radiation and non-ionizing radiations. The radioactive materials unit is headed by Carroll A. Connell and has one secretary, and three radiation specialists. The fourth radiation specialist heads up the South Georgia Region and this person is responsible for license reviews, compliance activities and emergency response capabilities in all South Georgia counties. The Southern Region receives administrative support from the Coastal Area Health Office but all technical support comes directly from the Radioactive Materials Unit in Atlanta. The Southern Regional Office in Brunswick was visited on November 9, 1981. A discussion of this visit is included in this report as Appendix B. The Program Director stated that the Radiological Health Section was comparably located to the Commissioner and the Office of Regulatory Services as any of the other sections. The reorganization has placed additional emphasis within the Radiological Health Section of obtaining more direct lines of communication within the Regional Office and on major program functions to provide a direct line of supervision and lines of communication between the two offices.

Legal Assistance

Legal staff has not been assigned directly to the Radiation Control Program (RCP); however, legal staff is available under the Office of Regulatory Services. The legal staff is apparently becoming more knowledgeable regarding the RCP Program statutes, regulations and possible needs as the legal staff is taking an appeal case and working with the MOU with DNR. The appeal case is the legal activity involving the Luminous Processes facility in Athens, GA. This has been previously discussed in the 1980 review.

Technical Advisory Committee and Consultants

The Medical Advisory Committee as outlined in previous reviews is no longer functioning. No meetings have been held and no actions taken by the Medical Advisory Committee since the last review. A Radiological Health Advisory Committee has been proposed by the Program Director and is shown in the attached organizational chart in Appendix A. The Program Director stated that this committee when formed would be only advisory in nature and the statutory authority of the Radiological Health Unit would not be altered. The Program Director also stated that the committee, when established, would be composed of a variety of medical disciplines, including members of private industries and academic disciplines. The Program Director stated that the State would not hesitate to call on the NRC or the NRC consultants if needed. The State has a medical ad/hoc committee that can be called upon in case medical consultation is needed. This committee is composed of the following members: John Watson, M.D., Radiologist; Mark Brown, M.D., Radiologist; Gerald Capland, M.D., Radiologist; Robert Rohr, PhD., Medical Dosimetry.

MANAGEMENT AND ADMINISTRATIONEmergency Response Plans

There have been no changes to the State Radiological Incident Response Plan for local emergencies involving Agreement Materials since the last review. It should be noted that DNR has the lead responsibility for fixed facility emergencies and transportation type emergencies. DHR has a support role for fixed nuclear and transportation type accidents also. The Radiological Health Unit Radiation Emergency Handbook has been updated periodically to reflect changes in personnel and phone numbers, and a copy is on file. The emergency handbook was updated July 21, 1981. The handbook includes: (a) an incident data form; (b) names, organization and telephone numbers of emergency team members; (c) describes duties of the radiological emergency response coordinator and describes actions to be taken based upon the category of the emergency; (d) contains a radiological emergency telephone directory; (e) provides instructions for transportation incidents in accordance with the severity of the accident; (f) describes the duties of emergency response teams and describes the duties of the emergency monitoring teams; (g) has telephone directories for radiological emergencies involving the Edwin I. Hatch facility; (h) principal Alabama Power staff contacts on State and Federal level; (i) a listing of medical facilities with capabilities for caring for radiation accident victims; (j) listing of radiological emergency medical consultants; (k) has re-entry guidelines for fixed nuclear facilities, protective action guides, emergency information and forms for evacuees; (l) bioassay forms for the collection of urine; and, (m) an emergency radiological assistance telephone directory.

DNR which has the prime lead responsibility for responding to fixed facility emergencies and transportation type accidents, has published a manual entitled, "First Responder's Handbook on Radiation Emergency Response and Protective Actions". This handbook discusses radiological accident assessment procedures, immediate response actions, notification procedures, and has annexes dealing with civil defense survey meter operating instructions, location of radiological survey meters in Georgia, contamination guidelines for emergency response personnel and information recording forms. DNR has also published radiation emergency information entitled "Georgia Department of Natural Resources Environmental Protection Division Environmental Radiation Program", dated July 1980, Revision 1. This document has an "emergency radiological assistance" telephone directory and denotes immediate actions to be taken in the event of a radiation accident; a listing of State and local law enforcement agencies; instructions to fire departments; a guide for distinguishing agents containing radioactive material; instructions to ambulance squads; information recording forms; and description of transportation type labels. Copies of these DNR documents have been placed in the appropriate files.

Budget

The State Radiation Control Program continues to be entirely funded by State general funds. The fiscal year runs from July 1 through June 30. The radiological health budget for FY 82 is \$394,408 for the entire section, of which the agreement materials program will receive \$125,496. This represents an increase

in the total budget of \$26,418. This increase has been primarily due to salary increases within the Radiation Control Program. The level of funding in dollars per license is approximately \$220 per license for FY 82.

The program director stated that DHR was working on a materials license and x-ray registration fee system that could be introduced during the next legislative session; however, it was emphasized that the revenue from these fees must be structured to provide an overall gain in the Radiation Control Program or the fee system would not be recommended by DHR. Some legislators proposed that fee system revenues would go into the general budget and that the operating funds for the Radiation Control Program be reduced by the corresponding amount. The program director stated that a fee collection system would not be pursued unless this aspect of the fee system can be resolved before the system is introduced into the legislature. The possibility of a program budget cut was discussed during the review and management agreed that the operating budget should be sufficient to support program needs such as travel to conduct routine and special inspections, responses to incidents, and other emergencies, instrumentations and equipment to support the program, administrative cost of program support, salaries and the increase in travel costs. It was recommended to management that they continue to explore all methods of strengthening the budget, including development of the fee system for supplemental support of the budget.

Administrative Budget

As noted previously, the RCP was reorganized under the Office of Regulatory Services in the Summer of 1981 and a program director was not assigned to administer the radiation program until September 1981. This position is still filled only in an acting capacity. Because of this reorganization, current internal guides and policy memoranda had not been developed at the time of the review. The reviewer commented that internal guides and policy memoranda are necessary to assure that the staff performs its duties as required and to provide a high degree of uniformity and continuity in regulatory practices, especially where regional offices are utilized. It was recommended that the program director continue to develop and implement an administrative procedures manual that would address internal processing of license applications, inspection policies and procedures, decommissioning, interagency or interdepartmental procedures, enforcement actions, public relations and policy on press releases. It should be noted that for several months during this previous fiscal year, the technical staff was required to perform the administrative functions as necessary and as the need developed.

There have been no changes in the policies established for handling public relations problems and press releases. Although specific policies were not available at the time of the review, the State has experienced several public relation type exercises since the last review with no apparent negative consequences. These cases involved the activities around the Luminous Processes plant at Athens and also an incineration license and permit that was issued to the University of Georgia.

There have been no changes in the establishment of the public document room since the previous reports.

The technical staff has developed licensing guides for medical uses at institutions, guides on acceptable training and experience for medical uses of radioactive materials, on composition of medical isotopes committees, guides for specific procedures for medical applicants, guides showing precautions to follow and caring for patients treated with therapeutic quantities of radionuclides, guides for supporting documentation on xenon-133 use, teletherapy licensing guides, teletherapy survey reports, and guides concerning prenatal radiation exposures. These guides are comparable and analogous to those used by NRC and they are distributed to applicants upon request. All of the guides have been previously reviewed by NRC reviewers. These guides are used uniformly between the Atlanta office and the Southern Regional Office located in Brunswick, GA.

Statistical information is compiled on the RCP and provided to NRC on a timely basis. The program director stated that he had plans to upgrade the handling of statistical data as one of his priority items.

Planning

Because of the aforementioned changes in program management, the program director has not had an opportunity to fully assess workload trends, resources, and changes in legislative and regulatory responsibilities to forecast needs for staff equipment services and funding. The program director stated that he planned to computerize licensing inspection and compliance of statistical data within the next two or three months. The current manual card system in use is accurate but it is a time consuming means of data management. The reviewer recommended to the program director that he continue his efforts to computerize licensing inspection enforcement data as a management planning tool.

Laboratory Support

DHR does not have in-house capability for laboratory services. All laboratory type equipment was transferred to DNR with the responsibility for environmental monitoring and emergency operations. The MOU between DNR and DHR provides for laboratory support to DHR on an as-needed basis. The laboratory support services apparently have been adequate to meet the needs of DHR and no problems with this arrangement have surfaced since the last review. The laboratory services available at DNR and the equipment will be discussed further under the Environmental Surveillance Section.

Office Facilities, Equipment, and Support Services

The Radiation Control unit is physically located in the Georgia Mental Health Institute. Utilities and office space cost do not come out of the unit budget. The office is apparently adequate for the Radiological Program Unit needs. The program director has a secretary and each of the sections has a secretary for support of the technical staff. There is only one secretary in the Agreement Materials Program; however, program management believes that this is adequate for

the program needs. As previously noted, the FY 83 budget calls for additional expenditures for a computer system to handle data management. Also, additional clerical support can be obtained from the Office of Regulatory Services if needed and on an emergency basis.

Public Information

Inspection and licensing files are made available to the public upon request after they have been sanitized with the removal of personal names and protected procedures and processes relative to the licensee's operation. Public information and proprietary information is handled in accordance with State laws. There have been no changes since the previous review.

PERSONNEL

Qualifications

All professional staff are required to have a bachelor's degree or equivalent training in a physical or natural science, or an engineering field related to radiological health, from a four year college or university.

After the last review it was recommended to the Health Commissioner that the RCP director's position be filled as soon as possible by an individual with strong credentials in the technical aspects of the program as well as administrative capabilities. Under the reorganization of the Radiological Health Section, under the Office of Regulatory Services, the program director position is still vacant; however, as previously noted a person has been assigned as Acting Director of the Radiological Health Section. The acting director does not have a strong technical background; however, he has had extensive experience at administrative capacities within the Health Department in other divisions of DHR. During the close-out meeting with the Commissioner at the close of this review, the reviewer strongly recommended that the program director's position be made permanent as soon as possible. At the time of the review, a position description for the program director's position had not been prepared.

Number of Personnel

There have been no changes in the numbers of professional staff since the last review meeting. A listing of the professional personnel is included in the organization chart under Appendix A. This chart shows one vacant environmental radiation specialist position; however, after the closeout with the Commissioner, it was noted that this vacant position would be filled the following week by a previous employee. This individual's resume is on file from previous reviews and he has considerable experience with the Radiation Materials Program.

Excluding management and clerical personnel, the State has five full time professional positions to conduct the activities of the Radioactive Materials unit; however, some of these persons have not been available full time during the past year and some have been in a training category. The person year effort devoted

to the agreement materials program over the past year has been 4.5 persons per 567 licenses or a ratio of 0.8 which is less than the 1.0 to 1.5 person years per 100 licenses recommended by the NRC.

The program director stated that four additional professional persons had been requested in the RCP FY 83 budget. If approved these persons would be utilized throughout the program, both in the x-ray section and agreement materials program. However, final approval of this budget had not been obtained as of the date of this review.

Duties

The Radioactive Materials Unit Chief is headed by Carol Connell. The Southern office located in Brunswick is staffed by Jerry Morris, Senior Principal Environmental Radiation Specialist. Thomas E. Hill, William L. Slocumb and Willard D. Ingram are Senior Environmental Radiation Specialists located in the Atlanta office. The senior personnel review applications and inspect licenses independently and monitor the work of junior personnel. Since the last review, one professional has been transferred to the x-ray unit and one person, William L. Slocumb, has been hired. The following table lists the professional personnel in the Radioactive Materials Unit, the full-time effort (FTE) devoted to the program since the last review and the major duties assigned to each person.

| <u>INDIVIDUAL</u> | <u>FTE</u> | <u>DUTIES</u> |
|-------------------|------------|--|
| C. Connell | 1 | Supervision, licensing reviews and technical direction |
| J. Morris | 0.75 | Southern Regional Office, licensing reviews, independent inspections, and emergency response |
| T. Hill | 1 | License reviews, independent inspections |
| W. Slocumb | 1 | License reviews, inspections, under supervision |
| W. Ingram | .75 | License reviews, independent inspections and special projects |

It should be noted from the above chart that the FTE for J. Morris of 0.75 reflects that 25% of his time is utilized in training of State and County personnel in emergency response capabilities and performing other emergency response matters associated with fixed nuclear facility emergency exercises.

Training

Since the last program review, considerable training among the professional staff has occurred as follows:

WILLIAM L. SLOCUMB

| <u>Course</u> | <u>Sponsor</u> | <u>Location</u> | <u>Date</u> |
|--|----------------|-----------------|----------------------|
| Industrial Radiography for State Regulatory Personnel | NRC | Baton Rouge, LA | 5/31/81 - 6/5/81 |
| Radiological Emergency Response Course | FEMA | Las Vegas, NV | 8/27/81 - 9/4/81 |
| Troxler Electronic Laboratories Training Course for Use of Nuclear Testing Equipment | Troxler | Atlanta, GA | 2/17/81 - 2/18/81 |
| Radiological Emergency Response Training Program | GEMA | Atlanta, GA | 9/4/80 - 2 day |

THOMAS E. HILL

| <u>Course</u> | <u>Sponsor</u> | <u>Location</u> | <u>Date</u> |
|--|----------------|-------------------------|----------------------|
| Training Course for the Use of Nuclear Testing Equipment | Troxler | Atlanta, GA | 1/17/80 - 1/18/80 |
| Ten-Week Health Physics Course | NRC | Oak Ridge, TN | 2/25/80 - 5/3/80 |
| Radiological Emergency Response Training Program | GEMA | Atlanta, GA | 9/4/80 |
| Orientation Course in Regulatory Practices and Procedures | NRC | Silver Springs, MD | 9/14/80 - 9/26/80 |
| Radiological Emergency Response Training for State and Local Government Emergency Preparedness Personnel | FEMA | Las Vegas & Mercury, NV | 6/16/81 - 6/27/81 |
| Incineration of Low-Level Radioactive Waste | GA-DHR | Raleigh, NC | 9/29/81 - 10/2/81 |

JERRY W. MARRIS

| <u>Course</u> | <u>Sponsor</u> | <u>Location</u> | <u>Date</u> |
|--|----------------|------------------------------------|---------------|
| Radiation Emergency Seminar | GA-DHR | Tampa, FL | 1/30 - 2/1/81 |
| Occupational Health Workshop for Public Health Employees | GA-DHR | GA Southern College Statesboro, GA | 4/14-15/81 |
| Handling Toxic Materials University of GA | GA-DHR | Statesboro, GA | 7/1/81 |

WILLARD D. INGRAM

| <u>Course</u> | <u>Sponsor</u> | <u>Location</u> | <u>Date</u> |
|--|----------------|--------------------|-------------------|
| Radiological Emergency Response Training For State and Local Government Emergency Preparedness Personnel | FEMA | Las Vegas, NV | 5/77 |
| Health Physics and Radiation Accidents | GA-DHR | Oak Ridge, TN | 1/78 |
| Inspection Procedures | NRC | Glenn Ellyn, IL | 3/79 |
| Regulatory Practices and Procedures | NRC | Silver Springs, MD | 9/79 |
| Safety Aspects of Industrial Radiography | NRC | Baton Rouge, LA | 8/23/81 - 8/28/81 |

From the evaluation of the above training received by the program employees, it should be noted that W. Slocumb has not received the NRC core courses on orientation and medical uses. T. Hill has not received the core courses on radiography, medical uses, or inspection procedures. J. Morris has not received any of the NRC core courses; however, he is a principal senior environmental specialist with considerable training and experience and it is felt that he would benefit from the core courses. However, he has difficulty getting away from the one-man office located in Brunswick, GA. C. Connell has received the core courses in orientation, radiography inspection procedures and she is a certified nuclear medicine technologist. W. Ingram has not received the medical use course. It should also be noted that none of the Georgia professional personnel have received the NRC-sponsored course "Teletherapy Calibration".

Since the last review, the staff has received a total of 102 days of training and when compared with the potential working days of 1250 days, this ratio is equivalent to about 8% of the total available time utilized in staff training. This overall staff level of training effort is normal; however, a considerable amount of this time was by one individual who attended a ten-week course at Oak Ridge Associated Universities. It is recommended to the program director that he continue to send the staff to NRC-sponsored courses as the courses and space become available and that he also consider utilization of short courses, seminars, or workshops as appropriate to train the Atlanta office and the Southern Regional staff.

Salaries

The salary levels for the agreement materials program as of the date of this review are as follows:

| <u>Position</u> | <u>Pay Grade</u> | <u>Salary Range</u> |
|---|------------------|---------------------|
| Principal Environmental Radiation Specialist | 34 | \$18,564 - 28,704 |
| Senior Environmental Radiation Specialist | 30 | \$15,684 - 24,108 |
| Environmental Radiation Specialist | 27 | \$13,842 - 21,138 |
| Associate Environmental Radiation Specialist | 25 | \$12,780 - 19,386 |

These salaries were in effect as of July 1, 1981 and they are distributed over an 11-year period. At the entry level the employee is given a promotion at the end of six months. Thereafter, the employee is eligible for yearly grade increases until he has reached grade 7. After grade 7 the employee is eligible for salary step increases at the rate of one step every three years. In addition to the scheduled step increases, the legislature, on occasion, will provide cost of living increases that are factored into each pay grade and salary level. As of this review, the staff is authorized two principal environmental radiation specialists, and three senior environmental radiation specialists.

Staff Turnover

In the past the program has experienced considerable turnover at senior staff levels. This turnover was not only in the key professional staff, but also at the administrative level. There have been a number of staff turnovers at the program directors level during the past two years.

There has been no staff turnover since December 1980 when Mr. Simanis left the program. It is recognized by the program management that the State is a training ground for professional personnel, as they can be brought in right out of college

with a minimum of experience and after attending NRC core courses and other type courses and gaining experience, they are sometimes hired by private industry. It is believed that the staff, through the State Merit System, has opportunities for promotion and competitive salaries and when compared with other states, the Georgia program ranks in the lower half of the salary ranges prepared by NRC for all Agreement State median salary ranges.

Recruiting

Written job descriptions are prepared for all the professional positions in accordance with the State Merit System regulations. These job descriptions and job announcements are provided to a state-wide system for announcing openings and vacancies in the system as well as being announced also in key academic institutions and all government offices. A listing of the job descriptions is included in this report as Appendix C.

The Acting Program Director stated that the director's position would be announced during the next fiscal year and it was hoped that it would be made permanent at a pay grade range of 38-40. The program director felt that this pay grade range would be competitive with other supervisory and administrative positions located in the Department of Human Resources.

REGULATIONS

Compatibility

The NRC-proposed regulations are reviewed by the staff of the Radiation Control Program and usually comments are provided to the Office of State Programs. The NRC is provided an opportunity to comment on proposed changes of State Radiation Control regulations and the State responds appropriately to such comments prior to formal adoption of the State regulations. The State can adopt regulations on an administrative basis by submission of the proposed regulations to the Board of Human Resources for adoption. Administrative adoption of regulations can be done on a routine or an emergency basis.

The reviewer informed the radiation program staff that a statement of compatibility would be withheld pending the newly revised rules and regulations for radioactive materials becoming effective. It should be noted that the latest revision of the rules and regulations for radioactive material was in 1975. It was noted during the last review that the regulations had not been updated since 1975 and the Commissioner replied that the process was underway to update the regulations. As of the time of this review the regulations still had not officially become effective. Adoption of the newly revised regulations was held up because of administrative procedures within DHR. The staff informed the reviewer that the newly revised regulations that were commented on by the NRC consisted of 173 pages maintained in a word processor unit. Administrative procedures within State government now require the information to be placed on a legal copy which is similar and in the same format as other Code sections in the State. The pages of this newly revised copier are much smaller and the 173

8½ X 11" pages now become 250 pages and the regulations also must be put in a bound form. It was commented to the program staff that this requirement would probably increase the cost of updating the regulations.

Updating the Regulations

As mentioned above, the program staff was advised that revision of regulations were necessary every two years and made effective within three years of adoption by the NRC to maintain compatibility. A summary of the steps that must be followed to promulgate regulations or revisions are as follows:

1. An original draft, based upon the current suggested State regulations and NRC regulations, is sent to the NRC and other concerned parties for preliminary comments.
2. Based upon these initial comments, a revision of this draft is presented to the Board of Human Resources for their approval to be presented for public hearing.
3. The Hearing Officer will then set a date for the public hearing, sends notices to all interested parties within 30 days prior to the hearing advising them of the date and how to obtain copies of the proposed regulations.
4. A public hearing is held, at which time comments and suggestions are submitted.
5. Based upon the results of the public hearing, other proposed revisions along with the analysis of comments and suggestions submitted at the public hearing, is sent to the board and the legislative overview committee 30 days prior to adoption of the Board.
6. If the regulations are approved by the Board, they are retyped in the format required for filing with the Secretary of State's office.
7. This retyped copy (legal copy) must be on file with the Secretary of State's office for 30 days prior to final adoption or publication.
8. Emergency regulations in the event of imminent threat to the public may be approved by the Board, but only by the Board.

At the time of the review, the newly revised regulations were in the process of being retyped in the format required for filing with the Secretary of State's office. Program management stated to the reviewer that the regulations would become effective 30 days after submittal to the Secretary of State's office.

LICENSINGLicensing Actions

As of September 1, 1981, the State had 567 agreement materials licenses, and 18 non-agreement licenses in effect. There have been 408 licensing actions issued since the last review. Sixty-two of these actions were in the southern region, performed out of the Brunswick office. There have been 61 new licenses issued during the same period, 13 of these were issued out of the Brunswick office.

For over a year, the staff has been dealing with a license application from Nuclear Assurance Corporation. The actions with this company have been sporadic and concern a license for a facility to perform repairs on spent fuel shipping casks. The applicant has talked about the possibility of eventually expanding the operation to include repair work on irradiated equipment which has been used for such things as fuel shipping, etc. The applicant, application, and responses to the Department's questions have been very vague and the applications and correspondence have been forwarded to the NRC/OSP office for technical assistance. The staff stated that in addition to this complex action, the most time-consuming routine licensing action performed by the staff involves applications from commercial radiopharmacies.

The staff has the policy of reviewing and performing pre-license inspections on all radiopharmacies, based upon design, layout, flow patterns, security, and storage of licensed material. Since the last review, the State has conducted five pre-licensing visits which include the following list: three commercial radiopharmacies; one low-level waste incineration facility; one distribution and device evaluation.

The State still licenses four major licensees that would have a potential for significant environmental impact. These four facilities are as follows: Georgia Institute of Technology, Atlanta; Emory University, Atlanta; Medical College of Georgia, Augusta; and University of Georgia, Athens.

In addition, there are other licensees in the State who have received the concurrence of the DNR. They are Ernest Tsivoglou, PhD - Planned Environmental Releases; Southern Space Incorporated - Nuclear Laundry; Hamilton Memorial Hospital - Incineration of Low-Level C14 Waste. The State does not have any major processors or major distributors of radioactive materials, radwaste brokers, and all of the broad type-A licenses are included under the major license list above.

The service distribution licenses are as follows: (1) Sentrol Systems, Inc. - Service and distribute general license gage; (2) Brainard - Kilman Drill Company - Distribute Campbell-Pacific gages; (3) Lester Laboratories - Distribute 3M Statometers; (4) Yokogawa Corporation - Distribute large volume lead hand analyzers for refineries; (5) Analytics, Incorporated - Make and distribute custom-made calibration sources mainly for use by nuclear power plants and environmental labs.

Twenty-six pre-selected license files were reviewed. A summary of these license reviews is included as Appendix D. In general the staff was complimented on the quality of the application reviews. The files were reviewed to determine that supporting information in the files reflects current scope of the license program, the use of licensing guides, supervisory review of complex license applications, quality assurance, pre-licensing inspection, timely action on applications, and the documentation and maintenance of adequate files and records. The staff stated that instead of using licensing checklists, the license reviewer completes the license application review and drafts the license, then rotates the document through the staff for their concurrence. This not only helps the licensing process quality control procedures, but it provides training for all members of the professional staff and allows them to comment on the licensing actions before the licensing actions becomes final.

Adequacy of Product Evaluations

The staff stated that only one device has been evaluated which was for distribution of equipment that would be used only in licensed NRC reactor operations. The applicant was Applied Physical Technology. The device, Model No. CS-OLCM-1, was approved for no single source to exceed three microcuries of barium-133, six microcuries of cesium-137, and 12 microcuries of cobalt-60. These sources are contained in Applied Physical Technology's on-line coolant monitors (OLCM). A catalog sheet was not issued.

Licensing Procedures

Georgia's internal licensing guides and policies are consistent with current NRC practice and used in all licensing actions both in the Atlanta office and in the Brunswick office. License applicants, including renewals, are furnished copies of applicable guides and regulatory positions. A listing of the licensing guides is as follows: (1) information needed in support of applications for renewals or new gas chromatographs; (2) a guide for preparation of radioactive materials applications for the use of sealed sources and portable and non-portable gauging devices; (3) information needed in support of applications for new or renewal gauge licenses; (4) licensing guide for industrial radiography programs; and (5) licensing guides for specific licenses for medical institutions. This latter guide includes an introductory statement; Appendix A which is acceptable training and experience for medical uses of radioactive material; Appendix B which provides guidance on medical isotopes committee; Appendix C which provides guidance for specific procedures which includes instructions for safely opening packages, radioactive shipment receipt reports, methods and frequency for conducting surveys, contamination levels, acceptable limits, sample survey forms, laboratory rules and procedures to be followed to assure safe usage of radioactive materials, methods for calibration of dose calibrators, tests for instrument accuracy, tests for instrument constancy, and geometrical factors and tests for linearity. Appendix D describes precautions to follow when caring for patients treated with therapeutic quantities of radionuclides including instructions to nurses, waste procedures, surveys, guides for supporting documentation for xenon-133 use, teletherapy licensing guide, teletherapy survey report guide, and a listing of medical uses by groups I, II, III, IV, and V. Copies of these licensing guides are on file in the NRC Region II office.

As previously noted, the inspection staff concurs on the license application reviews before they become final. This not only helps the quality control of the licensing actions, but also provides training for the junior professional personnel.

The staff indicated that initial review is taken within one week of receipt of the application except in specialized cases, and that it usually takes one to two weeks to process an application. The timely renewal procedures in effect requires the licensee to be mailed a notice between 60-90 days before expiration of the license. The list of licenses that are due for renewal is developed monthly from card-file and a computer listing. If an application has not been received from the applicant within 30 days before the license will expire, the licensee is notified by telephone and a reminder of the renewal is provided to them. In the event the applicant does not respond by the time the license expires, the licensee is called and he is issued an order to store the material(s). Compliance activities would proceed at this point until the licensee has submitted a renewal application or other appropriate response.

It was noted during the review that the license files are maintained in an orderly fashion to allow accurate retrieval of information.

Standard license conditions are in use by the program staff that are essentially identical to those utilized by the NRC. The license conditions include: (a) general standard conditions; (b) medical conditions for medical group licensing; (c) nuclear powered pacemaker conditions; (d) teletherapy conditions; (e) leak test conditions for broad licenses and persons who fabricate sources and/or neutron and alpha-beta emitting sources; (f) alpha neutron and beta-gamma emitting sources not including radium, and extended leak test interval conditions; (g) leak test conditions for licensees utilizing leak test kits; (h) conditions for sources including radium sealed sources; (i) conditions for medical sealed sources; (j) conditions for gas chromatograph containing nickel-63 foils; (k) conditions for plutonium sources; (l) guidance for leak testing of sealed sources used as calibration or references sources; (m) standard conditions for sealed sources, detector cells, and well logging gauges; (n) radiography standard conditions; (o) gamma irradiator conditions; (p) standard conditions for general license distribution for certain sealed sources and devices; (q) standard conditions for incineration; (r) standard condition for five-year service and maintenance of teletherapy units; (s) standard conditions for tritium bioassays; and, (t) standard conditions for civil defense licenses.

Quality Assurance

As previously discussed, licensing actions include supervisory review of selected license cases handled by each reviewer and the licenses are concurred on or reviewed by other professional staff.

The Southern area office in Brunswick sends a copy of all licenses issued to the Atlanta office. These licenses are reviewed by supervision and on a quarterly basis, the Chief of the Radioactive Materials Unit will travel to the Brunswick

office to discuss the license reviews and inspections performed, enforcement letters, and other activities performed out of the Brunswick office. Frequent telephone discussions are also conducted between the two offices as needed.

It was noted during the review that license review checklists were not used by the professional staff. However, a review of the preselected license files indicate that quality control is not a problem with the licensing reviews and the staff was complimented on the quality of the licenses that were issued.

Medical Advisory Committee

The program director informed the reviewer that a medical advisory committee was not in effect in the Department. However, the Commissioner maintains that the Department has sufficient expertise to evaluate most situations that would occur with the licensing of radioactive materials. The Commissioner has an ad hoc committee composed of three radiologists certified in nuclear medicine, and a radiation physicist at Emory University who can be called upon for consultation whenever needed. The program director also stated that the State would not hesitate to call upon NRC or arrange for NRC consultants if needed.

COMPLIANCE

Status of Inspection Program

Statistical information is supplied to the NRC on a semi-annual basis. Most of this information is collected by the staff from the files using manual methods. The program director stated that he had plans for computerization of the licensing and inspection data during this next fiscal year.

The overall status of the compliance program shows that 21% of the licenses are overdue for inspection, of which 30% of the southern region licenses are overdue for inspection. The majority of these overdues are in lower priority licenses. It was recommended to the program director that an inspection schedule be developed that would reduce the numbers of the overdue inspections. The following table is the number of inspections performed in each category for the Atlanta Office and the Brunswick Office since the last review.

| <u>Priority</u> | <u>Atlanta Office</u> | <u>Brunswick Office</u> |
|-----------------|-----------------------|-------------------------|
| I | 4 | 0 |
| II | 6 | 3 |
| III | 4 | 0 |
| IV | 23 | 13 |
| V | 3 | 0 |
| VI | 6 | 0 |
| VII | 7 | 8 |

The following table lists the number of inspections overdue as of September 1, 1981, listed by priorities for both the Atlanta and Brunswick offices.

| <u>Priority</u> | <u>Atlanta Office</u> | <u>Brunswick Office</u> |
|-----------------|-----------------------|-------------------------|
| I | 2 | 0 |
| II | 5 | 1 |
| III | 3 | 0 |
| IV | 50 | 12 |
| V | 11 | 4 |
| VI | 4 | 9 |
| VII | 3 | 18 |

Of the following overdue inspections, one licensee, Medical Research Foundation, has a license to manufacture and use a therapeutic research drug for which they possessed an IND from FDA. However, a year ago the IND was taken away and it has not been reissued but the foundation still exists and their license is valid. A complete inspection has been performed since February 1978; however, special inspections and investigations have been done since that time. In the other instance of an overdue Priority I licensee, Nuclear Medicine Pharmacy, Inc., of Georgia, has been due for an inspection since April 1981. A facility visit was made on September 21, 1981, since they wanted to move to a new location; however, it was not a complete inspection.

A total of 17 supervisory accompaniments have been performed by supervision since the last review period. Will Ingram supervised Willy Thompson on four inspections and supervised Bill Slocumb on two inspections. Carol Connell supervised Tom Hill on five occasions and supervised Bill Slocumb on one occasion. Andre J. S. Simanas supervised Tom Hill on one occasion. Tom Hill supervised Bill Slocumb on three occasions. Carol Connell accompanied Jerry Morris during one inspection in the Southern region.

Inspector Performance and Capabilities

During this review, Bill Slocumb and Tom Hill were accompanied on two inspections of two different licenses.

Mr. Hill was the prime inspector for an inspection of an initial medical hospital license, and Mr. Slocumb was the principle inspector for a radiographic fixed facility license which was a reinspection. Both inspectors conducted their inspections in a professional, business-like manner and appeared to be capable of evaluating health and safety problems. A critique of the inspections was provided to the inspectors the following day.

Response to Incidents and Alleged Incidents

A summary of each of the incidents has been included as Appendix E. The incident investigation reports were reviewed for adequacy in the following areas: adequate response to incidents, adequate investigative procedures, adequate reporting procedure, use of medical consultants, reenactments, and enforcement actions. A review of the selected incident file reports found them to be

generally adequate and well documented. Since the last semi-annual data was submitted by the State there have been six incidents that were investigated as follows: (1) on August 4, 1981, Mall Engineering Company from Columbia, South Carolina reported an overexposure of a radiographer while working at the Richard B. Russell Dam at Elberton, GA. However, when his film badge was processed it showed 11 rems of whole body exposure but his dosimeter was off-scale. This incident was investigated by a South Carolina Agreement Program inspector. The office was located in Columbia. (2) On August 19, 1981, a concerned citizen called and stated she was worried that the bed her children were sleeping in was contaminated. The bed was from a relative's home in Cleveland, Ohio and her parents had told her that there had been an illegal disposal of radioactive materials in that neighborhood. None of the readings or smears indicated any contamination. Incident closed. (3) On September 8, 1981, 24 luminous light sources (radium-226) were found in a private citizen's home. The radium sources were not leaking and no residual contamination was found in the house and the sources were transported to Anniston, AL for disposal by the military. Incident closed. (4) The staff was called by the USEPA to pick up radioactive material which had been left at the Atlanta Hilton Hotel, presumably following a convention. The source was an RIA pregnancy test kit and had been found in the Conference Room which had been used by Rollins Protective Services. The material was removed from the hotel and the incident closed. (5) The two pending investigations both concern individuals who are concerned that their freezers or refrigerators are contaminated since radioactive materials were once stored in them. Preliminary screening by the program staff showed no signs of contamination.

The State has a policy of making prompt inquiries to evaluate the need of onsite investigations. In most cases, investigations are conducted even though it appears that the hazard is minimal. During all incidents, the State has apparently responded promptly and appropriately and the files are well documented.

Enforcement Procedures

There have been no changes in the enforcement procedures since the last review. In general, enforcement letters are issued within a few days to a week following an inspection. Of all of the files reviewed, the enforcement letters appeared to be written in appropriate regulatory language and specified items of noncompliance. If health and safety matters are identified during the inspection, they reference the appropriate Georgia regulations or license conditions being violated. The State requires the licensee to respond to enforcement letters within a 30-day time period after the receipt of the enforcement letter. The State has developed a form similar to the NRC Form 591 for use in enforcement cases that involves only record keeping requirements. The enforcement letters are prepared by the principal inspector and signed by the Material Section Chief, or the Acting Program Director. An exception to this policy would be in the case of the Brunswick South Georgia office. Since this is a one-man office, Mr. Morris not

only performs the inspections, but also signs the compliance letters and he requires replies to his correspondence to be sent back to him in the South Georgia office. Copies of the enforcement letters and responses are reviewed on a quarterly basis when the Materials Section Chief visits the South Georgia office.

Escalated enforcement action procedures do exist and were reviewed in detail during the last program review. No changes in these escalated enforcement actions have taken place since the last review. The State has the authority for impounding radioactive materials and opportunities for hearings are provided under the Georgia Code.

Civil penalty authority was discussed with the Staff and it was recommended that consideration be given to the establishment of a civil penalty provision which would strengthen the enforcement capabilities. This recommendation was also provided to Dr. Edwards during the closeout meeting.

Equipment Failure

During the period covered by this review, the State has not conducted any investigation of incidents which would be attributed to generic-type equipment failures.

Inspection Procedures

The State has on file various NRC inspection guides and policy memoranda. In addition, the State has developed their own inspection guides which are more of an inspection checklist. These lists are industrial gauges checklist, gas chromatograph inspection checklist, teletherapy inspection checklist, onsite radiographic inspection checklist, seal source inspection checklist, medical inspection form, and draft inspection report forms. After completion of the field notes, the inspector returns to the office and prepares a narrative inspection report. The use of a revised report form that is being used by NRC Regional offices was discussed with the staff. This type of form combines the inspection guide with the field notes in sufficient detail to be used as an official inspection report. Copies of forms used by NRC and some Agreement States such as Alabama, Mississippi and South Carolina were provided to the Georgia staff for their consideration. The general consensus of opinion was that the professional staff would revise their report formats so their office time could be utilized more effectively and thus provide more time for field inspection activities. The staff stated that the policy on unannounced inspection provided for radiopharmacy and radiographic facilities to be inspected on an unannounced basis. Most medical and academic facilities are notified a short time prior to the inspection. This policy utilized by the State is to make the inspector's time more effective and to assure that the licensed user will be at the onsite facility during the inspection. The unannounced inspection policy and procedures that are used by the NRC regional offices was reviewed in detail with the program staff.

Inspection procedures were discussed with the program director and in response the program director stated that he was in the process of preparing a policy manual to identify goals and priorities and to establish inspection and licensing procedures and guides. This policy manual will be in effect for each section of the Radiation Control Program and also utilized by the South Georgia Brunswick office. This intent by the program director was acknowledged in the close-out meeting with the Commissioner.

Inspection Frequency

The inspection priority system being used by the State is similar to that used by the NRC. The system is outlined in Appendix F of this report and provides details of the type of categories for each type of licensee and assigned priority. Initial and subsequent inspection priorities are also identified. Inspection priorities may be upgraded to a higher frequency if the license reviewer or inspectors determine that there are health and safety considerations that should be followed more closely at the licensee's facility. The State has the policy of conducting follow-up inspections whenever corrective actions taken by the licensee were questionable or when the compliance actions involved serious items of noncompliance. In less severe items of noncompliance, followup activities are conducted at the next routine inspection.

As previously stated, the number of licenses overdue for inspection had increased to 21%. 30% of the southern regional licenses were overdue for inspection. However, most of these overdues were in lower priority categories. The overdue inspections are directly related to the staff time available for inspection activities. It was recommended to the program director that he develop a plan to reduce the backlog of overdue inspection with emphasis placed on the higher priority licenses.

Adequacy of Inspection Reports

Twenty-seven license folders were reviewed for compliance activities. However, not all of these files contained reports of inspections performed since the last review. Details of the compliance file review is included in Appendix G.

The compliance files in general have narrative reports that describe the scope of inspection, substantiation of all items of noncompliance and health and safety matters, and discussions with management and the licensees response. All inspection reports are reviewed by the Section Chief and were uniform and adequately documented.

The staff stated that noncompliance items, enforcement letters to the licensees, and the licensee's responses are routinely discussed among each other, which serves as a training exercise for the junior inspectors and also has built-in quality control benefits to the professional staff; both from an inspection standpoint and a licensing review standpoint.

Independent Measurements

In general, independent measurements are performed by the inspectors; however, during our visit to the Brunswick regional office, it was noted that velometers and smoke tubes were not available for the inspectors' use. These items were discussed and the recommendation was made that these items be obtained for the Brunswick office. During the inspection accompaniments out of the Atlanta office, it was noted that the nuclear medicine facility was not evaluated to determine if the facility engineering controls were adequate to control potential airborne releases. This type of independent measurement could be performed either with smoke tubes, velometers, or evaluation of engineering schematics and discussions with the building engineers. Recommendations concerning independent measurements were provided to the program staff during the review and at the close-out meeting.

It should also be noted that no professional on the State's staff has ever attended the teletherapy calibration and spot check measurement course sponsored by NRC. Spot check measurements are not performed by the professional staff. The Materials Section Chief stated that she did not believe the staff had been sufficiently trained to perform this type of measurement in teletherapy license facilities. The reviewer discussed with the staff the possibility of the reviewer providing teletherapy spot check measurements assistance or training on a one-to-one basis with the staff.

All of the laboratory implementation for environmental surveillance and analysis is maintained by DNR. However, DHR apparently has sufficient instrumentation for compliance surveys and independent measurements at the licensee's facilities. A listing of the DHR instrument inventory is provided in Appendix H. It should also be noted that the State's calibration program which was reviewed during the last review period has not changed. The staff utilizes the calibration of radiation detection survey instrument procedure developed by the Office of State Programs. The calibration procedures have been updated and a listing of the calibrator radiation levels and specific maintenance calibration instructions for each of the portable radiation protection instrument types is provided to this report as Appendix I.

OTHER AREAS AFFECTING THE ADEQUACY OF THE STATE'S TOTAL RADIATION CONTROL PROGRAM

Surveillance of Radiation Producing Machines

The State reports a total of 8,698 x-ray units in the State, of which 3,854 are human use diagnostic, 94 are human use therapeutic, 4,750 are dental units, and 226 units are for industrial use. The State has 27 registered accelerators, of which two are non-medical type accelerators. The current regulations have provisions for a general license to cover the use of depleted uranium in the shielding of accelerators. The State estimates that only 95% of the radiation producing machines are registered with the State and the State also estimates that 75% of the units have been inspected. The x-ray section consists of four inspectors and one supervisor. During the last year, 947 radiographic machines

were inspected along with 31 fluorographic machines and three human use accelerators. The staff stated that the data management section was in the process of computerizing the machine produced radiation registration data. As soon as this program is completed, the next objective would be to computerize the materials section licensing and compliance data.

Environmental Surveillance/DNR Program Review

In 1976, the Georgia Radiation Control Act was amended to provide the Environmental Protection Division (EPD) of the Georgia Department of Natural Resources with the authority and responsibility for environmental radiological protection. This Act requires EPD to establish a state-wide radiation monitoring and surveillance network, development of a regulatory program for radioactive waste disposal, and establishment of a program for review and concurrence of certain radioactive material licenses issued by the Georgia Department of Human Resources. A report dealing principally with the environmental radiation program activities such as environmental surveillance and monitoring was published by DNR for the period covering Summer 1979 to Summer 1980. This report of the surveillance program consists of five major program functions. These functions are: (1) surveillance of major fixed facilities; (2) state-wide background surveillance; (3) safe drinking water evaluation; (4) special evaluations; (5) emergency response assessment. A copy of this report has been placed in the Office of State Program files.

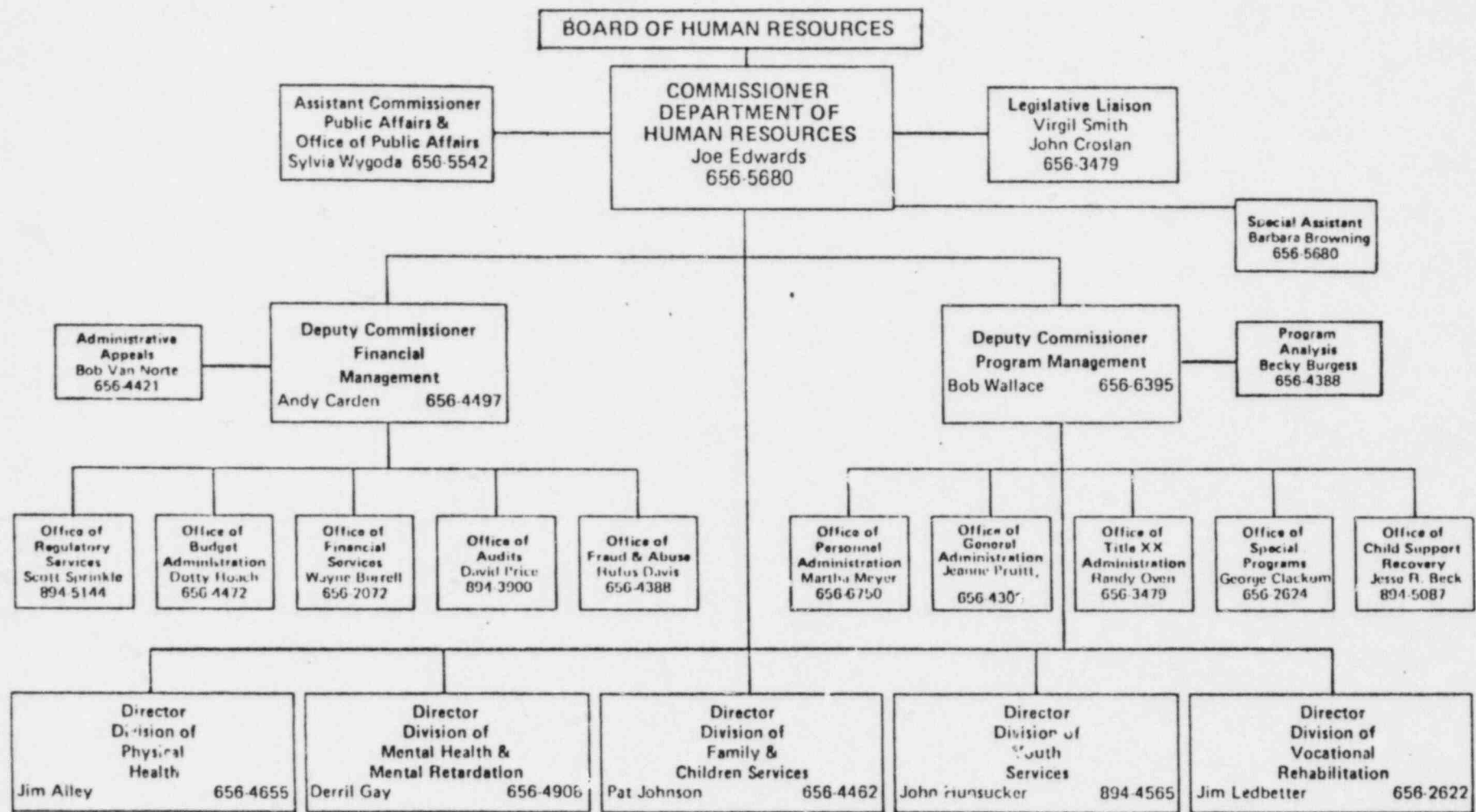
During previous years, a separate report and staff evaluation of the Georgia Department of Natural Resources Radiation Control Program was prepared. A review of the DNR program covering the period of May 30, 1980 to November 25, 1981 has been incorporated into this report as Appendix J along with specific attachments. The reviewer believes that the Environmental Protection Program is also a part of the overall Georgia Radiation Control Program, and therefore, should be included with the periodic program review, covering the same time periods, and reviewed at the same time period as the routine program review.

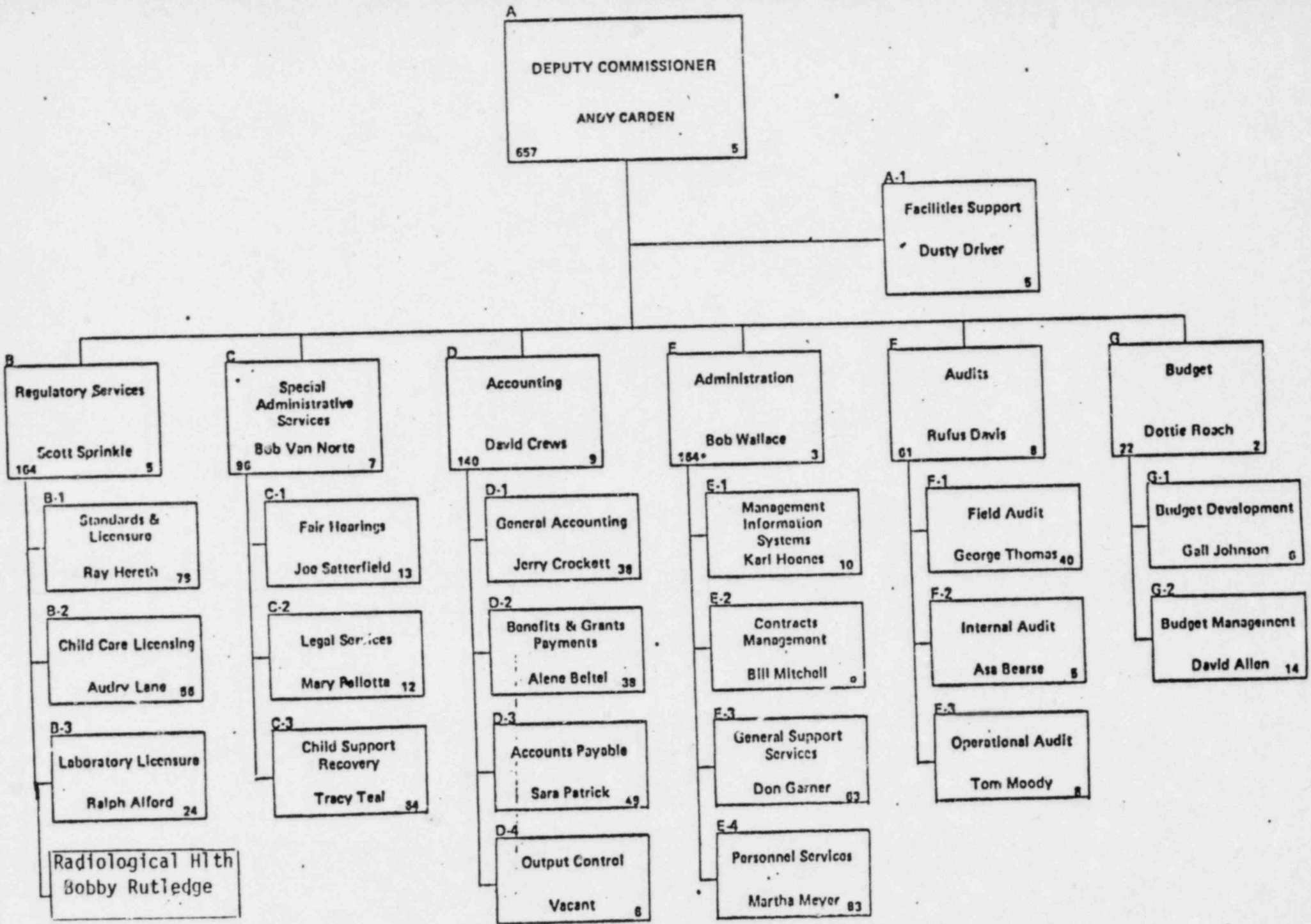
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- B. Regional Office Visit
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- E. Incidents Summary
- F. Inspection Priority System
- G. Compliance Files Review
- H. Instrument Inventory
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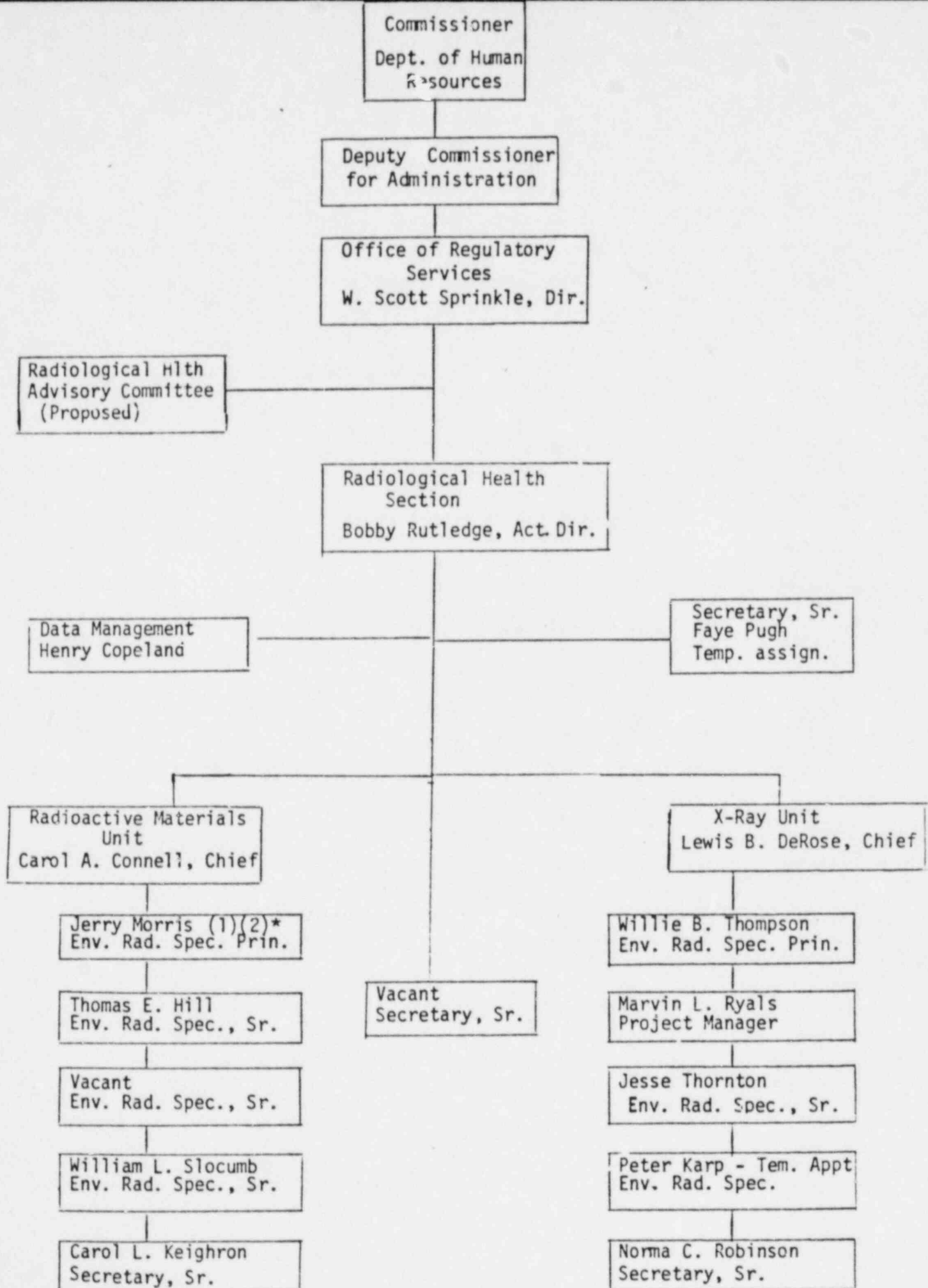
APPENDIX A
ORGANIZATION CHARTS

SUBJECT: DHR ORGANIZATION CHART





*Field Administration Deleted - 9



*(1) Located in Brunswick, Ga. (2) Section Emergency Response Coordinator

APPENDIX B

REGIONAL OFFICE VISIT

APPENDIX B

REGIONAL OFFICE VISIT

A visit was conducted by R. Woodruff at the Southern Regional Office located at Brunswick, Georgia on November 9, 1981. The purpose of this visit was to enable the reviewer to become acquainted with the functions of the Regional Office and to discuss administrative, licensing, and compliance activities unique to the Regional Office.

The Southern Office is located in the building owned by the Coastal Health Unit, which is also a regional office for the Georgia Department of Human Resources. Office space and secretarial support (part time) is provided by this office; however, Mr. Morris maintains the files and on occasion will type draft copies of reports or other correspondence.

The Southern Regional Office's jurisdiction covers 80 counties. There are 132 licensees in this area, about half are medical type licenses. In addition to his agreement material duties, Mr. Morris is on the Emergency Response Team and is listed as the "primary response" agency for the DNR Emergency Response Plan (GEMA) and also provides training to EMT's and hospital personnel for radiological health type emergencies. Mr. Morris estimated that 75% of his time since the last State Program review has been utilized in Emergency Planning functions. A copy of the 80 county jurisdictional area is provided as Attachment A.

Mr. Morris reviews all license and amendment applications and conducts all the material inspections in the Region. Copies of all licenses issued (signed) by the Regional Office are sent to the Atlanta central office along with a monthly activities report on licensing actions and compliance actions. Copies of license back-up materials are maintained at the Regional Office only.

Quarterly visits to the Regional Office are conducted by the Materials section chief to review licensing and compliance actions. On occasion, Mr. Morris will travel to Atlanta for a staff meeting.

The office maintains sufficient numbers of survey equipment and "incident" type supplies, and the survey meters are calibrated by the Atlanta Office. It was noted that the Regional Office did not have air sampling equipment except for a MSA breathing zone pump, and no equipment is maintained for teletherapy spot check measurements. The office needs a velometer and smoke tubes.

A review was conducted of the files and noted that the filing system was up to date and well organized. A white card file is maintained of all licenses and a yellow card maintained for the inspection due date, and a blue card maintained by date of expiration of the license.

The procedures in use are the same as those utilized by the Atlanta Office with respect to the timely renewal system, the issuance of licenses, and compliance correspondence and acknowledgement letters. Mr. Morris stated that most of his inspections were announced except for radiographers and licensees with prior items of noncompliance. The office maintained copies of the licensing guides, regulations, inspection guides, a copy of the SSR, and NRC regulations.

STATE OF GEORGIA



APPENDIX C

JOB DESCRIPTIONS



MERIT SYSTEM OF PERSONNEL ADMINISTRATION

STATE OF GEORGIA

Class Specification

| Class Title | Effective Date | Specification No. |
|--|----------------|-------------------|
| PRINCIPAL ENVIRONMENTAL RADIATION SPECIALIST | 07/01/78 | 57310 |

The examples of work given are illustrative of the duties assigned to positions of this class. No attempt is made to be exhaustive. The intent of the listed examples is to give a general indication of the levels of difficulty and responsibility common to all positions of this class.

The standards for training and experience express the minimum background necessary as evidence of an applicant's ability to qualify for positions of this class. Unless otherwise stated, the Applicant Services Division may allow substitution of appropriate education or experience for the training and experience minimums listed.

DEFINITION

Under general direction, performs work of considerable difficulty in directing all the activities of a major sub-program of the radiological health program, or performs the most technically difficult radiological health surveys on a regular basis, and performs related work as required.

EXAMPLES OF DUTIES

Performs duties involving actively directing a major sub-program of the radiological health program. Develops and periodically reviews operational objectives and policies, interprets rules and regulations, conducts public informational programs, and prepares training programs and training aids. Prepares budget data, periodic activity reports, and any required administrative reports. Prepares drafts of proposed codes, rules, and regulations.

Supervises sub-program personnel, interviews job applicants, makes selection recommendations to the program director, designs and implements training programs, monitors work, and evaluates employee performance.

Supervises the maintenance and calibration of the instruments used by the sub-program personnel. Recommends the acquisition of new equipment and repair of older equipment.

Regularly confers with program director on the general technical, legal, and operational aspects of the sub-program operation. When indicated by survey findings obtained either personally or by subordinate specialists, recommends to the program director that legal action be taken to enforce the rules and regulations. Prepares reports and recommendations from field data.

Evaluates and takes action on license applications pertinent to the technical speciality of the sub-program.

Critically reviews and takes action on architectural specifications of facilities where x-ray equipment, microwave devices, lasers, and similar radiation-producing devices will be used, and facilities where radioactive material will be handled and/or stored.

Regularly performs the most technically complex and difficult radiological health surveys, in the particular field of technical expertise, of medical and industrial facilities using all types of x-ray equipment, microwave devices,

(OVER)

lasers, and any other type of radiation-producing equipment, and facilities where radioactive materials are used for any purpose and in any quantity, to determine compliance with the public health rules and regulations, and, if applicable, terms of the issued use license. In all cases, prepares detailed comprehensive reports of survey findings, discusses results with facility management, and recommends corrective measures where indicated.

Writes articles for consideration for publication in scientific literature. Consults with federal, state, and local officials, and consultant physicists, on matters related to radiological health safety. Plans and conducts research projects to assess and reduce radiation exposure to persons engaged in radiation use or handling. Prepares and conducts public information programs in matters related to radiological health.

MINIMUM QUALIFICATIONS

NECESSARY KNOWLEDGE, SKILLS, AND ABILITIES

Considerable knowledge of the theories, principles and practices of radiological health; of the design and operating characteristics of sophisticated state-of-the-art x-ray equipment, microwave devices, lasers, and similar radiation-producing devices, both medical and industrial; of construction techniques used to minimize the risks of excess radiation exposure in facilities housing radiation-producing equipment or where radioactive materials will be handled and/or stored; of the radiological health program licensing requirements and procedures; of proper x-ray, microwave, and laser device operating procedures; of radiological health survey methods.

Comprehensive skill in writing clear and concise reports of survey findings; in operating, maintaining and calibrating a variety of radiation field survey instruments such as radiation meters, pulse height analyzers, oscilloscopes, liquid scintillation counters, geiger counters, and others.

Considerable skill in preparing the survey activity reports, administrative reports, personnel evaluations, and operational reports.

Marked ability to perform independent comprehensive radiological health surveys of medical and industrial facilities to determine compliance with the appropriate public health rules and regulations.

Considerable ability to provide technical leadership and administrative supervision to radiological health program personnel; to interpret rules and regulations and adapt the requirements to the particular type of equipment involved; to critically review architectural specifications for relevant construction factors; to deal tactfully with radiation users and the general public; to evaluate and take action on license applications; to develop and present training programs to radiological health personnel and persons involved in all phases of radiation use; to design and implement survey procedures; to identify management problems and take corrective actions.

TRAINING AND EXPERIENCE

One year of experience at a level equivalent to Senior Environmental Radiation Specialist.



MERIT SYSTEM OF PERSONNEL ADMINISTRATION

STATE OF GEORGIA

Class Specification

| Class Title | Effective Date | Specification no. |
|--|----------------|-------------------|
| PG 30 SENIOR ENVIRONMENTAL RADIATION SPECIALIST | 07/01/78 | 57320 |

The examples of work given are illustrative of the duties assigned to positions of this class. No attempt is made to be exhaustive. The intent of the listed examples is to give a general indication of the levels of difficulty and responsibility common to all positions of this class.

The standards for training and experience express the minimum background necessary as evidence of an applicant's ability to qualify for positions of this class. Unless otherwise stated, the Applicant Services Division may allow substitution of appropriate education or experience for the training and experience minimums listed.

DEFINITION

Under direction, performs work of considerable difficulty in performing independent comprehensive radiological health surveys of facilities using x-ray, microwave, lasers, or similar radiation-producing devices, and facilities where radioactive materials are handled and/or stored, and performs related work as required.

EXAMPLES OF DUTIES

Performs independent radiological health surveys of medical facilities which use various types of diagnostic and therapeutic x-ray equipment, including the more technically sophisticated and complex devices, to determine compliance with the applicable public health rules and regulations. When necessary, adapts the requirements of rules and regulations to the characteristics of the particular type of equipment involved. Checks for such items as the use of adequate shielding, the collimation and filtration of the output of x-ray tube heads, the adequacy of written procedures and the actual operating techniques, personnel qualifications, proper storage of film, required dark room equipment, and documentation of exposure levels of personnel to radiation. Confers with the responsible facility personnel, and prepares comprehensive reports of survey findings, which include recommendations for corrective actions when indicated.

Performs independent surveys of industrial users of x-ray, microwave, laser, and similar radiation producing devices to determine compliance with the applicable public health rules and regulations. Confers with firm management, and prepares comprehensive reports of survey findings, including recommendations for corrective measures when indicated.

Performs independent surveys of both medical and industrial users of radioactive materials to determine compliance with the applicable public health rules and regulations and the conditions of the license authorizing use of radioactive materials, and the accuracy of the license application data. Obtains radiation level readings with portable radiological survey instruments, and interprets the readings for significance. Confers with facility management, and prepares comprehensive reports of findings, including recommendations for corrective measures, if necessary.

Critically reviews for adequacy architectural specifications of facilities where x-ray, microwave, laser, or similar radiation producing device will be used, or radioactive materials will be handled and/or stored. Evaluates applications for radioactive material use licenses, and provides program management with recommendations.

When survey findings warrant, informs program management of the possible necessity of legal action against a radiation use facility.

(OVER)

Provide thorough documentation as to the need for such action.

Supervises and trains other radiological health personnel. Prepares and presents informational lectures to the public on radiological health matters, and provides instruction in safe practices to radiation use personnel.

Supervises, and performs, the maintenance and calibration of field survey equipment such as x-ray and gamma survey meters. Maintains instrument log books.

Contributes information to improve evaluation and survey procedures.

MINIMUM QUALIFICATIONS

NECESSARY KNOWLEDGE, SKILLS AND ABILITIES

Considerable knowledge of the theories, principles, and practices of radiological health; of the rules and regulations related to radiological health; of proper x-ray, microwave, and laser device operating procedures; of radiological health survey methods.

Good knowledge of construction techniques used to minimize the risks of excess radiation exposure in facilities housing x-ray, microwave, laser, or similar devices, or facilities where radioactive materials are handled and/or used; of the design and operating characteristics of technically sophisticated and complex radiation equipment, both medical and industrial; of the pertinent licensing requirements and procedures.

Considerable skill in writing clear and concise reports of survey findings, including providing recommendations for corrective measures if necessary; in maintaining and calibrating radiation field survey instruments of various types.

Considerable ability to perform independent comprehensive radiological health surveys of medical and industrial facilities to determine compliance with the appropriate public health rules and regulations.

Working ability to adapt the requirements of the rules and regulations to the particular characteristics of the particular type of equipment involved; to critically review for adequacy architectural specifications of facilities where x-ray, microwave, laser, or similar radiation-producing equipment will be installed, or radioactive material will be handled and/or stored; to deal tactfully with radiation users; to evaluate license applications; to travel throughout the state on a regular basis; to supervise and train other radiological health personnel; to instruct radiation use personnel in safe techniques and procedures.

TRAINING AND EXPERIENCE

One year of experience at a level equivalent to Environmental Radiation Specialist.



MERIT SYSTEM OF PERSONNEL ADMINISTRATION

STATE OF GEORGIA

Class Specification

| Class Title | Effective Date | Specification no. |
|--|----------------|-------------------|
| ENVIRONMENTAL RADIATION SPECIALIST PG 27 | 07/01/78 | 57330 |

The examples of work given are illustrative of the duties assigned to positions of this class. No attempt is made to be exhaustive. The intent of the listed examples is to give a general indication of the levels of difficulty and responsibility common to all positions of this class.

The standards for training and experience express the minimum background necessary as evidence of an applicant's ability to qualify for positions of this class. Unless otherwise stated, the Applicant Services Division may allow substitution of appropriate education or experience for the training and experience minimums listed.

DEFINITION

Under general supervision, performs work of moderate difficulty in conducting radiological health surveys of users of diagnostic and therapeutic x-ray equipment, microwave devices, lasers, and radioactive material, and performs related work as required.

EXAMPLES OF DUTIES

Performs radiological health surveys of medical facilities such as hospitals, clinics, and offices of physicians, dentists, veterinarians, and chiropractors, which use both simple and relatively complex diagnostic and therapeutic x-ray devices, to determine compliance with the applicable public health rules and regulations. Checks for such items as the use of adequate shielding, the collimation and filtration of the output of x-ray tube heads, the adequacy of the written operating procedures and the actual operating techniques, personnel qualifications, proper storage of film, required darkroom equipment, and documentation of exposure levels of personnel to radiation. Prepares comprehensive reports of the survey findings, which includes recommendations for corrective actions when indicated, for the responsible hospital administrators, boards or private practitioners.

Performs radiological health surveys of licensed facilities where radioactive materials are used for either limited medical or industrial purposes, to determine compliance with the applicable rules and regulations, and the license conditions, and verifies the accuracy of the original license application information. Obtains radiation level readings with portable radiological instruments, and interprets the measurements for significance. Confers with facility management, and prepares comprehensive reports of findings, including recommendations for corrective measures if indicated. Apprises immediate supervisor of the status of the facilities.

Conducts radiological health surveys of industrial users of x-ray, microwave, and laser devices to determine compliance with the applicable rules and regulations. Confers with firm management and prepares reports of findings.

Evaluates routine radioactive material use license applications, such as those for basic nuclear medicine facilities and limited radiography installations, for adequacy of the proposed facilities, equipment, radiation safety procedure, personnel qualifications, proposed operating procedures, and radioactive waste disposal plans. Based on this evaluation, provides program management with recommendations, or requests that additional information be obtained.

When the situation warrants, informs supervisor of the possible need for legal action to enforce the rules and regulations.

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Supervises and trains other radiological health personnel, assists in presentations on radiological health, and instructs radiological personnel in safe techniques.

Calibrates field survey equipment such as x-ray and gamma survey meters, dosimeters, and other instruments used in the evaluation of radiation exposure.

MINIMUM QUALIFICATIONS

NECESSARY KNOWLEDGE, SKILLS, AND ABILITIES

Good knowledge of the theories, principles, and practices of radiological health; of the codes, rules, and regulations related to radiological health; of the operating characteristics of diagnostic and therapeutic x-ray devices; of the characteristics and handling requirements of radioactive materials commonly used in medical or industrial applications; of radiation detection instruments; of the licensing procedures related to x-ray devices or radioactive material use; of the methods of conducting radiological health surveys.

Working skill in the use, calibration, and maintenance of radiation detection and measuring instruments used in radiological health surveys.

Working ability to perform independent radiological health surveys of users of basic to relatively complex medical diagnostic and therapeutic x-ray devices, of industrial users of x-ray devices, and of medical and industrial users of common radioactive materials; to produce clear and concise reports of users findings, including recommendations for corrective measures; to deal tactfully with radiation users; to learn to perform more technically complex and difficult surveys.

Some ability to supervise and train other radiological health personnel.

TRAINING AND EXPERIENCE

One year of experience at a level equivalent to Associate Environmental Radiation Specialist.



MERIT SYSTEM OF PERSONNEL ADMINISTRATION

STATE OF GEORGIA

Class Specification

| Class Title | Effective Date | Specification No. |
|---|----------------|-------------------|
| PG 25 ASSOCIATE ENVIRONMENTAL RADIATION SPECIALIST | 07/01/78 | 57340 |

The examples of work given are illustrative of the duties assigned to positions of this class. No attempt is made to be exhaustive. The intent of the listed examples is to give a general indication of the levels of difficulty and responsibility common to all positions of this class.

The standards for training and experience express the minimum background necessary as evidence of an applicant's ability to qualify for positions of this class. Unless otherwise stated, the Applicant Services Division may allow substitution of appropriate education or experience for the training and experience minimums listed.

DEFINITION

Under immediate supervision performs work of moderate difficulty in performing radiological health surveys of users of common x-ray devices, in performing basic surveys of radioactive material licenses and applicants, and in training to perform surveys and evaluations of more complex installations, and performs related work as required.

EXAMPLES OF DUTIES

Performs radiological health surveys of users, such as physicians, dentists, veterinarians, and chiropractors, of the more common types of diagnostic x-ray devices to determine compliance with the applicable public health rules and regulations. Checks items such as proper storage of film, required darkroom equipment, and documentation of exposure levels of personnel to radiation. Notes variances from the proper operating procedures, and makes recommendations for safer operation of the equipment.

Conducts screening inspections of microwave ovens, and prepares reports with recommendations for corrective measures, if necessary.

Evaluates radioactive material use license applications which are relatively basic in scope, such as those for in-vitro laboratories, civil defense cobalt training sets, general licensed gauges, and strontium 90 applicators, to determine adequacy of such things as the specifications of the proposed installation, equipment procedures, personnel qualifications, and radioactive waste disposal plans.

Conducts surveys of facilities where radioactive materials are used to a limited extent to determine the accuracy of the license applications and compliance with rules, regulations, and license conditions. Uses portable radiation survey meters to obtain level readings and interprets these measurements with the assistance of senior personnel.

In all cases, prepares clear, concise reports of findings, which will include recommendations to licenses/users if indicated.

Performs basic maintenance checks on portable radiation survey instruments, and maintains instruments log books. Assists in the preparation and presentation of radiological health information programs and safe radiological practices procedures classes.

MINIMUM QUALIFICATIONS

NECESSARY KNOWLEDGE, SKILLS, AND ABILITIES

Good knowledge of the fundamental physics of ionizing and non-ionizing radiation health safety, including such elements as the characteristics of alpha, beta,

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and gamma radiations, units of radiation dosage and the quantities they represent, the hazards and indications of excessive exposure to radiation, typical radiation source levels, and methods of controlling dosage; of common radiation detection instruments; of the characteristics of x-ray device operation, including shielding requirements, collimation, and filtration of the output of x-ray tube heads; of proper x-ray procedures.

Working ability to write clear and concise reports of radiological health surveys; to deal tactfully with users of x-ray equipment or radioactive material, particularly in making recommendations for safer operation; to learn to perform various types of radiological health surveys; to learn thoroughly the rules, regulations, and codes concerning radiological health.

TRAINING AND EXPERIENCE

Completion of an undergraduate major in a physical or natural science, or engineering field, related to radiological health at a four year college or university.

APPENDIX D

SELECTED LICENSE REVIEWS

APPENDIX D

REVIEW OF SELECTED LICENSE FILES

Summary and Conclusions

A review was conducted of 25 license files. The files were reviewed in general for significant errors, omissions, deficiencies in the licensing actions, properly completed applications, appropriate signatures, and to determine if the licenses were properly supported by information in the files.

Cover letters are utilized to transmit renewal notices and license documents. In general, the reviewer found that the licenses were properly supported by information in the files, contained appropriate licensing conditions for the type of license being issued, and the reviews covered pertinent points of acceptable radiation programs; however, in some cases, detailed information was lacking, or an incorrect date was referenced in the tie-down condition. Superceded license amendments and materials should be clearly identified and separated from the active information in the folders, and the license with back-up materials should be separated from enforcement reports and correspondence, and from the general correspondence.

A review was conducted on the status of the Luminous Processes, Inc., license which has been turned over to the State Attorney General's office for action. A fence has been constructed around the property and posted with no trespassing and "Caution Radioactive Material" signs. The Department of Natural Resources has applied for a \$700,000 grant from EPA for decontamination of the site.

The following files were reviewed and for the purposes of this report, a numerical code was assigned to each license file as follows:

1. Luminous Processes, Inc.
Tritium Production Department
Atlanta Highway
Athens, GA 30601

License Number - GA-197-1, Amendment 14
Issued 5/15/80
Expired
Type License - Industrial use of Tritium and Radium
2. Southeastern Medical Services, Inc.
4660 N. Royal Atlanta Drive
Tucker, GA 30084

License Number - GA-663-1, Amendment 12
Issued 7/11/80
Expires 7/31/85
Type License - Medical, Groups I and II

3. Atlanta Testing and Engineering Co.
105 Technology Parkway
Norcross, GA 30092

License Number - GA-488-2

Issued 8/18/80

Expires 8/31/85

Type License - Radiography, Permanent and temporary sites

4. Pittsburg Testing Laboratory
255 Mendell Drive, S.W.
Atlanta, GA 30336

License Number - GA-411-1

Issued 2/12/80

Expires 12/31/84

Type License - Radiography, temporary locations

5. University of Georgia
Public Safety Division
Athens, GA 30602

License Number - GA-103-1, Amendment 19

Issued 5/19/80

Expires 10/31/81

Type License - Academic, Broad

6. Dr. Ernest C. Tsivoglou, President
E. C. Tsivoglou, Inc.
1974 Starfire Drive, N. E.
Atlanta, Ga. 30345

License Number - GA-414-1, Amendment 2

Issued 9/27/79

Expires 9/30/84

Type License - Tracer studies at waste water treatment plants

7. Southern Space, Inc.
3061 Houston Avenue
Macon, GA 31206

License Number - GA-61-1, Amendment 10

Issued 7/24/81

Expires 7/31/86

Type License - Broad, nuclear laundry

8. Georgia Institute of Technology
Atlanta, GA 30332

License Number GA-147-1, Amendment 35
Issued 8-30-79
Expires 4/30/82
Type License - Broad, academic

9. Power Piping Company
829 Beaver Avenue
Pittsburg, PA 15283

License Number GA-729-1
Issued 12/21/79
Expires 12/31/84
Type License - Radiography, temporary locations

10. Task, Inc.
255 Belmont Road
Athens, GA 30605

License Number GA-700-1
Issued 2/21/80
Expires 3/31/84
Type License - Industrial

11. Solvent Solidification Service
P. O. Box 4206
Athens, GA 30602

License Number GA-783-1
Issued 10/14/81
Expires 10/31/86
Type License - Industrial

12. Picker Corporation
595 Miner Road
Cleveland, OH 44143

License Number GA-404-2
Issued 8/21/80
Expires 8/31/85

13. Nuclear Medicine Pharmacy, Inc. of Georgia
Rankin Square, Suite 206
8 Eleventh Street
Columbus, GA 31901

License Number GA-746-1MD
Issued 10/21/80
Expires 10/31/85
Type License - Nuclear Pharmacy

14. The Aston Company
1800 Montreal Circle
Tucker, GA 30084

License Number GA-107-2
Issued 3/21/80
Expires 3/31/85
Type License - Service, Industrial

15. Yakogawa Corporation of America
Shenendoah, GA 30265

License Number GA-732-1
Issued 7/16/80
Expires 7/31/85
Type License - Service and distribution

16. Enoch Callaway Cancer Clinic, Inc.
111 Medical Drive
LaGrange, GA 30240

License Number GA-20-2, Amendment 12
Issued 4/17/80
Expires 4/30/85
Type License - Medical Groups I, II, III, IV, V, VI

17. Henry General Hospital
P. O. Box 538
Stockbridge, GA 30281

License Number GA-710-1, Amendment 02
Issued 1/19/81
Expires 7/31/84
Type License - Medical, Groups I, II, III

18. Hamilton Memorial Hospital
Memorial Drive
P. O. Box 1168
Dalton, GA 30720

License Number GA-45-2
Issued 3/5/81
Expires 3/31/86
Type License - Medical, Group IV
19. Medimco, Inc.
6667 Vernon Woods Drive
Suite B-14
Atlanta, GA 30328

License Number GA-619-1, Amendment 09
Issued 11/6/80
Expires 3/31/86
Type License - Medical, Groups I, II, IV, V
20. Northeast Georgia Medical Center
743 Spring Street, N. E.
Gainesville, GA 30501

License Number GA-193-2, Amendment 06
Issued 5/2/80
Expires 5/31/85
Type License - Medical, Group VI
21. John D. Archbold Memorial Hospital
Gordon Avenue and Mimasa Drive
P. O. Box 1018
Thomasville, GA 31792

License Number GA-78-1, Amendment 13
Issued 3/16/81
Expires 2/28/86
Type License - Medical, Groups I, II, III, IV, V
22. John D. Archbold Memorial Hospital
Radiation Therapy Department
Thomasville, GA 31792

License Number GA-78-2
Issued 4/18/79
Expires 5/31/84
Type License - Teletherapy

23. Skidway Institute of Oceanography
P. O. Box 13687
55 West Buff Road
Savannah, GA 31406

License Number GA-86-1
Issued 3/20/81
Expires 3/31/86
Type License - Industrial, tracer studies

24. Southeastern Testing Services
800 E. Bay Street
P. O. Box 341
Savannah, GA 31402

License Number GA-552-1
Issued 5/17/79
Expires 5/31/84
Type License - Radiographer, temporary locations

25. Americus and Sumter County Hospital
Teletherapy Department
712 Forsyth Street
Americus, GA 31709

License Number GA-5-2
Issued 6/4/81
Expires 6/30/86
Type License - Teletherapy

The following summary table provides the types of comments for each license reviewed and as coded numerically above:

| <u>License Comment</u> | <u>License Code</u> |
|--|---------------------|
| a. Terminated. | 2 |
| b. Incorrect date referenced in the license tie-down condition. | 3, 4 |
| c. Emergency operating procedures were not filed with license. | 3 |
| f. Current license amendments and supporting information should be separated from superceded materials. | 4 |
| g. NRC regulations were referenced in the license condition rather than Georgia equivalent requirements. | 5 |

| <u>License Comment</u> (Continued) | <u>License Code</u> |
|---|---|
| h. Insufficient details for authorized use or quality control methods used. | 10, 11 |
| i. No deficiencies were noted. | 2, 6, 7, 8, 9, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25. |

APPENDIX E
INCIDENT SUMMARY

INCIDENT FILE

This is a list of investigations performed by DHR since May 1980.

1. Lost well logging source down hole and recovery of source from a U. S. Geological Services Well near Adelle, Georgia. This occurred on March 26, 1980, and was reported by telephone. The source was a one curie americium beryllium source which was lost 200 feet below the surface in a water well and then dropped to the 865 feet level. The well logger was Bendix Corporation out of Grand Junction, Colorado doing work for DOE at a USGS well near Adelle. On May 30, 1980 the source was recovered but licensee did not inform the State. Incident closed.
2. Robert Boyd, RSO at Georgia Institute of Technology purchased two gas analyzers from DMS Surplus Property Warehouse in Georgia. The analyzers contained a 150 microcuries of Radium-236. These devices were transferred to Georgia from the Alabama Surplus Property Warehouse. A survey was performed by Georgia Tech and DHR and found to be 8 millirem per hour at the surface. The devices were subsequently returned to Marshall Space Flight Center in Alabama. Incident Closed.
3. June 5, 1980. Memo to files from Carol Connel. This incident involved two one gallon cans marked radioactive which were found by Clark County Police Department near Athens, Georgia. The University of Georgia Radiation Safety Officer was called and a team from the University evaluated the cans. Additional markings made with a common marking pen were as follows: "T. Wade 12/7/79 do not open 2319." Mr. Wade was contacted by police after inquiries were made of local hospitals and users of radioactive material. It was determined that the containers were marked as a joke and that they did not contain radioactive material. The incident was reported on the front page of the Athens Daily News on or about June 2, 1980. The information in the newspaper appeared to have been derived from radio communication channels. The incident was closed out.
4. On August 12, 1980, a representative of the Savannah River Plant which is part of the Interagency Radiological Assistance Program called the EPD emergency phone number and reported that a radioactive material package had been damaged at the Lockheed Terminal of the Atlanta Hartsfield International Airport. The EPD Radiological Emergency response team of Blackman, Kline and Martin responded to the incident about 9:00 a.m. The incident involved nine packages containing Molybdenum-99 generators that were being transported between terminals. Only one other package was damaged. No measurable levels of radiation or leakage in material resulted. The area was cleared and released for unrestricted use around 11:00 a.m. Incident closed.
5. August 15, 1980 Recovery of a 10 Milligram Radium Equivalent cesium-137 tube from Georgia Baptist Medical Center. On July 30, 1980 the licensees consulting physicist called DHR to report the loss of the cesium-137 source. They also stated that the source had been lost between April and the first of

July according information in a log book. A thorough investigation was conducted by DHR personnel and hospital personnel with assistance from DNR. The survey included meetings and discussions with housekeeping and nursing personnel; surveys of sewage plans and all rooms used or potentially used by therapy patients. The survey finally resulted in the survey of a land fill operation where trash dumpsters had been emptied. After surveying for about two hours a radiation area was discovered. The equipment was brought in to remove materials and the source was found. The source was later identified by serial numbers by hospital personnel as the lost source. A notice of violation letter was sent to the licensee containing twelve violations of Georgia Code. Incident closed.

6. On August 20, 1980 a licensee at Goldkist Research Center notified DHR that a Varian Model 1800 gas chromatograph with a 250 millicurie hydrogen-3 foil had overheated to a temperature of 290°. The maximum temperature for the titanium titate foil was 225°C. A survey of the facility resulted after taking smears of specific locations and surveying with a portable tritium gas analyzer. When the gas chromatograph was opened to inspect the detector cell, it was discovered that the source was missing. Subsequent surveys located the foils in a spare foil drawer storage area and interviews with laboratory technicians determined that the foil from the detector cell had been removed for cleaning and that the technicians forgot to replace it in the cell. A new microswitch was ordered that would shut the oven off at 225°C and incident was closed.
7. On November 13, 1980 a Picker C-9 cobalt teletherapy unit did not retract during a rotational chest treatment. The timer stopped, but the source lights stayed on. Emergency procedures were used by two technicians to remove the patient from the beam. The service company determined that a faulty source return spring was the source of the problem. The spring was replaced and the machine thoroughly checked by the teletherapy service people and it was determined that this was not a generic problem. It was determined by dosimeters and calculations that no person received more than 6 millirems. The incident was closed.
8. September 23, 1980. Report of a Teletherapy Unit Malfunction at the Memorial Medical Center. This incident involved the malfunction of a bent detent pen and an air cylinder failure. The emergency procedures were used to remove the patient from the room. No excessive radiation resulted from the incident. The technician and physicians involved received from 10 to 40 millirems according to personnel dosimetry. The AECL repairmen indicated that this incident was not due to a genetic problem. A report was provided to DHR by the Memorial Medical Center and this report subsequently sent to OSP. Incident closed.
9. January 8, 1980. Memo to files, subject "Misadministration of A Radiopharmaceutical at Griffin-Spaulding Hospital on January 6, 1980." The licensee's consultant informed DHR of a misadministration of a sulfur colloid dose of 4.6 millicuries. The prescription was labeled sulfur colloid; however, it acted as a lung agent instead of going to the liver. The radiopharmacy involved was Nuclear Pharmacy, Inc. The pharmacist

suspected that the dose was drawn from the microspheres bottle rather than from the sulfur colloid bottle. No other licensee in the area had similar problems from that pharmacy. No serious overexposure resulted to the patient and the incident was closed after requesting a report from the Radiopharmaceutical Company.

10. April 17, 1981. Report to DHR Concerning A Laboratory at the Medical College In Georgia On April 16, 1981. An individual dropped a 2 milliliter partially filled biometric glass containing approximately 5 milliliters of calcium chloride in solution. The total activity was 4 millicuries. The licensee's RSO decontaminated the floor and the individuals involved were requested to submit urine samples. Decontamination attempts of the floor were unsuccessful and the plastic tiles were replaced. The laboratory was shut down for approximately one week. It was determined by the RSO that no significant exposure to individuals had occurred. A report was submitted to DHR and the incident closed.
11. April 28, 1981. An incident involving a radiography source was reported by Atlanta Testing and Engineering Company, Atlanta, Georgia. This was a source disconnect involving a Tech-Ops 660 device at Plant Hatch, in Baxley, Georgia. The licensee was able to retrieve the source successfully without any overexposures to personnel. The Radiographer received 170 millirems and his supervisor who retrieved source received approximately 90 millirems. The incident was properly reported. Incident closed.
12. May 14, 1981. A concerned citizen notified DHR that a neighbor had been receiving packages that were marked radioactive. DHR investigated and determined that the material was Thorium Nitrate, received from Fisher Scientific Chemical Manufacturing Company and distributed under an NRC license SNM-201. This material is not for drug, food or household use. Subsequent investigation revealed that the individual who received the material was developing a paint stripper and was also a graduate student at Georgia Institute of Technology. A license was not required for the material and the material was being used in accordance with good health and safety practices. The incident was closed.
13. Law Engineering notified DHR of a possible of overexposure on August 4, 1981, using a 38 curie iridium-192 source. This incident took place at R. B. Russell Dam in Elberton, Georgia. Emergency procedures were taken by the licensed radiographer and the operation closed down. DHR was notified, calculations were performed, and the licensed radiographer's film badge was sent off for processing. Subsequent analysis of the film badge company shows that the film badge received 11 millirem whole body radiation. Incident was closed after a report from the licensee.
14. September 14, 1981. DHR received a phone call from a concerned citizen on August 19, 1981 who was concerned that a bed her children were sleeping in was contaminated. This bed had come from an aunt's house in Cleveland, Ohio and it was rumored that the Ohio area was having problems because of illegal disposal of radioactive materials. Region II office was notified and the

Region III NRC office determined that the only contamination problem was in a suburb home of a researcher who had been using americium-241, but it had not affected any other homes. The concerned citizen was not related to the researcher. The incident was closed.

15. On September 8, 1981, 25 luminous light sources were found under the basement of a private citizen's home. They were determined to Radium-226. The radium was determined not to be leaking. No residual contamination was found in the house and the sources were transported to Anniston, Alabama for disposal by the military. Incident closed.
16. October 5, 1981. The U. S. EPA representative in the Atlanta Regional Office called DHR to pick up radioactive material which had been left at the Atlanta Hilton Hotel presumably following a convention. The material turned out to be an iodine-125 RIA pregnancy test kit and was found in a conference room that had been previously used by Rollins Protective Services. The ownership of the material could not be determined. The material was removed from the hotel, smeared, and determined not to be contaminated and stored at DHR and will be transferred for disposal after it has decayed. Incident closed.
17. Investigation following a complaint of alleged unsafe working practices against Pittsburg Testing Laboratory (PTL), Birmingham, Alabama, while conducting industrial radiography at Ingles Marine, Inc., Brainsbidge, Georgia. A complaint received through the NRC and OSHA regarding unsafe industrial radiography practices by PTL. The allegation was investigated by DHR on December 8, 1980. The complaints involved a radiographer who supposedly smoke marijuana and drank beer while on the job and his helpers felt they had been exposed to unsafe practices. The investigation by DHR determined that there were no violations of the Georgia Department of Human Resources' rules and regulations for radioactive materials. The incident was closed.
18. About June 9, 1980, DHR learned of a warehouse in Rome, Georgia containing 17 crates of luminous watch components containing radium. This material had been purchased from the Anniston Ordinance Dept in Alabama approximately twenty years ago and stored in this warehouse during this period of time. The private citizen did not have a license for the material and wanted to dispose of the material. Surveys were conducted by DHR personnel and it was arranged to have the material transferred to the Department of Army for disposal by Southwest Nuclear Company of Louisville, Kentucky. This incident was closed out on December 4, 1980 and no additional contamination of the building or exposure to persons resulted.
19. There are two pending investigations of individuals who are concerned that their freezers or refrigerators are contaminated with radioactive materials because the refrigerators were once used to store radioactive materials. Preliminary screening showed no signs of contamination. These refrigerators came from a State facility and had a radioactive material sign on the outside. The samples of smears are currently being analyzed by DNR.

APPENDIX F

INSPECTION PRIORITY SYSTEM

INSPECTION PRIORITY SYSTEM

A-3

| <u>CATEGORY</u> | <u>PRIORITY</u> |
|--|-----------------|
| (A) - LOOSE SPECIAL NUCLEAR MATERIAL (HIGH RISK) | - II |
| (B) - PROCESSORS AND DISTRIBUTORS OF SEALED SOURCES OR NON-SEALED SOURCE | - I |
| (C) - RADIOGRAPHERS | - II |
| (D) - COMMERCIAL BURIAL SERVICE | - II |
| (D-1) - COMMERCIAL DISPOSAL SERVICE, NOT INCLUDING BURIAL | - IV |
| <u>INDUSTRIAL</u> | |
| (E) - INDUSTRIAL R & D: MANUFACTURING, PROCESSING, OR ASSEMBLING OF PRODUCTS INCLUDING NUCLEAR LAUNDRIES AND USE OF IRRADIATED ITEMS | - IV |
| (E-1A) - TYPE A BROAD | - IV |
| (E-1B) - TYPE B BROAD | - VI |
| (E-1C) - TYPE C BROAD | - VI |
| (E-2) - CATEGORY E NOT REQUIREING BIOASSAYS OR CONTAMINATION SURVEYS OTHER THAN LEAK TESTS WITH LIMITED PERSONNEL EXPOSURES | - VI |
| <u>ACADEMIC</u> | |
| (F) - NON-BROAD ACADEMIC LICENSE | - VI |
| (F-1A) - TYPE A BROAD | - III |
| (F-1B) - TYPE B BROAD | - VI |
| (F-1C) - TYPE C BROAD | - VI |
| <u>MEDICALS</u> | |
| (G) - NON-BROAD MEDICAL, NOT INCLUDING EYE APPLICATORS | - IV |
| (G-1) - BROAD MEDICAL | - II |
| (G-2) - DIAGNOSTIC ONLY (NOT INCLUDING GENERATOR) AND/OR EYE APPLICATORS | - |
| (G-3) - TELETHERAPY (INITIAL 6 MONTHS) | - |
| (H) - APPLICATION TO THE ENVIRONMENT | - IV |
| (I) - PREPARATION AND PROCESSING SOURCE MATERIAL | - II |
| (J) - SHIPPING CASKS, TRANSPORTATION | - VI |
| (K) - ALL OTHERS INCLUDING GAUGES, SINGLE CD SETS, STORAGE ONLY, INSTRUMENT CALIBRATION, IN VITRO ONLY, CONSULTANTS, ETC. | - VI |
| (K-1) - MULTIPLE CD SOURCE SETS BY MULTIPLE USERS | - VI |

PRIORITY INSPECTION INTERVALS:

| | <u>INITIAL</u> | <u>AFTER INITIAL</u> |
|-----|----------------|---|
| I | 1 MONTH | 2/YEAR - - - - COMPLEX 1/YEAR - - - - LESS COMPLEX |
| II | 6 MONTHS | 1 YEAR |
| III | 1 YEAR | 2 YEARS |
| IV | 1 YEAR | 3 YEARS |
| V | 18 MONTHS | 5 YEARS |
| VI | 18 MONTHS | 10 YEARS |
| VII | 5% | ONLY FOR CAUSE |

APPENDIX G

COMPLIANCE FILES REVIEW

APPENDIX G

REVIEW OF SELECTED COMPLIANCE FILES

Summary and Conclusions

The State has been using inspection checklists in the field then writing narrative inspection reports. Copies of selected inspection forms used by the NRC and some states were provided during the review. These forms provide a guide for the inspector during the inspection and provides a combination type report consisting of checklists, fill in the blank type statements, and sufficient room for narrative discussions as needed.

In general, the files were reviewed to determine if the inspections were complete and substantiated all items of noncompliance and recommendations. The files were reviewed to determine if appropriate enforcement actions were taken, written in appropriate regulatory language, timeliness of letters, and if adequate responses were received from the licensee to close out the enforcement actions.

In general, the quality of the inspection reports have improved over the years, however, in one case, additional details and documentation is needed as outlined in the summary table that follows. The reviewer found it difficult to review the folders in some cases because the inspection reports and enforcement actions had not been kept separate from the license back-up materials and general correspondence. The state was complimented on the quality of their recent inspection reports.

Twenty-four license compliance files were selected for review; however, only 13 had received inspections since the last review. Some of the licenses were new and some were overdue for inspection. The following files were reviewed and for the purposes of this report, a numerical code (1 through 24) was assigned to each license file as follows:

1. Luminous Processes, Inc.
Tritium Production Department
Atlanta Highway
Athens, GA 30601

License Number - GA-197-1, Amendment 14
Issued 5/15/80
Expired 9/30/80

2. Atlanta Testing and Engineering Co.
105 Technology Parkway
Norcross, GA 30092

License Number - GA-488-2
Issued 8/18/80
Expires 8/31/85
Type license - Radiography, Permanent and temporary sites

3. Pittsburg Testing Laboratory
255 Mendell Drive, S.W.
Atlanta, GA 30336

License Number - GA-411-1
Issued 2/12/80
Expires 12/31/84
Type license - Radiography, temporary locations

4. University of Georgia
Public Safety Division
Athens, GA 30602

License Number - GA-103-1, Amendment 19
Issued 5/19/80
Expires 10/31/81
Type license - Academic, Broad

5. Dr. Ernest C. Tsivoglou, President
E. C. Tsivoglou, Inc
1974 Starfire Drive, N.E.
Atlanta, GA 30345

License Number - GA-414-1, Amendment 2
Issued 9/27/79
Expires 9/30/84
Type license - Tracer studies at waste water treatment plants

6. Southern Space, Inc.
3061 Houston Avenue
Macon, GA 31206

License Number - GA-61-1, Amendment 10
Issued 7/24/81
Expires 7/31/86
Type license - Broad, nuclear laundry

7. Georgia Institute of Technology
Atlanta, GA 30332

License Number - GA-147-1, Amendment 35
Issued 8/30/79
Expires 4/30/82
Type license - Broad, academic

8. Power Piping Company
829 Beaver Avenue
Pittsburg, PA 15283

License Number - GA-729-1
Issued 12/21/79
Expires 12/31/84
Type license - Radiography, temporary locations

9. Task, Inc.
255 Belmont Road
Athens, GA 30605

License Number - GA-700-1
Issued 2/21/80
Expires 3/31/84
Type license - Industrial

10. Solvent Solidification Service
P. O. Box 4206
Athens, GA 30602

License Number - GA-783-1
Issued 10/14/81
Expires 10/31/86
Type license - Industrial

11. Picker Corporation
959 Miner Road
Cleveland, OH 44143

License Number - GA-404-2
Issued 8/21/80
Expires 8/31/85

12. Nuclear Medicine Pharmacy, Inc. of Georgia
Rankin Square, Suite 206
8 Eleventh Street
Columbus, GA 31901

License Number - GA-746-1MD
Issued 10/21/80
Expires 10/31/85
Type license - Nuclear Pharmacy

13. The Aston Company
1800 Montreal Circle
Tucker, GA 30084

License Number - GA-107-2
Issued 3/21/80
Expires 3/31/85
Type license - Service, Industrial

14. Yokogawa Corporation of America
Shenendoah, GA 30265

License Number - GA-732-1
Issued 7/16/80
Expires 7/31/85
Type license - Service and distribution

15. Enoch Callaway Cancer Clinic, Inc.
111 Medical Drive
LaGrange, GA 30240

License Number - GA-20-?, Amendment 12
Issued 4/17/80
Expires 4/30/85
Type license - Medical Groups I, II, III, IV, V, VI

16. Henry General Hospital
P. O. Box 538
Stockbridge, GA 30281

License Number - GA-710-1, Amendment 02
Issued 1/19/81
Expires 7/31/84
Type license - Medical, Groups I, II, III

17. Hamilton Memorial Hospital
Memorial Drive
P. O. Box 1168
Dalton, GA 30720

License Number - GA-45-2
Issued 3/5/81
Expires 3/31/86
Type license - Medical, Group IV

18. Medimco, Inc.
6667 Vernon Woods Drive
Suite B-14
Atlanta, GA 30328

License Number - GA-619-1, Amendment 09
Issued 11/6/80
Expires 3/31/86
Type license - Medical, Groups I, II, IV, V

19. Northeast Georgia Medical Center
743 Spring Street, N. E.
Gainesville, GA 30501

License Number - GA-193-2, Amendment 06
Issued 5/2/80
Expires 5/31/85
Type license - Medical, Group VI

20. John D. Archbold Memorial Hospital
Gordon Avenue and Mimasa Drive
P. O. Box 1018
Thomasville, GA 31792

License Number - GA-78-1, Amendment 13
Issued 3/16/81
Expires 2/28/86
Type license - Medical, Groups I, II, III, IV, V

21. John D. Archbold Memorial Hospital
Radiation Therapy Department
Thomasville, GA 31792

License Number - GA-78-2
Issued 4/18/79
Expires 5/31/84
Type license - Teletherapy

22. Skidway Institute of Oceanography
P. O. Box 13687
55 West Buff Road
Savannah, GA 31406

License Number - GA-86-1
Issued 3/20/81
Expires 3/31/86
Type license - Industrial, tracer studies

23. Southeastern Testing Services
800 E. Bay Street
P. O. Box 341
Savannah, GA 31402

License Number - GA-552-1
Issued 5/17/79
Expires 5/31/84
Type license - Radiographer, temporary locations

24. Americus and Sumter County Hospital
Teletherapy Department
712 Forsyth Street
Americus, GA 31709

License Number - GA-5-2
Issued 6/4/81
Expires 6/30/86
Type license - Teletherapy

Summary Table of Specific Comments

The following table lists the specific compliance comments developed during the review for each of the above numerically coded compliance files.

| <u>Specific Comment</u> | <u>License Code</u> |
|--|--|
| a. Corrective actions taken on previous items of noncompliance not sufficiently documented in inspection report. | 3 |
| b. Limited inspection, complete inspection is needed. | 7 |
| c. No specific comments were noted on these inspections. | 4, 5, 6, 8, 12, 13, 16, 18, 22, 23 |
| d. These licenses have not been inspected since the previous review; therefore, could to be evaluated. | 2, 9, 10, 11, 14, 15, 17, 19, 20, 21, 24 |

Update on Luminous Processes

- July 1980 - Applied Radiological Control (ARC) who was authorized to decontaminate the Luminous facility, stopped work.
- September 1980 - Partial payments were made to contractors for decon work.
- September 30, 1980 - License was terminated, no extension.

- March 19, 1981 - The Governor appointed a task force to identify areas to be decontaminated and to identify ways to finance the cleanup and decontamination of the facilities.
- Task force members
- Jim Setser, DNR
 Barry Allen, DHR, Law Department
 Charles Head, DHR
 Lou DeRose, DHR
 Tom Moody, DHR, Appeals Office
- March - April 1980 - DHR collected soil core samples and analyses performed by DNR.
- April 1981 - A four-foot "hot wire" fence with barb wire was constructed around the facility and was posted with "Caution" signs.
- April 1981 - The State filed a suit in Superior Court against Luminous and stock holders.
- July 30, 1981 - The Governor requested assistance from US EPA to finance decontamination operation.
- November 1981 - Preliminary hearings in progress.

APPENDIX H

INSTRUMENT INVENTORY

RADIOACTIVE MATERIAL UNIT INSTRUMENTATION EQUIPMENT

I. Field Instrumentation:

A. Beta - Gamma Survey Meters

1) Eberline - Model - E-520

- a) Serial No. - 1405
- b) Serial No. - 377
- c) Serial No. - 378
- d) Serial No. - 551
- e) Serial No. - 1098
- * f) Serial No. - 1548
- * g) Serial No. - 1552

*New E-520 in storage never used

2) Eberline - Model - E-120

- a) Serial No. - 504
- b) Serial No. - 529
- c) Serial No. - 1216

3) Eberline - Model - PRM-5-3

- a) Serial No. - 2347
- b) Serial No. - 2346

4) Jordan - Model - AGB-10KG-SR

B. Alpha Survey Meters

1) Eberline-Model - PAC-1SAGA

- a) Serial No. - 2129
- b) Serial No. - 2128

2) Eberline-Model - PAC-1SAG

- a) Serial No. - 173
- b) Serial No. - 179

C. Tritium, Alpha and Beta Survey Meter

1) Eberline - Model - PAC-4G-3

a) Serial No. - 2519

D. Neutron Survey Meters

1) Eberline Model-PNC-4

2) Eberline Model-PNR-4

E. Other Equipment

1) Alnor-Velometer-Series 6000-P

2) One box of smoke tubes

3) Air sampler-Staplex Model-TFIA

II. Laboratory and Calibration Instrumentation:

A. Eberline-Mini Scaler - Model-MS-2

B. Eberline-Mini Pulser - Model-MP-1

C. Cesium Calibrator (NBS TRACEABLE)

APPENDIX I
CALIBRATION PROCEDURES

STATE AGREEMENTS BRANCH
DIVISION III
INFORMATION NOTICE

Other

H.2 - Calibration of Radiation
Detection Survey Instruments

The purpose of this Information Notice is to provide SAP staff and the Agreement States with guidance for calibration of survey meters used by Agreement States in independent measurements during compliance inspections.

I. Calibration Frequency

- A. A survey instrument used for independent measurements in a compliance inspection should be calibrated at a date such that the interval between the calibration date and the date of inspection does not exceed the interval imposed upon the licensee.
 1. Example - Industrial radiographers are required to maintain survey instruments which have been calibrated at intervals not to exceed three months (and after each servicing of the instrument). The survey instrument used by the inspecting agency should have been calibrated at a date not more than three months previous to the date the instrument is used at the inspection.
 2. Example - A hospital's license requires their beta-gamma survey meter to be calibrated at intervals not to exceed six months. The beta-gamma survey instrument used by the inspecting agency should have been calibrated at a date not more than six months previous to the date the instrument is used at the inspection.
- B. In some cases, the only requirement upon a licensee may be that the survey instrument be "checked". In such cases, the instrument used by the inspecting Agency should be calibrated according to the guidelines in paragraph I.C (following).

11/19/76

1. Example - An industrial licensee is required by his license to "check" his alpha survey instrument against a calibrated RaDEF source daily. The inspecting agency's instrument should have been calibrated against a calibrated alpha source within one year (see paragraph I.C). In addition, the inspector should carry a small alpha check source to use to check for proper response of the instrument. This should be used each day the instrument is used for independent measurements. (See paragraphs III.A.1 and 2.)

- C. If there is no applicable requirement in the regulations or in the license regarding calibration frequency, the following guidelines may be applied to survey instruments used by the inspecting agency for independent measurements:

| <u>Type</u> | <u>Frequency^a</u> |
|----------------------------------|------------------------------|
| 1. Gamma (GM, "Cutie pie", etc.) | 6 months |
| 2. Alpha | <1 year prior to use |
| 3. Neutron | <1 year prior to use |
| 4. Beta | See footnote a |
| 5. Other | See footnote a |

II. Calibration Practices

- A. 1. For gamma survey instruments used by inspecting agencies, the calibration should be traceable to the National Bureau of Standards (NBS).^b

-
- a. Circumstances may dictate other calibration practices. For example a gamma scintillator kept for use in searching for lost sources would not normally be calibrated except, perhaps, after servicing. If used for a compliance survey, however, a timely re-calibration may be needed.
 - b. Calibrations using a source of uncertain origin or output can meet this objective if the output is established by using, for example, an R-chamber whose calibration is traceable to NBS.

II. Calibration Practices (continued)

- A. 2. For alpha and neutron survey instruments, calibrations using alpha or neutron sources prepared specifically for use for calibration, or sources whose outputs are certified by the manufacturer, are acceptable.
3. For beta dose measurements, calibration can be established by using a plated source of the same isotope as will be measured in the field. However, this objective can rarely be met (exceptions may be uranium or ^{90}Sr). An acceptable alternative would be to select a beta-gamma survey instrument properly calibrated against a gamma source and whose beta response is well established. It is highly desirable in such cases that the license and the inspecting agency use the same model instrument (detector, window thickness, etc.) and that agreement is reached beforehand concerning factors for converting scale readings to dose rates.
- B. The survey instrument should bear clear evidence of calibration. This may be accomplished by means of a tag, sticker or other suitable means. At a minimum, the date of the last calibration (or alternatively, the date when the current calibration expires) and the name of the person, agency or contractor who provided the calibration should appear.

III. Operational Use

- A. 1. When possible, small check sources should be carried by the inspector and used by him to assure the instrument is operational. In some cases, a check source and a calibration source may be the same, e.g., a small calibrated alpha source.
2. Although normally, check sources are not used for calibration, an inspector should be familiar with the typical response of an instrument to a check source. A significant deviation from the usual response is a signal that there may be a problem with the instrument, e.g., low batteries, contamination, defective detector, improper voltage setting, moisture, etc.
-
- c. The inspector should be acquainted with the battery requirements of his instrument and its battery test circuit. On some commercial survey instruments using multiple sets of batteries, not all batteries are included in the battery test circuit.

IV. Calibration Services

- A. Calibration services can be provided by the inspecting Agency using in-house resources, by persons exempt from licensing (e.g., a national laboratory), or by persons licensed by the NRC or an Agreement State.
 - B. If calibration services are provided to an Agreement State by a licensee of that State, the following practices should be followed:
 1. Services (including calibration, repair, component replacement, delivery, etc.) should not be accepted gratis;^d
 2. All services are covered by a formal agreement, contract, or letter agreement;
 3. Regulatory matters should not be mixed with service activities:
 - a. If an inspector who conducts an inspection of a calibration service license is asked, in the interests of cost savings, to deliver or receive instruments for calibration at the same time, he should clearly separate these two functions during his visit.
 - b. Enforcement or licensing correspondence should not contain references to calibration service matters unrelated to the regulation of the licensee.
 4. Any practice or circumstance that may suggest an appearance of a conflict of interest should be avoided.
 5. If possible, the Agency should prohibit the person providing calibration services to the Agency from advertising this fact.
-
- d. An exception could be another State agency (e.g., State university). In such cases, care should be exercised to assure that the provision of such services does not compromise the regulatory agency in the exercise of its duties.



CESIUM-137 CALIBRATOR

DECEMBER 18, 1978

| | |
|------------|----------|
| 2 MR/HR | 144 1/8" |
| 5 MR/HR | 90 5/8" |
| 15 MR/HR | 51 6/8" |
| 20 MR/HR | 44 5/8" |
| 50 MR/HR | 27 6/8" |
| 150 MR/HR | 15 3/8" |
| 200 MR/HR | 13 1/8" |
| 500 MR/HR | 7 7/8" |
| 1000 MR/HR | 5 1/4" |
| 1500 MR/HR | 4" |
| 2000 MR/HR | 3 1/4" |

EBERLINE - MODEL - E-520

CALIBRATION PROCEDURES
FOR
MODEL E-520 GM

1. PLACE THE CESIUM-137 CALIBRATOR UP AT ONE END OF A LONG, FLAT SURFACE WITH THE CONE OF THE CALIBRATOR AIMED ALONG THE AXIS OF THE SURFACE.
2. CHECK THE INSTRUMENT TO SEE THAT IT IS OPERATIONAL AND THAT THE BATTERIES ARE GOOD. ALSO CHECK FOR ANY OBVIOUS DEFECTS IN THE INSTRUMENT AND ACCOMPANYING PROBES AND CABLES.
3. POSITION THE PROBE USING A RING STAND AT THE SAME HEIGHT WITH THE CONE OPENING ON THE CALIBRATOR.
4. REMOVE THE INSTRUMENT CHASSIS FROM ITS CASE SO THAT THE CALIBRATION CONTROLS ARE ACCESSIBLE.
5. USING THE TABLE ENCLOSED OR THE ONE SUPPLIED WITH THE CALIBRATOR, CHECK THE INSTRUMENT AT TWO POINTS ON THE X1 SCALE AND THE X10 SCALE. (IE. 5, 15, 50, 150 MR/HR) ADJUST THE CALIBRATION CONTROLS ON THE APPROPRIATE SCALES SO THAT THE READING ON THE METER DIFFERS FROM THE TRUE EXPOSURE RATE BY LESS THAN 10% OF FULL SCALE. RECORD THIS DATA ON THE APPROPRIATE FORM.
6. REPEAT THE SAME PROCEDURE FOR THE X100 SCALE REMEMBERING THAT THE INTERNAL PROBE MUST BE CHECKED ON THIS SCALE.
 THE INSTRUMENT CHASSIS SHOULD REMAIN IN THE CASE WHILE CALIBRATING.
7. REMOVE THE CABLE FROM THE PROBE AND ATTACH IT TO THE MINI PULSER SETTING THE OUTPUT OF THE PULSER TO 15 MV.
8. TURN THE INSTRUMENT TO THE X1.0 SCALE AND SET THE MINI PULSER TO 20K CPM. TURN THE PULSER ON. NOTE THE READING OF THE INSTRUMENT ON THE MR/HR SCALE AND RECORD IT. THE RATIO BETWEEN THE 20K CPM AND THE MR/HR READING ON THE INSTRUMENT WILL BE USED TO CALIBRATE THE X.01 AND X0.1 SCALES IN THE FOLLOWING MANNER:

| <u>EXAMPLE:</u> | <u>CALIBRATION POINT</u> | <u>READING</u> |
|-----------------|--------------------------|----------------|
| | X1.0 20K CPM | 17 MR/HR |
| | X.01 200 CPM | .17 MR/HR |
| | X0.1 2K CPM | 1.7 MR/HR |

9. FILL OUT THE FORMS FOR THE INSTRUMENT CALIBRATED AND REPLACE THE STICKER ON THE SIDE OF THE INSTRUMENT FILLING OUT THE NECESSARY INFORMATION.

CALIBRATION PROCEDURES
FOR
MODEL E-520 GM

1. PLACE THE CESIUM-137 CALIBRATOR UP AT ONE END OF A LONG, FLAT SURFACE WITH THE CONE OF THE CALIBRATOR AIMED ALONG THE AXIS OF THE SURFACE.
2. CHECK THE INSTRUMENT TO SEE THAT IT IS OPERATIONAL AND THAT THE BATTERIES ARE GOOD. ALSO CHECK FOR ANY OBVIOUS DEFECTS IN THE INSTRUMENT AND ACCOMPANYING PROBES AND CABLES.
3. POSITION THE PROBE USING A RING STAND AT THE SAME HEIGHT WITH THE CONE OPENING ON THE CALIBRATOR.
4. REMOVE THE INSTRUMENT CHASSIS FROM ITS CASE SO THAT THE CALIBRATION CONTROLS ARE ACCESSIBLE.
5. USING THE TABLE ENCLOSED OR THE ONE SUPPLIED WITH THE CALIBRATOR, CHECK THE INSTRUMENT AT TWO POINTS ON THE X1 SCALE AND THE X10 SCALE. (IE. 5, 15, 50, 150 MR/HR) ADJUST THE CALIBRATION CONTROLS ON THE APPROPRIATE SCALES SO THAT THE READING ON THE METER DIFFERS FROM THE TRUE EXPOSURE RATE BY LESS THAN 10% OF FULL SCALE. RECORD THIS DATA ON THE APPROPRIATE FORM.
6. REPEAT THE SAME PROCEDURE FOR THE X100 SCALE REMEMBERING THAT THE INTERNAL PROBE MUST BE CHECKED ON THIS SCALE.
THE INSTRUMENT CHASSIS SHOULD REMAIN IN THE CASE WHILE CALIBRATING.
7. REMOVE THE CABLE FROM THE PROBE AND ATTACH IT TO THE MINI PULSER SETTING THE OUTPUT OF THE PULSER TO 15 MV.
8. TURN THE INSTRUMENT TO THE X1.0 SCALE AND SET THE MINI PULSER TO 20K CPM. TURN THE PULSER ON. NOTE THE READING OF THE INSTRUMENT ON THE MR/HR SCALE AND RECORD IT. THE RATIO BETWEEN THE 20K CPM AND THE MR/HR READING ON THE INSTRUMENT WILL BE USED TO CALIBRATE THE X.01 AND X0.1 SCALES IN THE FOLLOWING MANNER:

| <u>EXAMPLE:</u> | <u>CALIBRATION POINT</u> | <u>READING</u> |
|-----------------|--------------------------|----------------|
| X1.0 | 20K CPM | 17 MR/HR |
| X.01 | 200 CPM | .17 MR/HR |
| X0.1 | 2K CPM | 1.7 MR/HR |

9. FILL OUT THE FORMS FOR THE INSTRUMENT CALIBRATED AND REPLACE THE STICKER ON THE SIDE OF THE INSTRUMENT FILLING OUT THE NECESSARY INFORMATION.

MODEL E-520

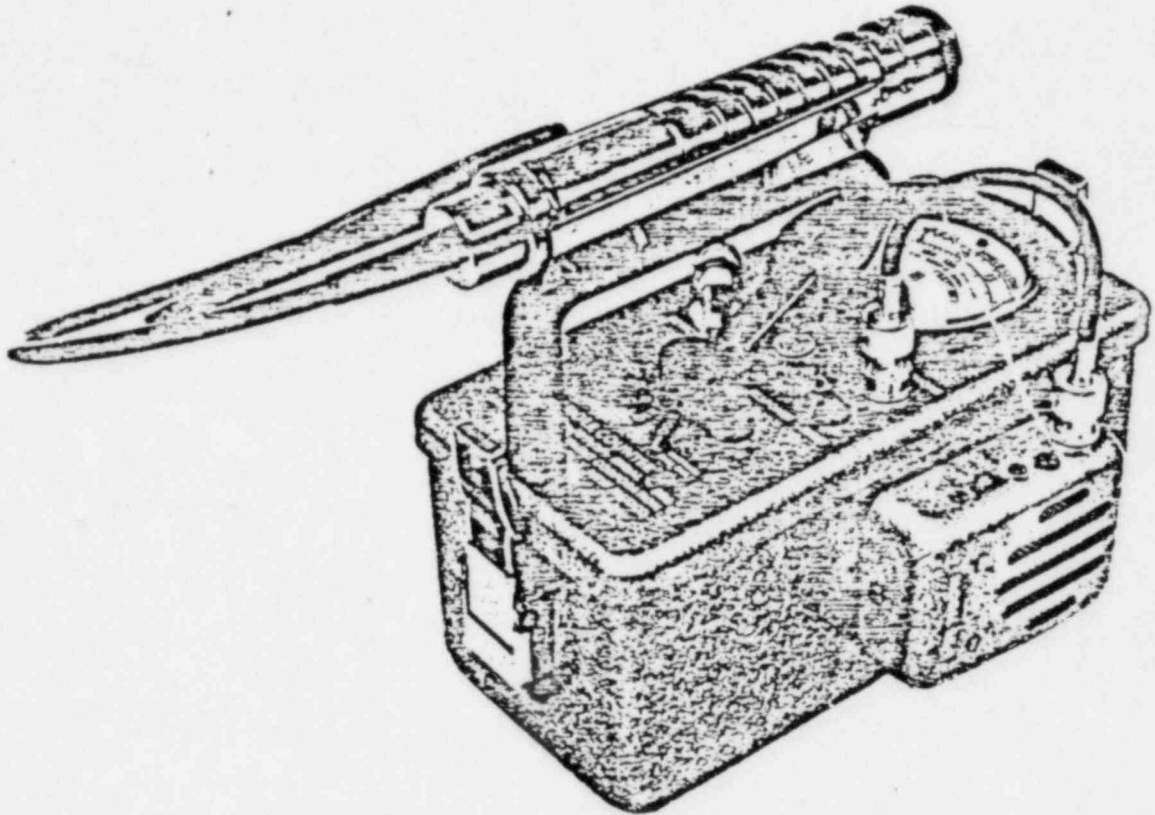


Figure 1-1. Model E-520 (Shown with SK-1 Speaker)

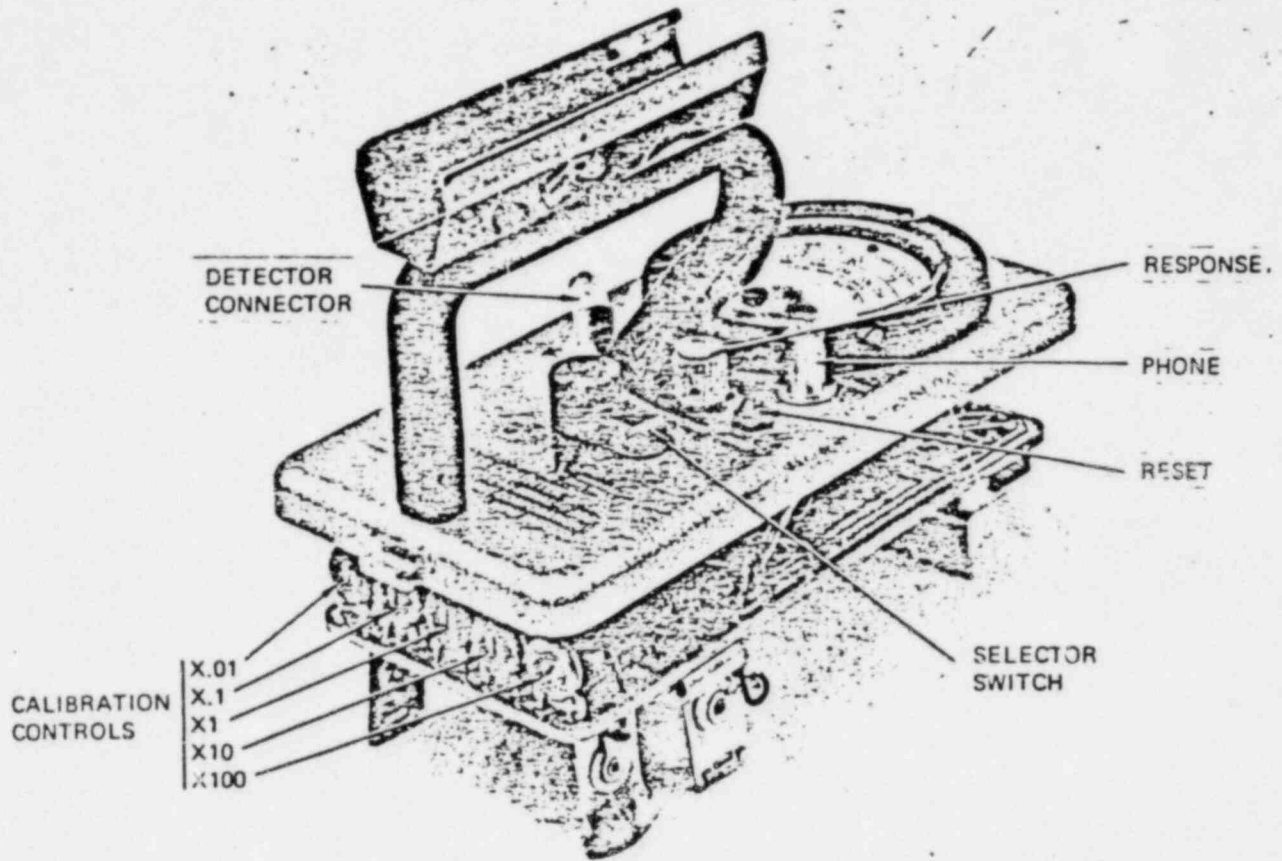


Figure 2-1. Location of Controls

EBERLINE - MODEL - E-120

MODEL E-120/E-120G

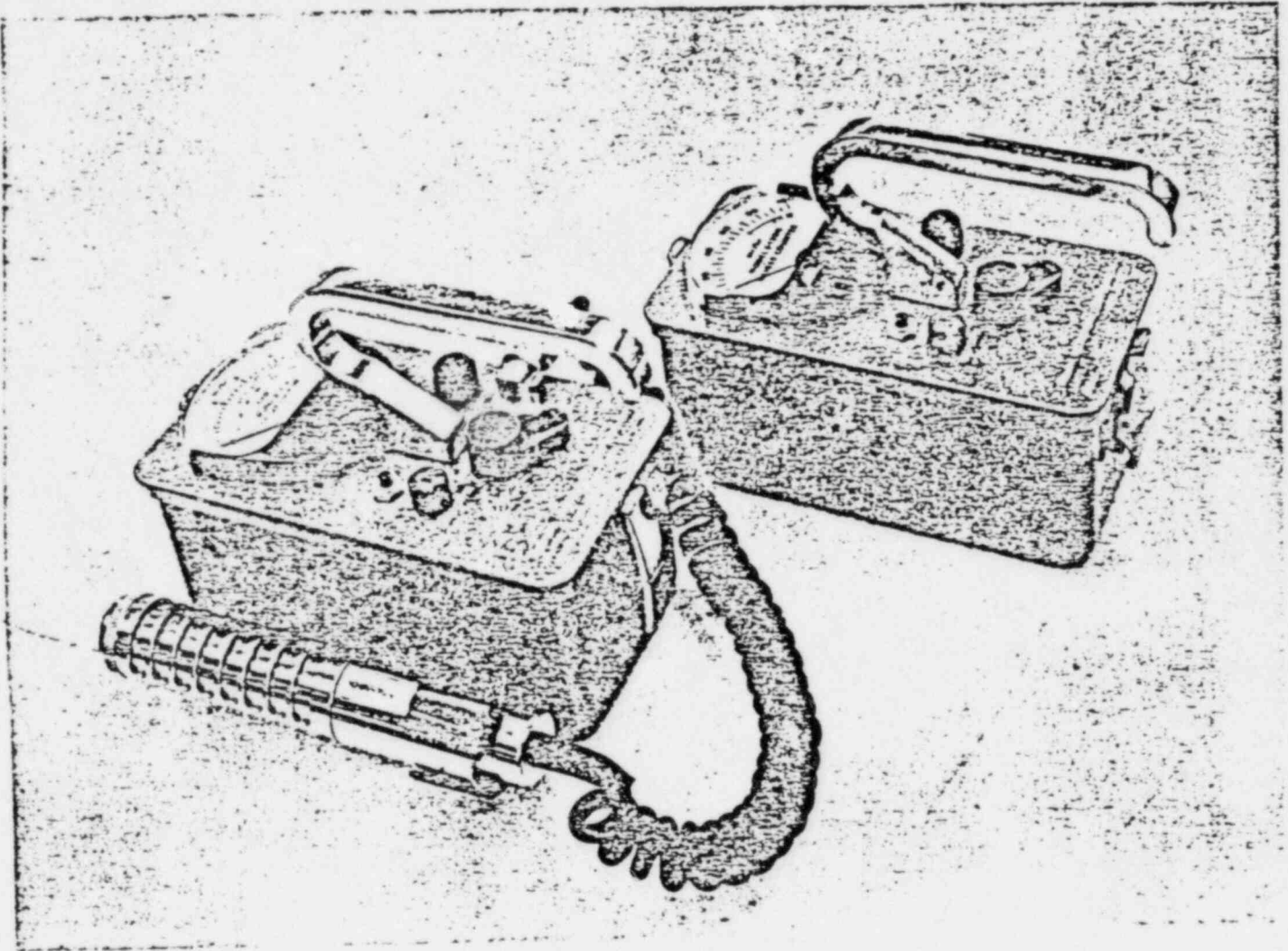


Figure 1-1. Model E-120/E-120G

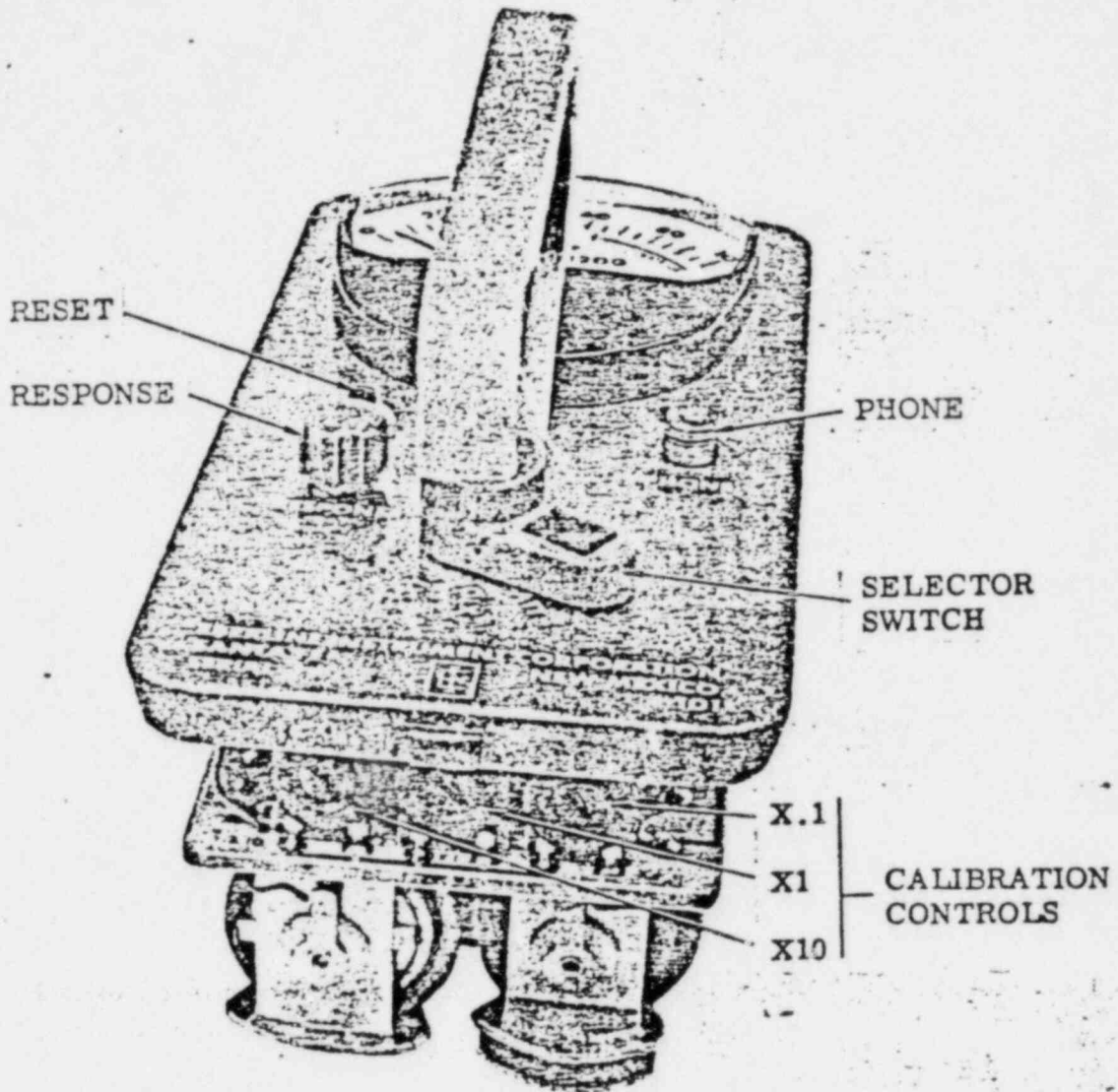


Figure 2-1. Internal and External Controls

CALIBRATION PROCEDURES
FOR
MODEL E-120 GM

1. CHECK THE INSTRUMENT TO SEE THAT IT IS OPERATIONAL AND THAT THE BATTERIES ARE GOOD. ALSO CHECK FOR ANY OBVIOUS DEFECTS IN THE INSTRUMENT AND ACCOMPANYING PROBES AND CABLES.
2. REMOVE THE INSTRUMENT CHASSIS FROM ITS CASE SO THAT THE CALIBRATION CONTROLS ARE ACCESSIBLE. (Check high voltage for ~900 volts)
3. REMOVE THE CABLE FROM THE PROBE AND ATTACH IT TO THE MINI PULSER SETTING THE OUTPUT OF THE PULSER TO .25 VOLT.
4. ADJUST THE PULSE GENERATOR FREQUENCY TO CORRESPOND WITH APPROXIMATELY 1/4 AND 3/4 SCALE METER READING AND ADJUST THE CALIBRATION CONTROL FOR THE RANGE SELECTED UNTIL THE READING ON THE METER DIFFERS FROM THE PULSE RATE BY LESS THAN 10% OF FULL SCALE. DO THIS ON EACH SCALE.
5. FILL OUT THE FORMS FOR THE INSTRUMENT CALIBRATED AND REPLACE THE STICKER ON THE SIDE OF THE INSTRUMENT FILLING OUT THE NECESSARY INFORMATION.

EBERLINE - MODEL - PAC-1SAG

EBERLINE - MODEL - PAC-1SAGA

CALIBRATION PROCEDURES
FOR
MODEL PAC-1SAG

1. CHECK THE INSTRUMENT TO SEE THAT IT IS OPERATIONAL AND THAT THE BATTERIES ARE GOOD. ALSO CHECK FOR ANY OBVIOUS DEFECTS IN THE INSTRUMENT AND ACCOMPANYING PROBES AND CABLES.
2. REMOVE THE INSTRUMENT CHASSIS FROM ITS CASE SO THAT THE CALIBRATION CONTROLS ARE ACCESSIBLE. SET THE INSTRUMENT UP IN THE SAME MANNER AS DESCRIBED IN THE PROCEDURES FOR THE PAC-3G USING THE CABLE THAT WE HAVE.
3. REMOVE THE PLUTONIUM ALPHA CALIBRATION SET FROM THE DRAWER AND PLACE IT ON THE WORK BENCH TOP.
4. BEFORE THE ACTUAL CALIBRATION CAN BE PERFORMED, THE DISCRIMINATOR ADJUSTMENT MUST BE MADE. TURN THE DISCRIMINATOR CONTROL CLOCKWISE UNTIL APPROXIMATELY 100 CPM ARE INDICATED ON THE X1 SCALE WITH NO SOURCE IN FRONT OF THE PROBE. PLACE A SOURCE INTO THE ACTIVE POSITION AND TURN THE DISCRIMINATOR CONTROL COUNTERCLOCKWISE UNTIL THE READING DECREASES APPROXIMATELY 5%. LOCK THE DISCRIMINATOR CONTROL.
5. PLACE THE DETECTOR OVER THE APPROPRIATE SOURCE FOR CALIBRATING THE X1 SCALE. RECORD THE CPM READING THEN ROTATE THE DETECTOR 180° AND RECORD THE READING IN THIS POSITION. (THESE READINGS SHOULD BE RECORDED ON A SCRATCH PAPER WHILE THE FINAL ADJUSTED READINGS SHOULD BE RECORDED ON THE CORRECT FORM.)
6. IF THE AVERAGE CPM OBTAINED ABOVE DOES NOT AGREE WITH THE CERTIFIED VALUE OF THE SOURCE BY LESS THAN 10% OF FULL SCALE, ADJUST THE CALIBRATION CONTROL FOR THE X1 SCALE.
7. REPEAT THE ABOVE STEPS FOR EACH RANGE OF THE INSTRUMENT.
8. THE PAC-1SAG IS ALSO EQUIPPED WITH AN INTERNAL GM PROBE THAT CAN READ UP TO 2000 MR/HR, AND THIS PROBE ALSO NEEDS TO BE CALIBRATED. PLACE THE CESIUM-137 CALIBRATOR UP AT ONE END OF A LONG, FLAT SURFACE WITH THE CONE OF THE CALIBRATOR AIMED ALONG THE AXIS OF THE SURFACE. THE INSTRUMENT CHASSIS SHOULD REMAIN IN THE CASE WHILE DOING THIS PROCEDURE. NOTE THE LOCATION OF THE INTERNAL PROBE AND POSITION THE INSTRUMENT IN THE BEST WAY POSSIBLE TO LOCATE THE INTERNAL PROBE IN THE CORRECT CONFIGURATION IN THE RADIATION FIELD. ADJUST THE CALIBRATION CONTROLS ON THE APPROPRIATE SCALE SO THAT THE READING ON THE METER DIFFERS FROM THE TRUE EXPOSURE RATE BY LESS THAN 10% OF FULL SCALE.
9. FILL OUT THE FORMS FOR THE INSTRUMENT CALIBRATED AND REPLACE THE STICKER ON THE SIDE OF THE INSTRUMENT FILLING OUT THE NECESSARY INFORMATION.

MODEL PAC-1SAG

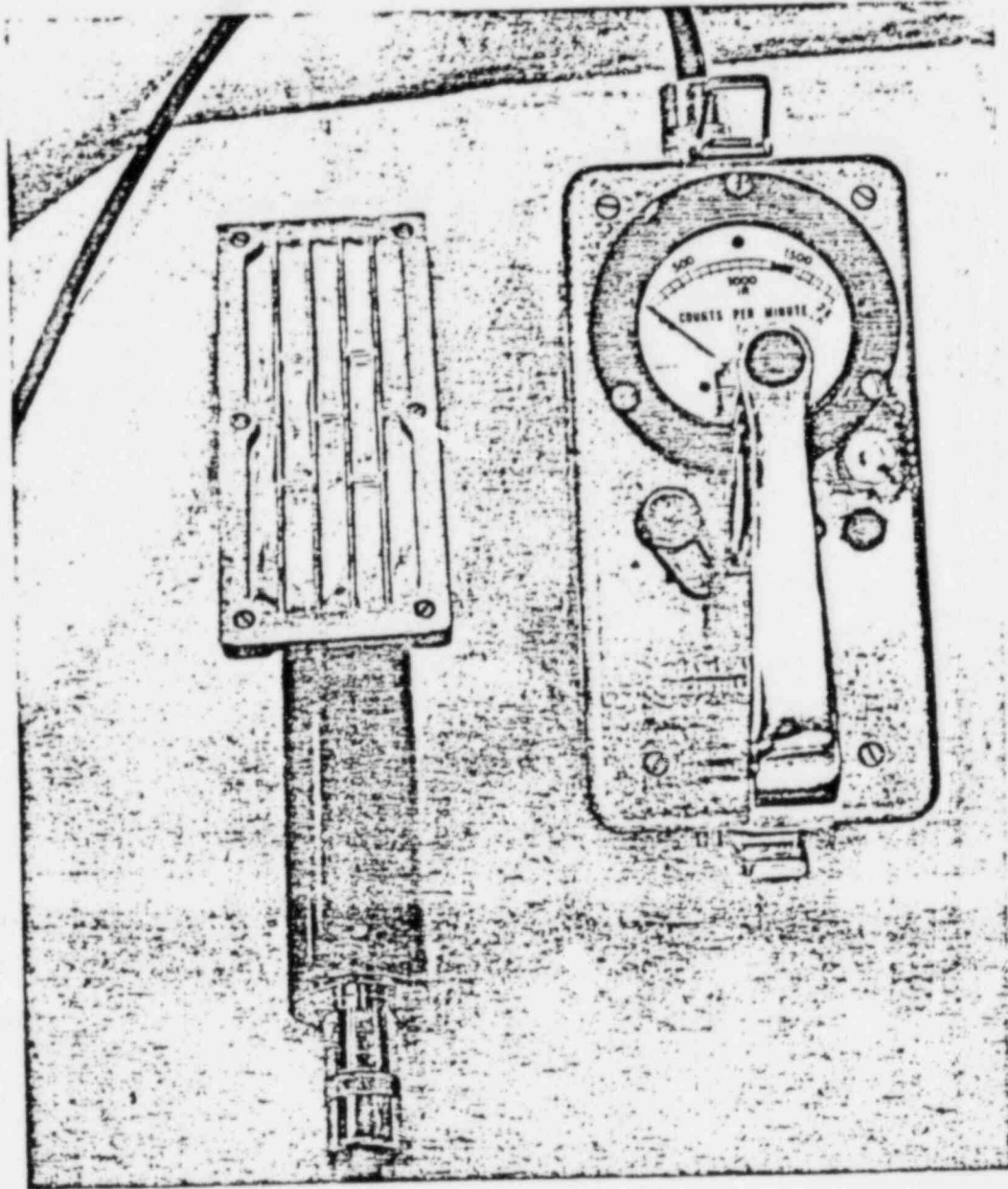


Figure 1-1. Model PAC-1SAG

EBERLINE - MODEL - PAC-4G3

*
* NOTE: THE SPECIAL MAINTENANCE INSTRUCTIONS *
* FOR THIS INSTRUMENT MUST BE PERFORMED *
* BEFORE IT CAN BE CALIBRATED EACH TIME *
*

SPECIAL MAINTENANCE INSTRUCTIONS

FOR THE PAC-4G-3

1. THE FOLLOWING SPECIAL PROCEDURES FOR MAINTENANCE OF THE PAC-4G-3 SHOULD BE CARRIED OUT BEFORE THE INSTRUMENT IS CALIBRATED.
2. THE PROPER GAS FLOW, MEASURED BY PROBE EXHAUST FLAME HEIGHT, IS APPROXIMATELY 3/4" IN THE OPERATE POSITION AND 2" IN THE FLUSH POSITION. FIRST ADJUST THE OPERATE POSITION, USING NEEDLE VALVE 1, THEN ADJUST THE FLUSH POSITION USING NEEDLE VALVE 2. SEE THE ENCLOSED DIAGRAM FOR THE LOCATION OF THE CORRECT NEEDLE VALVES.
3. OPTIMUM SETTING FOR THE SENSITIVITY ADJUSTMENT IS ABOUT 2 MILLIVOLTS WHICH CAN BE APPROXIMATED BY TWO COUNTERCLOCKWISE TURNS FROM THE EXTREME CLOCKWISE POSITION. THIS ADJUSTMENT IS NOT CRITICAL SINCE THE HIGH VOLTAGE WILL COMPENSATE FOR A WIDE RANGE OF SETTINGS.
4. THE INSTRUMENT SHOULD BE SET UP LIKE THE PAC-3G IS IN FIGURE 4-5. (SEE THE PAC-3G SECTION OF THIS MANUAL)
5. ATTACH THE ELECTROSTATIC VOLTMETER TO CONTACT A (FRONT CONTACT) OF THE HIGH VOLTAGE SUPPLY CARD.
6. PLACE THE AC-21 PROBE ON THE INSTRUMENT AND PLACE THE PROBE IN AN ALPHA FIELD AND TURN THE HIGH VOLTAGE FOR THAT SETTING TO THE MINIMUM. VARY THE VOLTAGE IN APPROXIMATELY 50 VOLT INCREMENTS AND READ THE COUNT RATE. PLOT CPM VS. VOLTAGE AND PICK A VOLTAGE SETTING IN THE MIDDLE OF THE PLATEAU.
7. REPEAT THIS SAME PROCEDURE FOR THE AC-21B AND THE TP-1 PROBES BEING CAREFUL EACH TIME TO CHOOSE THE CORRECT HIGH VOLTAGE SETTING.

NOTE: WHEN SETTING THE VOLTAGE FOR THE TP-1 PROBE, SET THE HIGH VOLTAGE JUST ABOVE THE KNEE OF THE PLATEAU OBTAINED BY PLOTTING CPM VS. VOLTAGE.

8. THE INSTRUMENT IS NOW READY TO CALIBRATE ACCORDING TO THE CALIBRATION PROCEDURES ENCLOSED.

CALIBRATION PROCEDURES
FOR
MODEL PAC -4G-3

1. THIS INSTRUMENT HAS ONLY ONE SET OF CALIBRATION CONTROLS SO THAT FOR CALIBRATION PURPOSES THE AC-21 PROBE WILL BE USED TO CALIBRATE THE INSTRUMENT USING AN ALPHA SOURCE.
2. CHECK TO SEE THAT THE INSTRUMENT IS OPERATIONAL AND THAT THE BATTERIES ARE GOOD. ALSO CHECK TO SEE IF A GAS BOTTLE IS INSTALLED IN THE INSTRUMENT AND IS FULL. CHECK FOR ANY OBVIOUS DEFECTS IN THE INSTRUMENT AND ACCOMPANYING PROBES AND CABLES.
3. REMOVE THE INSTRUMENT CHASSIS FROM ITS CASE SO THAT THE CALIBRATION CONTROLS ARE ACCESSIBLE. SET THE INSTRUMENT UP AS SHOWN IN THE PAC -3G PROCEDURES IN FIGURE 4-5 USING THE CABLE THAT WE HAVE.
4. TURN CONTROLS R3 AND R5 TO THE MAXIMUM CLOCKWISE POSITION. PLACE THE DETECTOR ON THE SOURCE FOR THE 500 DECADE (APPROXIMATELY 350 CPM) AND RECORD THE READING. ROTATE THE DETECTOR 180° AND RECORD THE READING IN THIS POSITION. (THESE READINGS SHOULD BE RECORDED ON SOME SCRATCH PAPER WHILE THE FINAL ADJUSTED READINGS SHOULD BE RECORDED ON THE PROPER FORM)
5. IF THE AVERAGE READING OBTAINED ABOVE DOES NOT AGREE WITH THE CERTIFIED VALUE OF THE SOURCE BY LESS THAN 10% OF FULL SCALE, ADJUST R2 FOR THE PROPER READING. NEXT PLACE THE DETECTOR ON THE SOURCE FOR THE 5K DECADE (APPROXIMATELY 3500 CPM) AND FOLLOW THE SAME PROCEDURE ADJUSTING THE R3 CONTROL THIS TIME.
6. THIS COMPLETES CALIBRATION FOR THE BLACK METER (M1). FOLLOW THE SAME PROCEDURE FOR THE RED METER (M2) USING CORRESPONDING SOURCES AND ADJUSTING R4 AND R5.
7. PLACE BOTH THE AC-21B AND TP-1 PROBES ON THE INSTRUMENT AND CHECK THEIR READINGS USING THE APPROPRIATE SOURCES AND HIGH VOLTAGE SETTINGS TO SEE IF THEY READ WITHIN CALIBRATION LIMITS STATED ABOVE. REMEMBER THE FLUSH CONTROL ON THE GAS SUPPLY SHOULD BE INCREASED TO YIELD ABOUT 2 1/2 TO 3" FLAME ON THE GAS OUTLET WHEN USING THE TP-1 PROBE.
8. FILL OUT THE FORMS FOR THE INSTRUMENT CALIBRATED AND REPLACE THE STICKER ON THE SIDE OF THE INSTRUMENT FILLING OUT THE NECESSARY INFORMATION. REMOVE THE GAS BOTTLE FROM THE INSTRUMENT.

DESCRIPTION AND OPERATING INSTRUCTIONS

TRITIUM PROBE

MODEL TP-1

The TP-1 is a gas flow proportional detector which operates with a PAC-4G instrument for the detection of low energy ionizing radiation emitted from a surface.

The probe has no window, only a wire gridwork which establishes an electrical ground plane, so radiation from the surface being monitored enters directly into a sensitive volume. A gas seal is made to the surface being monitored by a self contained seal and the probe is flushed by the gas supply from the instrument. A gaseous atmosphere is essential for proper operation.

The high voltage of the PAC-4G must be adjusted to the plateau of the TP-1. To do this, place the probe over the check source on a flat surface and flush with gas. The check source should be placed with the label side away from the probe.

NOTE

It is desirable to increase the gas flow from the PAC-4G to about a 2-1/2 to 3 inch flame height to speed the flushing. Adjust the "FLUSH" needle valve as described in Section IV, page 13 of the PAC-4G manual.

After flushing, run a plateau by varying the high voltage and reading the meter. Set the high voltage to a point just above the knee of the plateau.

The standard calibration of the PAC-4G is to read 100% of the 2π value of a one inch diameter alpha source under the AC-2 probe. This results in the meter reading approximately 3 times higher than the actual pulse rate from the probe. Therefore, with the TP-1 probe in use, the instrument will still read 3 times high. This factor should apply to all readings. The driver card in the PAC-4G may be changed to a P-203-1, which will allow the instrument to be calibrated to true pulse rate, if desired.

To monitor with the TP-1, place on a clean surface, flush and read the background count for a given area. Unknown surfaces may then be checked and the background subtracted from each reading. Be certain to flush the probe long enough for the reading to stabilize after each exposure of the probe to the atmosphere. (About 1 minute)

PAC-3G - Figure - 4-5.

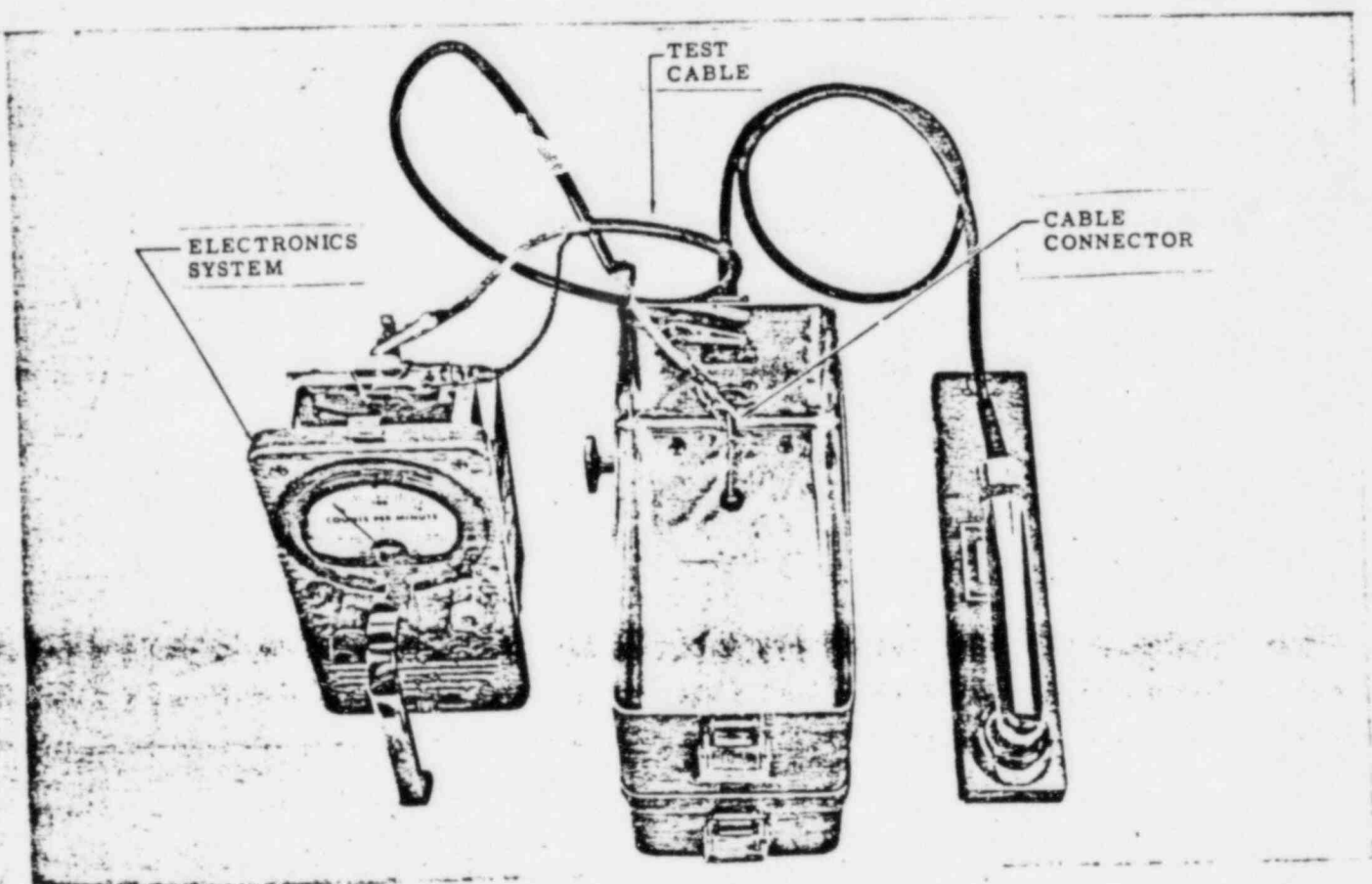


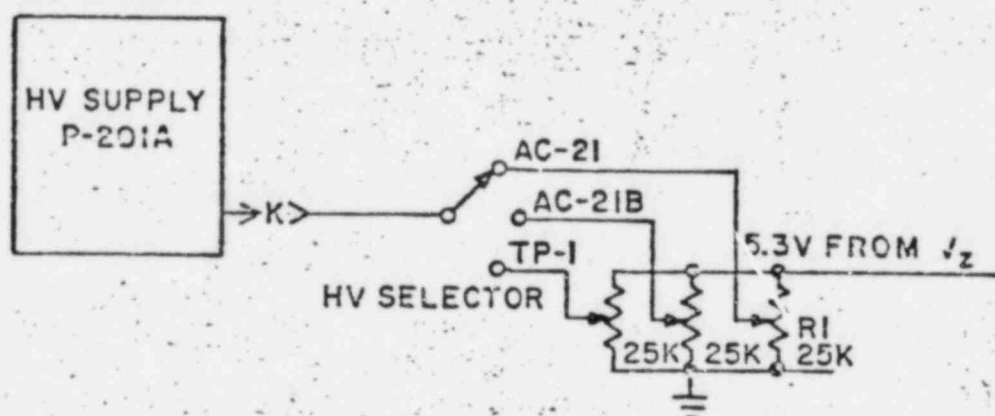
Figure 4-5. Bench Test Set-Up

MANUAL INSERT

MODEL PAC-4G-3

The Model PAC-4G-3 is identical to the Model PAC-4G except it has the added capability of presetting the high voltage for three different probes and switch selecting which one is in use. This eliminates the need of adjusting the high voltage each time a different probe is used.

The change consists of adding two more HV ADJUST controls (three total) and a selector switch. These are labeled for use with the Models AC-21, AC-21B and TP-1 probes. The schematic of the changed circuitry appears below. All calibration procedures given in the manual remain unchanged.



NOTE

The high voltage supplied to the probe is fast going up, but very slow coming down. Therefore, if switched to AC-21B or TP-1 and back to AC-21 with an AC-21 probe on, the voltage will be too high for some time. The following procedure is recommended.

1. Before turning the instrument on, check selector for proper position.
2. Do not change selector position during use.
3. When changing probes, turn instrument OFF and short out end of probe handle when removed from probe. Select proper position before turning ON.

MODEL PAC-4G

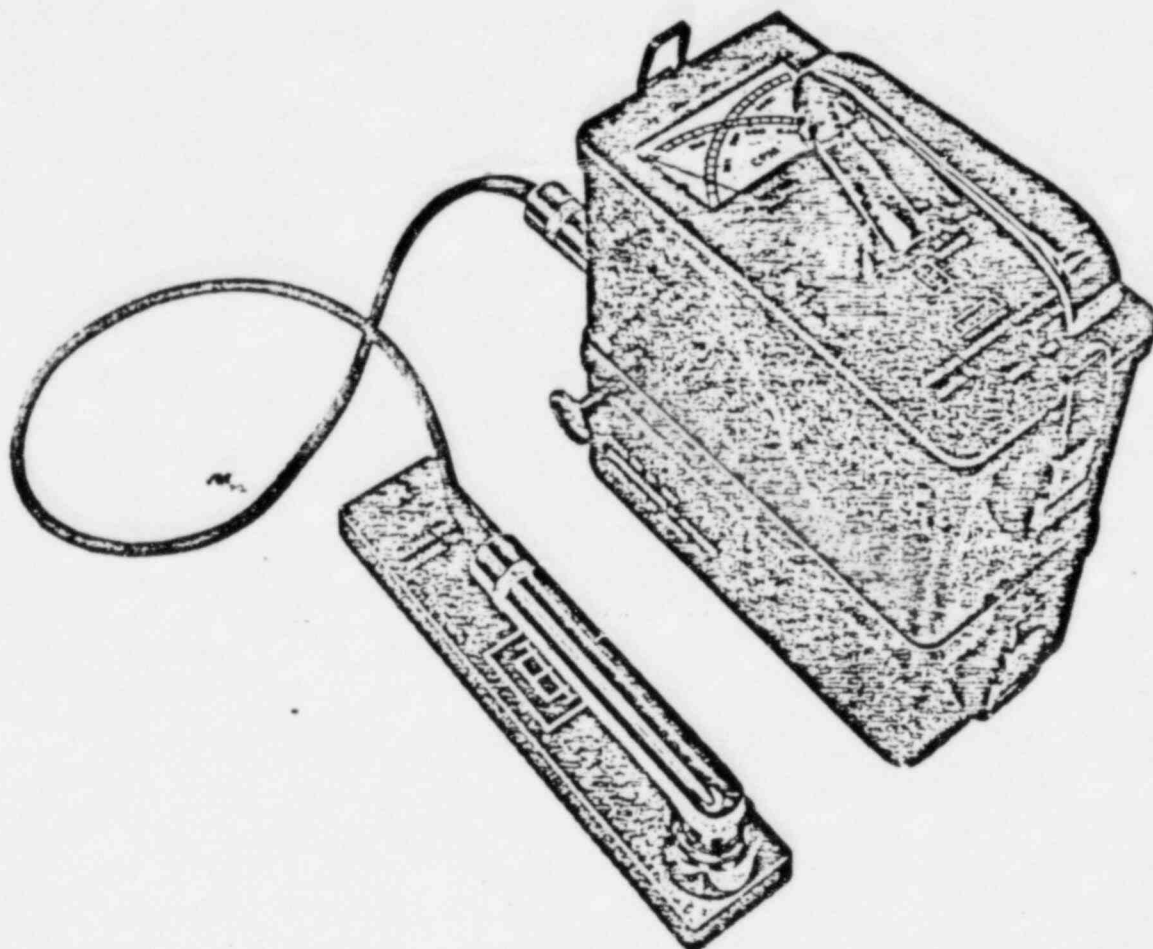


Figure 1-1. Model PAC-4G, Portable LIN-LOG Gas Proportional Alpha Counter

MODEL PAC-4G

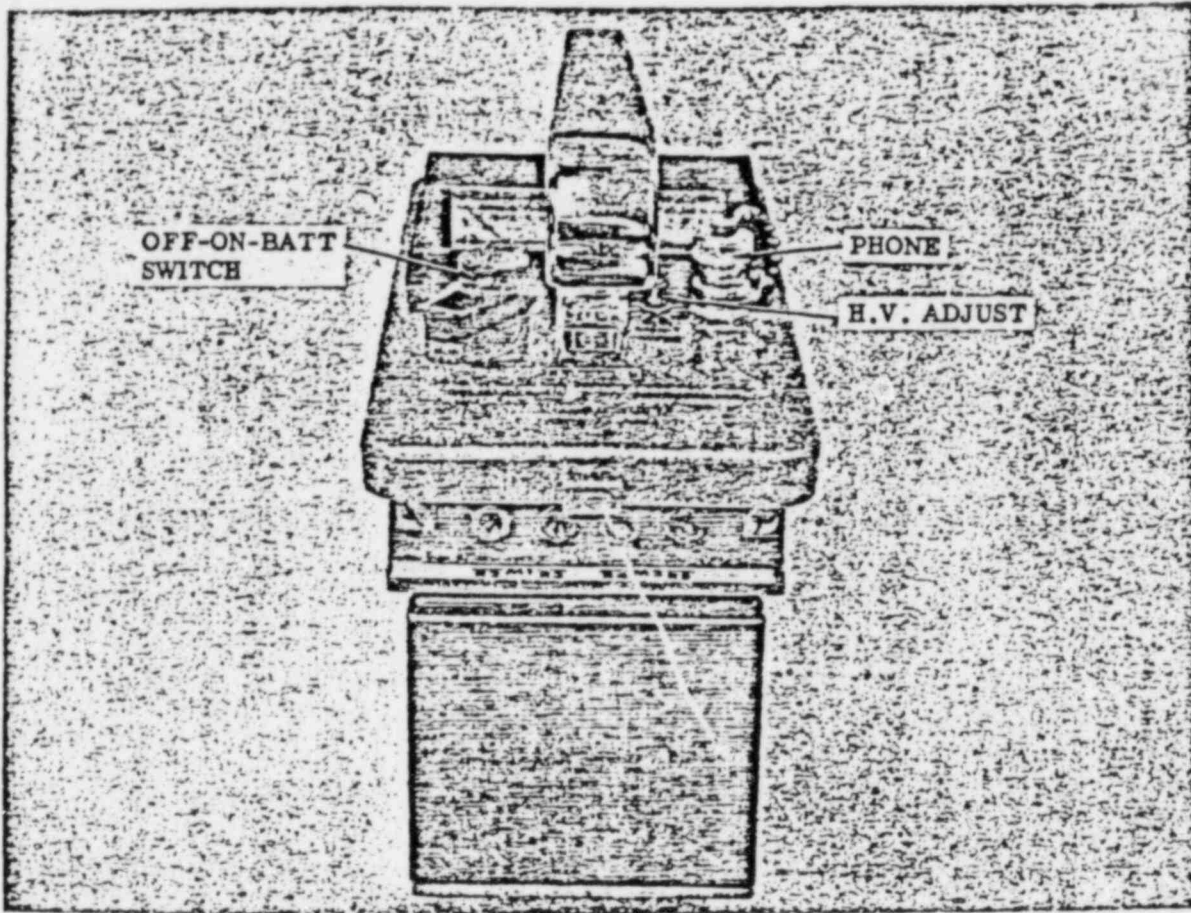


Figure 2-1. Model PAC-4G Exterior Controls

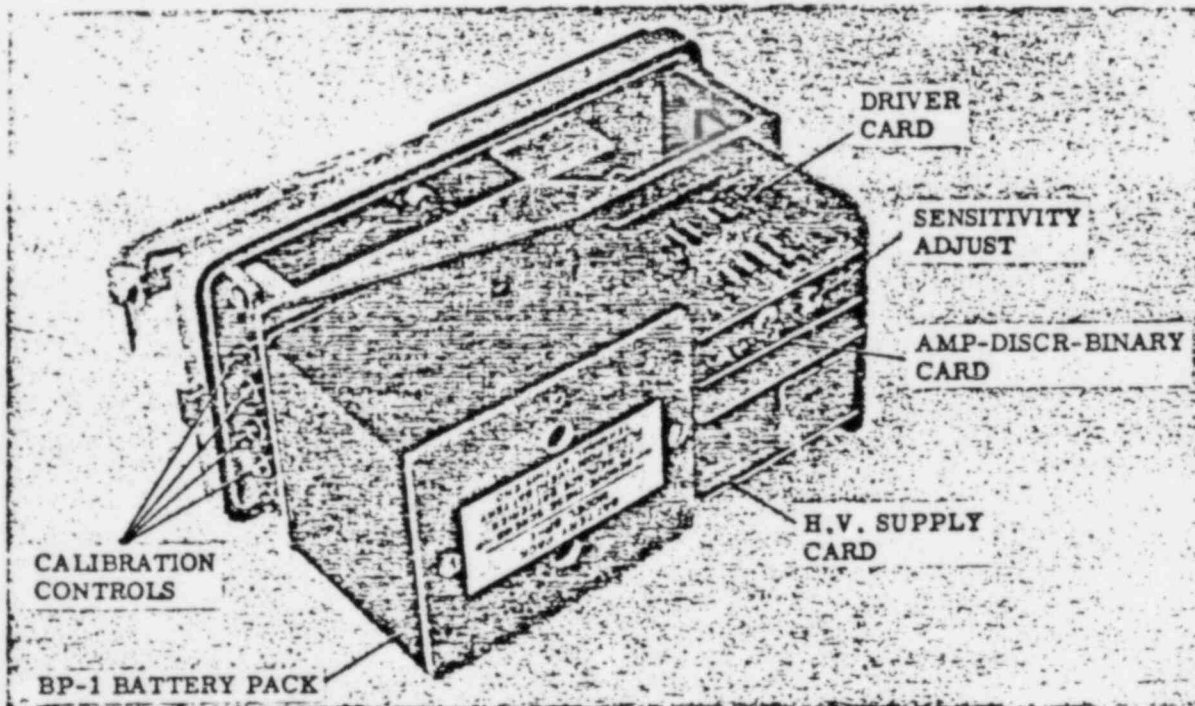


Figure 2-2. Model PAC-4G Interior Controls

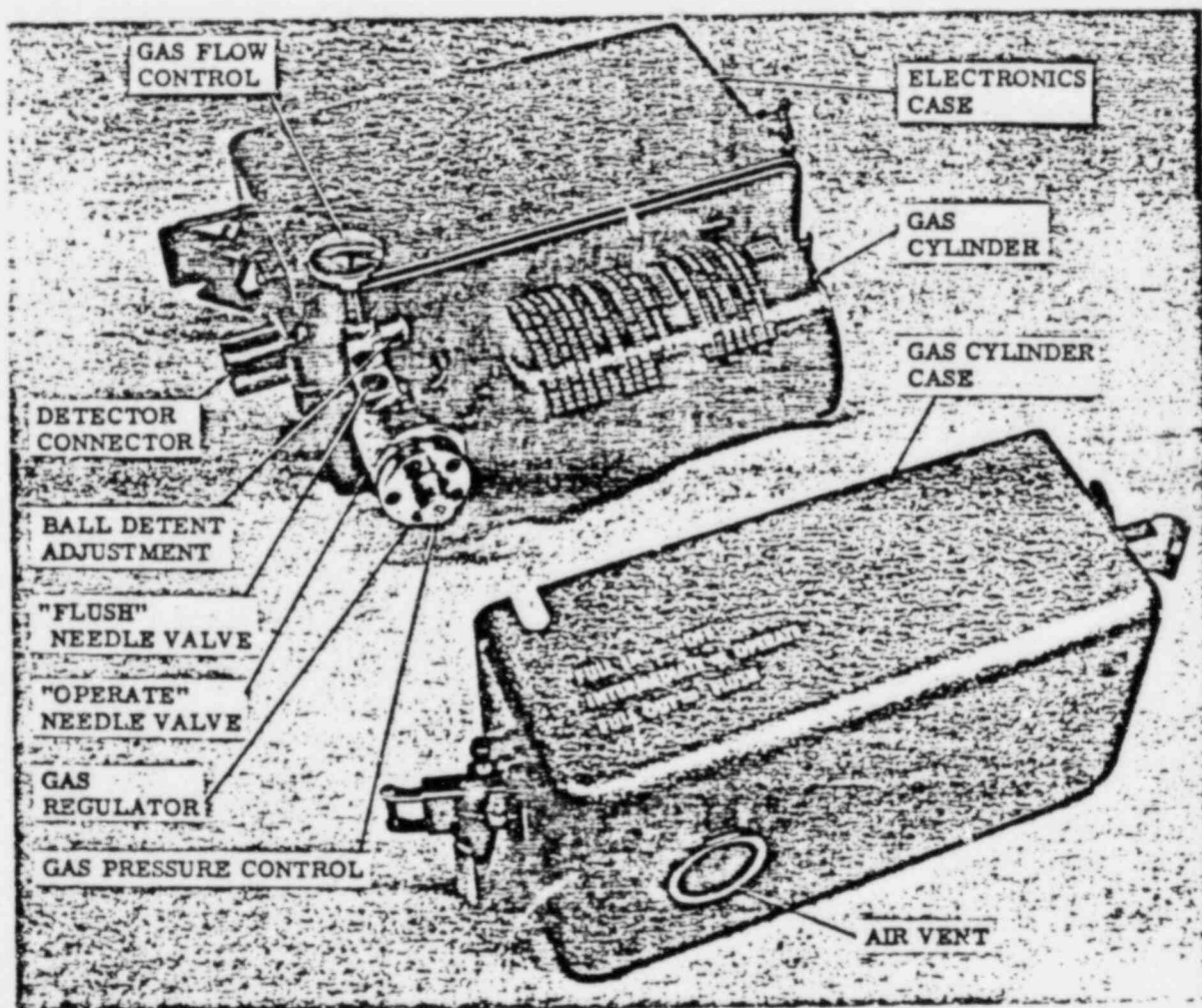


Figure 2-3. Gas Valve Regulator

EBERLINE - MODEL - PRM-5-3

*
* NOTE: THE SPECIAL MAINTENANCE INSTRUCTIONS *
* FOR THIS INSTRUMENT MUST BE PERFORMED *
* BEFORE IT CAN BE CALIBRATED EACH TIME *

CALIBRATION PROCEDURES
FOR
MODEL PRM-5-3

1. CHECK THE INSTRUMENT TO SEE THAT IT IS OPERATIONAL AND THAT THE BATTERIES ARE GOOD. ALSO CHECK FOR ANY OBVIOUS DEFECTS IN THE INSTRUMENT AND ACCOMPANYING PROBES AND CABLES.
2. REMOVE THE INSTRUMENT CHASSIS FROM THE CASE SO THAT THE CALIBRATION CONTROLS ARE ACCESSIBLE.
3. REMOVE THE EXISTING CABLE FROM THE INSTRUMENT AND REPLACE IT WITH ONE THAT WILL ALLOW CONNECTION BETWEEN THE INSTRUMENT AND THE MINI PULSER. THIS WILL BE THE ONE WITH THE TWO ALLIGATOR CLAMPS ON ONE END.
4. SET THE MINI PULSER TO AN OUTPUT OF 15 MV AMPLITUDE.
5. THE HIGH VOLTAGE SUPPLY CARD MUST BE REMOVED FROM THE INSTRUMENT BEFORE ATTEMPTING TO CALIBRATE. (SEE DIAGRAM ENCLOSED FOR THE LOCATION OF THE HIGH VOLTAGE SUPPLY CARD)
6. PLACE THE GROSS-PHA SWITCH IN THE GROSS POSITION FOR AN INFINITE WINDOW. TURN R3 AND R4 CONTROLS TO THE MAXIMUM CLOCKWISE POSITION.
7. SET THE PULSE GENERATOR FREQUENCY TO 400 CPM AND ADJUST R2 FOR 400 CPM READING. SET THE PULSE GENERATOR TO 4000 CPM AND ADJUST FOR 4K CPM READING, USING THE R3 CONTROL. THIS COMPLETES CALIBRATION OF THE BLACK METER. FOLLOW THE SAME PROCEDURE FOR THE RED METER USING 40,000 AND 400,000 CPM AND ADJUSTING R4 AND R5.
8. FILL OUT THE FORMS FOR THE INSTRUMENT CALIBRATED AND REPLACE THE STICKER ON THE SIDE OF THE INSTRUMENT FILLING OUT THE NECESSARY INFORMATION.

SPECIAL MAINTENANCE INSTRUCTIONS

FOR MODEL PRM-5-3

1. THE HIGH VOLTAGE ADJUSTMENT IS THE CONTROL TO SET FOR THE DESIRED ENERGY. ON THE PRM-5-3 THERE ARE THREE DIFFERENT HIGH VOLTAGE SETTINGS AVAILABLE. THESE SHOULD BE SET FOR THE THREE ISOTOPES THAT ARE CHOSEN BY THE UNIT AS THE MOST APPROPRIATE.
2. EXPOSE THE DETECTOR TO A SOURCE OF THE CHOSEN ENERGY WHICH IS INTENSE ENOUGH TO OBTAIN A READING WELL ABOVE BACKGROUND. (1 MR/HR WILL BE SUFFICIENT) TURN THE APPROPRIATE HIGH VOLTAGE CONTROL DOWN (COUNTERCLOCKWISE) UNTIL COUNTING FROM THE SOURCE STOPS. THEN INCREASE THE VOLTAGE (CLOCKWISE) UNTIL THE INSTRUMENT IS OBVIOUSLY COUNTING THE SOURCE. PLACE THE DETECTOR IN THE LARGE LED CONTAINER TO SHIELD OUT THE BACKGROUND RADIATION. IF BACKGROUND RADIATION MAKES THE SOURCE COUNTING DOUBTFUL, IT MAY BE VERIFIED BY REMOVAL AND REPLACEMENT OF THE SOURCE. THE GROSS-PHA SWITCH SHOULD BE IN THE GROSS POSITION.
3. PLACE THE GROSS-PHA SWITCH IN THE PHA POSITION. LOCATE THE POSITION OF THE WINDOW WIDTH CONTROL IN FIGURE 2-2. CLOCKWISE ROTATION OF THE CONTROL WIDENS AND COUNTERCLOCKWISE ROTATION NARROWS THE WINDOW.
4. NARROW THE WINDOW UNTIL THE SOURCE COUNT IS OBVIOUSLY DECREASING, THEN WIDEN UNTIL THE PRIOR READING IS JUST OBTAINED.
5. THIS PROCEDURE SETS THE VOLTAGE AND WINDOW CLOSE TO THE DESIRED SETTING. FINE ADJUSTMENTS OF EACH MAY BE ACHIEVED RUNNING A PLATEAU OF COUNTS BUT THIS IS NOT DEEMED NECESSARY FOR IN-FIELD USE.

MODEL PRM-5

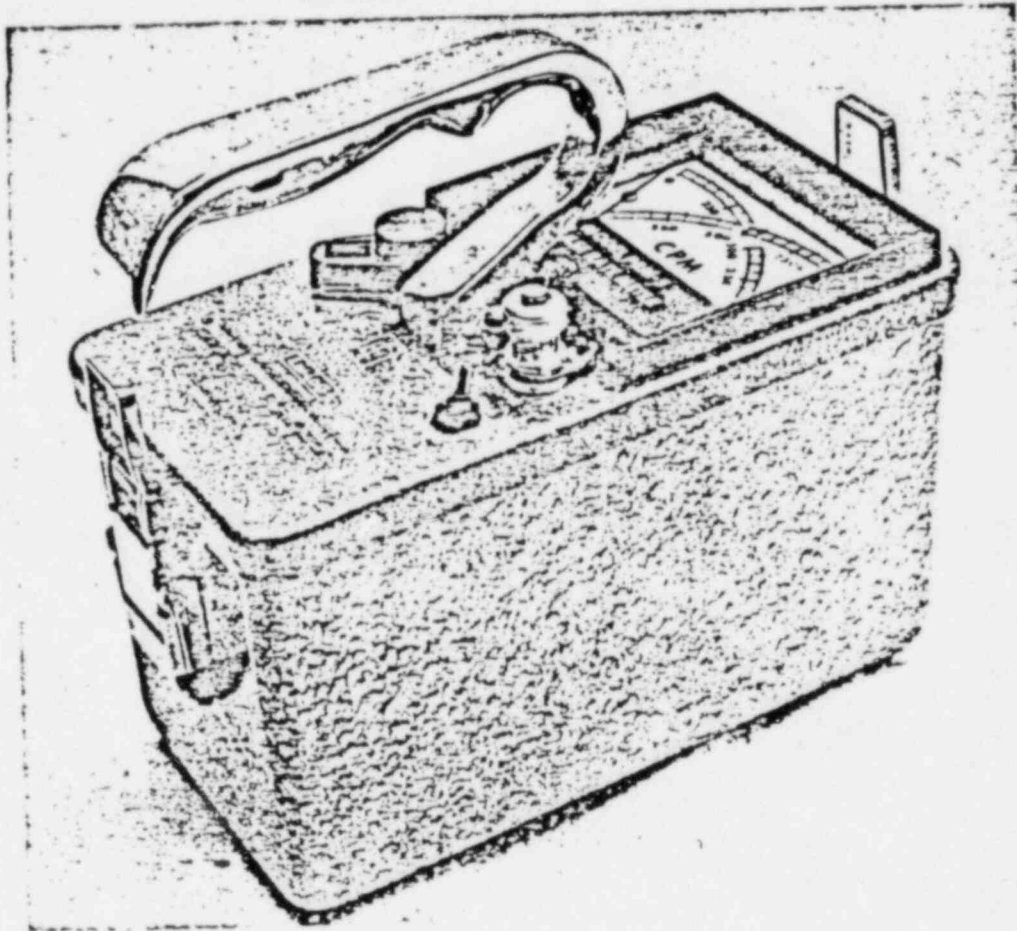


Figure 1-1. Model PRM-5, Portable Count Rate Meter

MODEL PRM-5

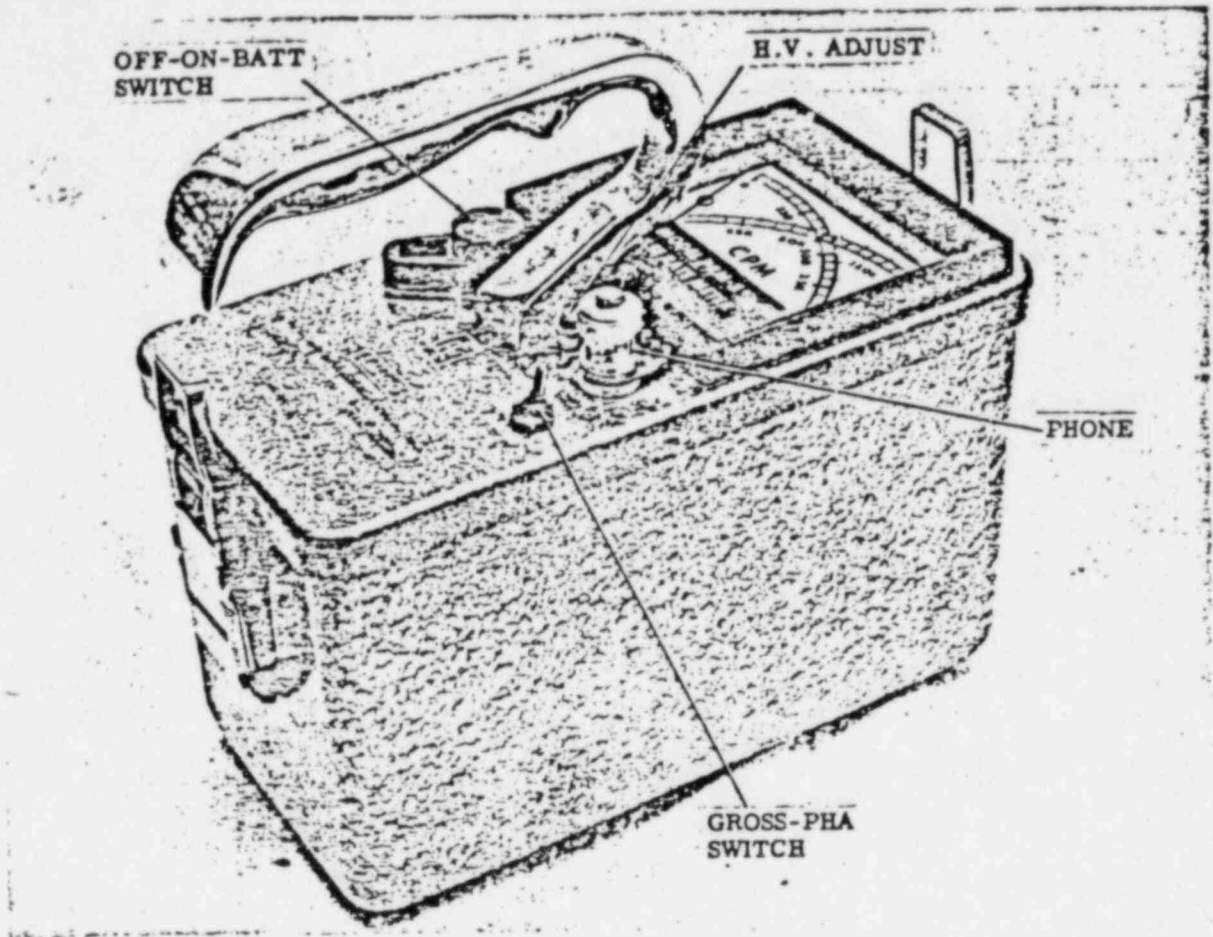


Figure 2-1. Model PRM-5 Exterior Controls

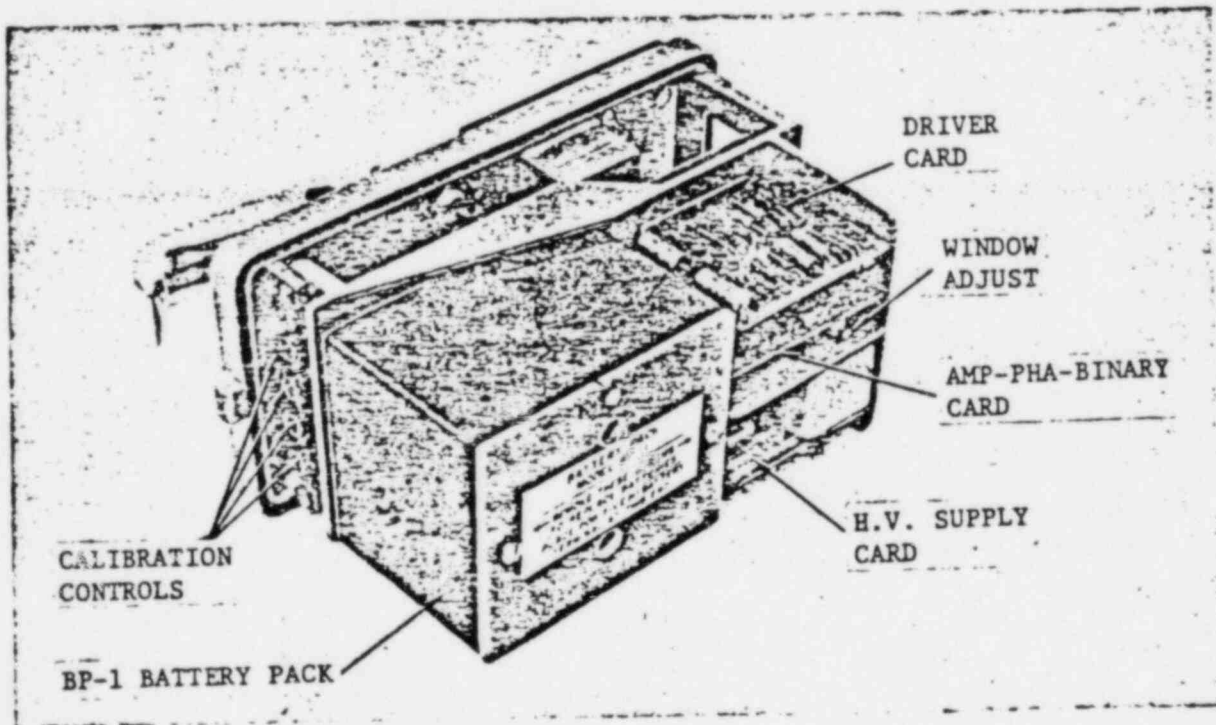


Figure 2-2. Model PRM-5 Interior Controls

7-14-80

Procedures for Counting Wipe Tests
using Eberline Mini Scaler (Model MS-2)

1. Allow instrument to warm up about 20 minutes before use. Check and set voltage at 900V. Connect MS-2 to HP-210 probe and place in empty holder. Adjust ~~Threshold~~ window to No. 2 position (about 125-150 CPM, background), WINDOW - OUT.
2. Run 2 or 3 background counts (HP-210 in holder) for 10 minutes each.

Example:

| | |
|---------|--------------------|
| 10 min. | 1150 counts |
| 10 min. | 1392 counts |
| 10 min. | <u>1517 counts</u> |
| | 4059 counts |

$$\frac{4059 \text{ counts}}{3} = \frac{1353 \text{ avg.}}{10 \text{ min.}} = 135 \text{ CPM}$$

3. Determine efficiency of the probe by the following method:

Place known TC99 source (15,730 DPM) in holder with HP-210 probe and run 2 or 3 counts for 2 minutes each.

Example:

| | |
|--------|--------------------|
| 2 min. | 4044 counts |
| 2 min. | 3966 counts |
| 2 min. | <u>4035 counts</u> |
| | 12045 counts |

$$\frac{12045 \text{ counts}}{3} = \frac{4015 \text{ avg.}}{2 \text{ min.}} = 2007 \text{ CPM}$$

$$\frac{2007 \text{ CPM}}{15730 \text{ DPM}} = .1276 \text{ or } \underline{13\% \text{ efficiency}}$$

4. Replace TC99 source with wipe sample and run 2 or 3 counts for 10 minutes each.

Example:

| | |
|---------|--------------------|
| 10 min. | 1411 counts |
| 10 min. | 1497 counts |
| 10 min. | <u>1463 counts</u> |
| | 4371 counts |

$$\frac{4371 \text{ counts}}{3} = \frac{1457 \text{ avg.}}{10 \text{ min.}} = 146 \text{ CPM.}$$

NOTE: If the wipe sample (CPM) is equal to or less than the background count, no further calculations are required.

4. (Continued)

NOTE: If the wipe sample is greater than the background count, as it is in the above example, proceed in the following manner.

Determine net difference between background count, (in this case 135 CPM) and wipe sample, 146 CPM or 11 CPM).

$$\frac{11 \text{ CPM}}{.13 \text{ (efficiency)}} = 84.62 \text{ DPM}$$

NOTE:

.001 uci = 2,200 DPM

.005 uci = 11,000 DPM (maximum removable contamination)

In the above example - NO SWEAT

APPENDIX J

DEPARTMENT OF NATURAL RESOURCES

APPENDIX J

DEPARTMENT OF NATURAL RESOURCES PROGRAM REVIEW

ORGANIZATION

Legal Authority

There have been no changes in the legal authority given to the Department of Natural Resources (DNR) since the previous review. The legal authority for the radiation control is given in Chapter 88-13, Section 1302 - 1350 of the Georgia statutes. The statutes are entitled "Georgia Radiation Control Act as Amended".

Previous reports contained a Memorandum of Understanding (MOU) between the DNR and the DHR. The last revised MOU was July 18, 1979, and it reflected the designation of DNR as a lead agency for responding to radiation emergencies. Copies of this MOU have been included in previous reports.

There have been no basic changes in the organization of DNR's environmental radiation program. J. Leonard Ledbetter continues to serve as Director of DNR, Division of Environmental Protection. Reporting to him is James H. Setser, Chief of Program Coordination Branch. William C. Cline reports to Setser and is Manager of the Environmental Radiation Program. It was reported by Mr. Cline that he expects to leave his position with DNR and join the NRC Region II office in January 1982. An updated organizational chart for the environmental radiation program headed by Mr. Cline is attached to this Appendix as Attachment A. As noted in the organizational chart, the program still consists of three sections - the Environmental Surveillance and Technical Support Unit, the Emergency Response and Regulatory Program Unit, and the Laboratory and Analytical Support Unit. The personnel listed on the organizational chart are current as of the date of this review. The temporary/hourly personnel listed on the organizational chart continue to be part-time and graduate student employees. These personnel come from the Georgia Tech facility. Mr. Cline still has a full-time secretary assigned to his program.

DNR has a radiation advisory committee established to provide consultation to the Division. The present membership of this committee is as follows: Charles Wakamo, EPA, Region IV; Dr. Melvin Carter, Georgia Institute of Technology; Dr. Robert Rohr, Emory University; and James Setser, DNR.

Administration

The sources of funding for the environmental radiation program have been updated as follows:

| | |
|---|-----------|
| State general funds | \$100,000 |
| NRC contract money for environmental surveillance | \$ 15,000 |
| EPA money for safe drinking water program | \$ 30,000 |
| TOTAL | \$445,000 |

The above funds are approximate and are utilized for the radiation program. Approximately \$75,000 is contracted to Georgia Tech University for laboratory support of the DNR program and for support to the DHR Program.

Laboratory equipment continues to be located at Georgia Tech and owned by DNR. The laboratory operations are still being conducted by a combination of full-time and part-time DNR employees and Georgia Tech personnel under contract to DNR. This has been reflected under the organizational chart. The Georgia Tech laboratory is an EPA-certified laboratory. The laboratory continues to participate in an inter-comparison sample program with EPA and the laboratory continues to provide sample analyses under a NRC contract.

The mobile laboratory and emergency response van is maintained by DNR. The mobile laboratory emergency response van is equipped with liquid scintillation counters, low background alpha and beta counter, TLD readers, a GeLI system, an alpha spectrometer, air samplers, gas and electric high volume samplers, and portable survey equipment for alpha beta-gamma, and neutron detection, along with an assortment of dosimeters, signs and anti-C clothing, respiratory protection equipment, sample containers, maps, walkie-talkie type communications, and a citizen's band radio set.

The Georgia Tech low level environmental radiation laboratory has the following equipment capabilities:

- 1 ea. - Ge(Li) type detectors
- 1 ea. - NaI type detector
- 2 ea. - 4000 channel multi-channel analyzers
- 1 ea. - spectro fluourometer
- 1 ea. - automatic gas proportional alpha/beta analyzer
- 1 ea. - natural gas proportional alpha/beta analyzer
- 1 ea. - liquid scintillation analyzer
- 6 ea. - radon scintillation counters
- 1 ea. - TLD annealer and reader
- 1 ea. - HP 9830 computer system
- 1 ea. - pressurized ionization chamber (PIC)
- 1 ea. - beta/gamma anti-coincidence system
- 1 ea. - alpha spectrometer.

PROGRAM ACTIVITIES

Environmental Radiation Surveillance

The Environmental Radiation Surveillance program involves three program areas: (1) surveillance at fixed nuclear facilities; (2) special surveillance at State-licensed facilities (DHR); and, (3) state-wide background determinations.

1. Surveillance at Fixed Facilities. Radiation surveillance at fixed facilities includes external radiation measurements and analysis of environmental media samples. It includes air samples, water samples, soil, vegetation, milk, sediment, crops, and aquatic life. The sample

sites are Plant Hatch, Plant Farley, Savannah River Plant, Georgia Tech, Dawsonville, Oconee, Kings Bay, and Sequoyah.

2. Surveillance at State-Licensed Facilities. The following facilities are included: Luminous Processes, Southern Space, Inc., University of Georgia, and Wastewater Assessment. Wastewater treatment plants in the Atlanta area are the South River Treatment Plant, Clayton Treatment Plant, the DeKalb Treatment Plant and the Humphrey Mining Company.
3. The State background program consists of TLD program of 21 to 25 stations around fixed facility monitoring locations. Soil and vegetation samples are also collected at each of the locations on an annual basis.

Safe Drinking Water Program

State regulations require in part that all community drinking water suppliers evaluate the levels of radionuclide contaminants in drinking water. As a service to the communities the EPD provides nuclide analysis of drinking water samples.

Radiation Emergency Response Program

Increased emphasis has been placed on the radiological emergency response preparedness and assessment capabilities. The authority and responsibilities of this program was delegated to the EPD by the Governor and include areas such as training and refresher courses for personnel, equipment upkeep and maintenance including calibration of analytical and measurement equipment, updating and planning of emergency response procedures around fixed nuclear facilities, full scale and limited exercises on emergency preparedness at fixed nuclear facilities, and radwaste disposal.

Rules and regulations for radioactive waste material disposal were developed in the Department of Natural Resources Chapter 391-3-9 dated July 1979. These regulations were discussed during the previous review and copies of the regulations are included in the Office of State Program files. There has been no activity in the area of radioactive waste materials disposal sites since the last review.

License Review and Concurrence - DHR Support

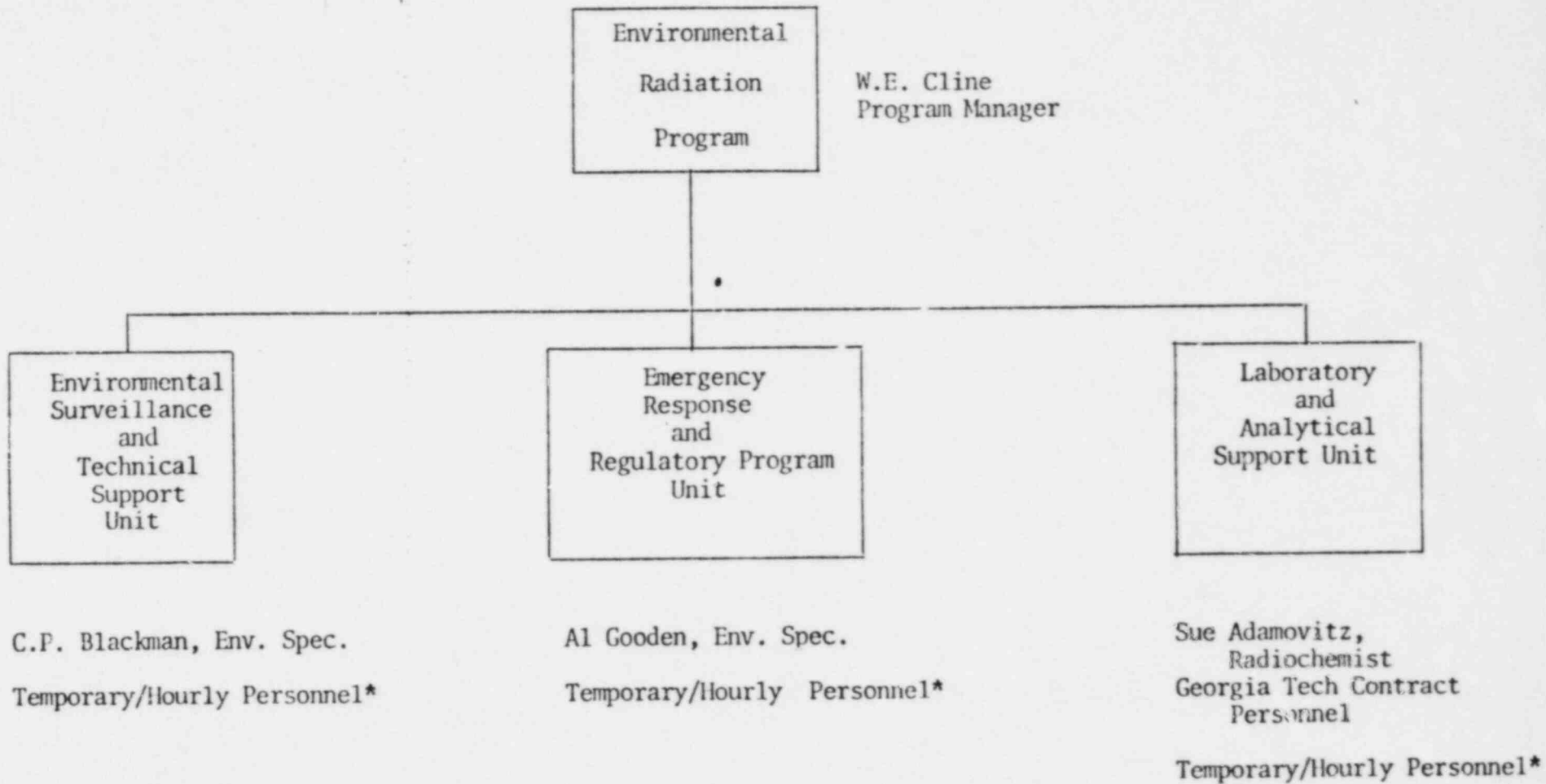
DNR continues to provide concurrence on licensing actions and support to the DHR on an as-needed basis. Staff members in both departments have stated that the relationship between the two departments is cooperative. All licenses that may have a significant potential impact on the environment are sent to the DNR for their concurrence. Normally, concurrence turnaround time required by DNR is on the order of one to four weeks, depending on the complexity of the license and the availability of DNR personnel. This has not created a problem for either department in the past.

During discussions with the DHR staff, it was stated that the recommendations by DNR were discussed over the telephone before being put into writing and the details worked out to the satisfaction of each department before incorporation of a requirement into a DHR license.

The DNR personnel and laboratory also provide support to DHR in the form of environmental sample analyses or analysis of independent measurement type samples that would be taken in conjunction with leaking sealed sources or effluent sample evaluations. Bioassay samples consisting of urinalyses can also be analyzed by the DNR facility at Georgia Tech.

1982 Draft Plan

The 1982 Program Plan for the Environmental Radiation Program was discussed with Mr. Setser and the plan was included as Attachment B to this Appendix.



*As Required

ATTACHMENT 1

Preliminary Draft

1982

ENVIRONMENTAL RADIATION PROGRAM PLAN

1982 PROGRAM PLAN - ENVIRONMENTAL RADIATION PROGRAM

I. Environmental Radiation Surveillance

During the 1982 year environmental radiation surveillance will involve three program areas. They are: surveillance at fixed nuclear facilities, special surveillance (surveillance at state licensed facilities), and statewide background. Each of the program areas are discussed in detail below:

1. Surveillance at Fixed Facilities (PRIORITY A)

Radiation surveillance at fixed facilities includes external radiation measurements and analysis of environmental media samples. Generally, environmental media samples collected in a surveillance network area includes: Air samples (particulate and radioiodine), water (ground and surface), soil, vegetation, milk, sediment, crops, and aquatic life. The sampling schedule at each fixed facility is presented below:

| <u>Facility</u> | <u>Schedule</u> |
|----------------------|--|
| Plant Hatch | Jan. 1982; April 1982; July 1982; Oct. 1982 |
| Plant Farley | Jan. 1982; April 1982; July 1982; Oct. 1982 |
| Savannah River Plant | Feb. 1982; May 1982; August 1982; Nov. 1982 |
| Ga. Tech | Feb. 1982; May 1982; August 1982; Nov. 1982 |
| Dawsonville | March 1982; June 1982; Sept. 1982; Dec. 1982 |
| Oconee | March 1982; June 1982; Sept. 1982; Dec. 1982 |
| Kings Bay | Feb. 1982; May 1982; Aug. 1982; Nov. 1982 |
| Sequoyah | March 1982; June 1982; Sept. 1982; Dec. 1982 |

1982

ENVIRONMENTAL RADIATION PROGRAM PLAN

The purpose of the attached plan is to provide guidance and direction as to the activities and tasks to be accomplished for the major Radiation Program function in 1982. The Plan will be used by management and unit personnel to establish detailed work plans and schedules. The Plan lists tasks/activities for each major radiation program functional area. For each functional area or task/activity a work priority is given. The priority designation and their respective definition are as follows:

PRIORITY A - Highest priority. Program functions or tasks/activities which are essential for mission accomplishment. Such functions or tasks/activities are generally mandated by law, regulation or executive order. Lack of attention to Priority A items would result in a significant performance decrement which could result in program failure.

PRIORITY B - Intermediate priority. This includes important program functions or tasks/activities which are needed to maintain a strong, capable state radiation program. Such functions or tasks/activities result from policy initiative or senior management directives. Program failure would not likely occur due to lack of attention to Priority B items.

PRIORITY C - Lower priority. This includes routine, support or service functions or tasks/activities which can be classified as mission non-essential. Such functions or tasks/activities result from program or branch level guidance. Completion of such tasks would enhance the program through increased proficiency or professionalism; however, lack of attention to priority C items would not result in program failure.

2. Network Expansion (PRIORITY B)

In 1982 some network expansion will be made. The planned expansions are:

| <u>Location</u> | <u>Expansion Activity</u> | <u>Projected Date for Expansion</u> |
|-----------------|---|-------------------------------------|
| Plant Hatch | Increase Air sampling from 3 to 4 locations. Increase sampling frequency to weekly. | Jan. 1982 |
| Plant Farley | Increase air sampling from 2 to 3 locations. Increase sampling frequency to weekly. | Jan. 1982 |
| SRP | Initiate weekly air sampling. Air sampling at two stations. | Feb. 1982 |
| Plant Farley | Install automatic water sampler. (Sample frequency monthly) | Jan. 1982 |

3. Special Surveillance

A. Luminous Processes (PRIORITY A)

Conduct independent confirmatory measures and monitor progress of cleanup activities at the Luminous Processes site. Actual date of cleanup activity is dependent on EPA Superfund support. It is anticipated that cleanup activities will be conducted sometime between January 1982 and June 1982.

B. Southern Space, Inc. (PRIORITY B)

Conduct external radiation measurements, environmental media, and effluent sample collection at Southern Space, Inc. in Macon. Target dates for surveillance are: April 1982 and October 1982.

C. University of Georgia (PRIORITY B)

In view of the University's intention to increase the total quantity of material to be disposed of by incineration, establish a semi-annual environmental surveillance program on the University campus in Athens. The program should be coordinated with and solicit participation of DHR - Rad Health.

D. Wastewater Assessment (PRIORITY C)

Conduct tri-annual assessments of radioactive materials in effluent from major metropolitan waste treatment facilities. Initial sites for investigation dates are: South River Treatment Plant - May 1982, Clayton Treatment Plant - July 1982, DeKalb Treatment Plant - September 1982.

E. Humphrey Mining Company (PRIORITY C)
Conduct follow-up assessment of radioactive materials distribution in tailings area about Humphrey Mining Company. Target date for assessment in May 1982.

4. State Background Program (PRIORITY C)
Plans call for expansion of TLD program from 21 to 25 in 1982. The four additional stations will be placed on or near transportation routes to fixed facility monitoring stations. Soil and vegetation samples will be collected at each of these locations at least annually.

II. Safe Drinking Water Program (PRIORITY A)

1. Routine Program Activities are summarized in the table below:

| | |
|--|---|
| Reorganize and clear SDW Warehouse in preparation for Phase II | Completion before 15 Jan. 82 |
| Update SDW Reporting & Tracking System | Completion before 1 Feb. 82 |
| Finalize Regional handling & flagging, transport & receipt & warehousing procedures | Completion before 15 Jan. 82 |
| Conduct weekly new source screen and submit weekly draft report | 4 to 8 samples per week Jan. 82 - Dec. 82 |
| Analysis of 1/3 of community samples $<$ 50% of MCL | 15 samples per week Jan. 82 - Dec. 82 |
| Analysis of 1/3 of community sample \geq 50% of MCL | 3 to 6 samples per week Jan. 82 - Dec. 82 |
| Analysis of drinking water samples collected downstream of nuclear facilities (Augusta & Savannah I & D) | 2 per month Jan. 82 - Dec. 82 |
| Analysis of re-sample, alternate water sources, etc., Non-compliance quarterly monitoring | 5 samples per month Jan. 82 - Dec. 82 2 to 3 samples per month Jan. 82 - Dec. 82 |

2. Special Program Activities (PRIORITY C)

| | |
|---|--------|
| issue (for general public distribution) Summary Report of Community Drinking Water Analytical Results | May 82 |
|---|--------|

Special non-community samples for DHR 50 samples per year

Issue report to DHR on all non-community results on record to date (Alamo, Jeff Davis Co., etc.) March 82

3. Compliance Assistance Support (PRIORITY B)
Review SDN phase I results, make determination as to how to handle those situations in which MCL is exceeded but no compliance program actions have been taken.

III. Radiation Emergency Response Program
Program activities in 1982 will be in major areas. The areas are training, equipment upkeep/maintenance, planning & procedure.

1. Training

- A. Establish Radiological Training Program Plan (PRIORITY A) Jan. 82
- B. Conduct monthly in-house training for RERT member (4 hour blocks of instruction) including Regional Staff. (PRIORITY A) Monthly
Jan. 82 - Dec. 82
- C. Funding and implementation of UGA Training for first responders (PRIORITY A) July 82
- Annual training and refresher training on respirator protective equipment use. (PRIORITY B) August 82
- D. RERT member participation in FEMA/NRC/EPA sponsored courses. (PRIORITY B) two members per year

2. Equipment Upkeep/Maintenance

- A. Semi-annual calibration of Emergency Response Analytical and Measurement Equipment (PRIORITY A) Feb. 82
Aug. 82
- B. Install tone-coded squelch on all RERT CD Radios. (PRIORITY B) March 82
- C. Routine preventive maintenance and service of program vehicles on semi-annual basis. (PRIORITY B) Aug. 82

3. Planning

A. Annual revision of fixed facility and transportation plans

| | | |
|---------------------|--------------|-------------------|
| Base Plant | (PRIORITY A) | June - July 82 |
| Hatch | (PRIORITY A) | June - July 82 |
| Farley | (PRIORITY A) | June - July 82 |
| Transportation Plan | (PRIORITY B) | Aug. 82 |
| SRP | (PRIORITY B) | Aug. - Oct. 82 |
| King's Bay | (PRIORITY B) | Aug. 82 - Oct. 82 |
| Georgia Tech | (PRIORITY B) | Aug. 82 - Oct. 82 |
| Oconee | (PRIORITY C) | Nov. 82 |
| Sequoyah | (PRIORITY C) | Dec. 82 |

B. Review and upgrade of written emergency response procedures (PRIORITY C) May 82

C. Attendance at Planner Training Courses - once per year. (PRIORITY C) Feb. 82 - Oct. 82

D. Assist in training of local government planner concerning use of Georgia REP. (PRIORITY C) Once per year near Plant Hatch, Plant Farley, other areas as required

4. Preparedness

A. Full scale - infield response exercises

| | | | |
|----------------|--------------|--------|----------|
| Plant Hatch | (PRIORITY A) | 2 days | Oct. 82 |
| Plant Farley | (PRIORITY A) | 1 day | Nov. 82 |
| SRP | (PRIORITY A) | 1 day | June 82 |
| Transportation | (PRIORITY A) | 1 day | April 82 |

B. Communication/Notification or Table-top exercises

| | | |
|--------------|--------------|-----------------|
| Georgia Tech | (PRIORITY B) | Sept. 82 |
| Kings Bay | (PRIORITY B) | Sept. 82 |
| Sequoyah | (PRIORITY C) | Jan. - March 82 |
| Oconee | (PRIORITY C) | June - Sept. 82 |

C. First Responder Manual (PRIORITY B) Jan. 82

D. Rad Emergency Info Booklet (PRIORITY B) Jan. 82

E. RERT In-house Tests (PRIORITY C) monthly
Jan. 82 - Dec. 82
Comm check on all RERT Vehicle Radios

IV. Radwaste Disposal

1. Radioactive Waste Management Study - identify generator of waste; quantity, the type, activity, form and ultimate disposal, location of waste; estimated volume of waste generated; develop management report with appropriate recommendation. (PRIORITY A) Feb. 82
2. Identification of location of past exempt quantity burial sites; estimate area involved; estimate waste disposal volume and activity. (PRIORITY B) one visit per site during 1982
3. Conduct monitoring at each "post" exempt quantity disposal site. (PRIORITY C) one visit per site during 1982
4. Evaluate need for revision of EPD Radwaste Rules and Regulations. (PRIORITY C) Mar. 82
5. Review and evaluate EPD - Rad Program radwaste disposal program. Brief management on program and activities, volumes, ultimate disposal. (PRIORITY C) Mar. 82
6. Obtain names of licenser indicating they will dispose of exempt quantity material by concentration, storage or burial, maintain permanent record of disposal location. (PRIORITY C) Jan. 82 - Dec. 82

VI. License Review/Concurrence - DHR Support

Activities in this program area will involve license review and support to the DHR inspection program.

| <u>Activity</u> | <u>Expected Frequency</u> | <u>Manpower Required</u> |
|---|---------------------------|-----------------------------|
| DHR License Review | 6/year | 24 man-days (PRIORITY A) |
| DHR Inspection Support | 2/year | 4 man-days (PRIORITY C) |
| DHR/EPD Luminous Processes Decommissioning | 20/year | 60 man-days (PRIORITY A) |

VI. Technical Review/Support

Technical review program function involves review of environmental states, review of proposed rules and standards, and review of licensed nuclear facility projects and operations. This program function

VI. Technical Review/Support (cont'd)

also involves providing inputs to state policy-making on radiation and radioactive materials. The estimated activity in this program function is presented below:

| <u>Activity</u> | <u>Expected Frequency</u> | <u>Manpower Required</u> |
|-----------------------|---------------------------|-----------------------------|
| Technical Review | 5/year | 24 man-days (PRIORITY A) |
| Policy-making support | 2/year | 2 man-days (PRIORITY B) |

VII. Lab Activities/ Operations

Lab activities for 1982 are presented in the table below:

| <u>Activity</u> | <u>Expected Frequency</u> | |
|--|--|--------------|
| Administer TLD Analysis Program | monthly Jan. 82 - Dec. 82 | (PRIORITY C) |
| Conduct routine environmental media sample analyses | daily | (PRIORITY A) |
| Develop or review as necessary written lab operating procedures | Jan. 82 - Dec. 82 | (PRIORITY C) |
| Audit Program QC Results and develop recommendations for QA Program improvements; Brief management or lab QA Program | Nov. 82 | (PRIORITY B) |
| Perform QA/QC analyses | as submitted by EPA Jan. 82 - Dec. 82 | (PRIORITY A) |
| Issue monthly Lab analytical results reports | monthly Jan. 82 - Dec. 82 | (PRIORITY A) |
| Issue new drinking water source screen reports | weekly Jan. 82 - Dec. 82 | (PRIORITY A) |
| Develop technical specification and bid package for lab H-3 combustion unit | March 82 - June 82 | (PRIORITY C) |

VII. Lab Activities Table (cont'd)

| <u>Activity</u> | <u>Expected Frequency</u> | |
|--|---------------------------|--------------|
| Beta scan planchets from Phase I and compare w/ Ra-228 levels | March 82 - June 82 | (PRIORITY C) |
| Develop contracts and contract amendments documents for Ga. Tech Lab operation | June 82 Sept. 82 | (PRIORITY A) |

VIII. Additional Program Activities

| | | |
|--|------------------------------|--------------|
| 1. Re-evaluate need for NRC IM & NRC TLD Program | Jan. 82 | (PRIORITY A) |
| 2. Review, upgrade and maintain radiological safety program. | | |
| a. External (personnel) exposure monitoring program | monthly Jan. 82 - Dec. 82 | (PRIORITY B) |
| b. Internal (personnel) exposure monitoring - wholebody counting | April 82 July 82 | (PRIORITY C) |
| c. Annual reports of exposure to employees | April 82 | (PRIORITY B) |
| 3. Evaluate COA rock hot spot at Dawson Forest. Make recommendations to mangement. | Jan. 82 | (PRIORITY A) |
| 4. Order new ERAMS air samples | March 82 | (PRIORITY C) |
| 5. Operate ERAMS water and air station as part of background program when not in service for EPA | weekly Jan. 82 - Dec. 82 | (PRIORITY C) |
| 6. Establish program to leak test all rad program sealed sources, establish record retention system for survey results | June 82, Dec. 82 | (PRIORITY C) |

| | <u>Expected Frequency</u> | |
|---|---------------------------|--------------|
| 7. Upgrade data acquisition and management system to include spectral analysis software improvements for mobile lab and fixed lab | Jan. 82 - April 82 | (PRIORITY B) |
| 8. Initiate fish collection program w/SRP. Review, present sample split program w/SRP. | Jan. 82 - April 82 | (PRIORITY B) |
| 9. Initiate sample splitting program with Kings Bay | Jan. 82 - April 82 | (PRIORITY B) |
| 10. Expand Georgia Dept. of Agriculture milk program to ingestion pathway at Oconee and Sequoyah | March 82 - Nov. 82 | (PRIORITY C) |
| 11. Jointly establish with SRP and State of South Carolina incident notification accident levels for SRP | Jan. 82 - April 82 | (PRIORITY B) |
| 12. Develop Environmental Radiation Surveillance Report for 1981 Activities | Jan. 82 - April 82 | (PRIORITY C) |