Return to URFO 467-SS
40-8511
PDR

Cotter Corporation
General Office

November 3, 1982

Mr. Harry J. Pettengill
Section Leader
Operating Facility Section II
Uranium Recovery Licensing Branch
Division of Waste Management
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Source Materials License No. SUA-1273 (Docket No. 40-8511)

Dear Mr. Pettengill:

In response to your July 7, 1982 letter, and consistent with Cotter's scheduling delay requested in its September 3, 1982 letter to you, please find enclosed the information which addresses your concerns about the in-plant safety portion of Cotter's renewal application.

Cotter's responses are set forth according to the sequence used in your July 7, 1982 letter.

1. P.3-4a provides a description of the proposed fence, and has been enclosed for insertion in the text of the renewal application.

2. P.3-11 has been revised in response to this comment. Although the term "semi-mobile recovery plant" no longer appears on the revised version of P.3-11, its use was intended to convey the temporary nature of the R&D ISL facility.

3. Figure 3-6 has been revised to limit access to, and potential contamination of, non-process areas. A copy of Figure 3-6, as revised, is enclosed herewith.

   Please note that gas surge tanks will not be used at this facility, and, accordingly, are not depicted on either Figures 3-5 or 3-6. Solution tanks are depicted on both figures.

   Section 5.3 at P.15 in the Safety Evaluation Report (SER) has been revised to indicate that eating shall be allowed only in the offices and lunchroom. A revised copy of P.15 is enclosed herewith.

DESIGNATED ORIGINAL

Certified By B Fishu

20851
Add'l Info

4. Section 3.7.2 at P.3-21 has been revised to indicate that facility and site decommissioning and reclamation will be done in compliance with the NRC Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source or Special Nuclear Material, dated November, 1976. A revised copy of P.3-21 is enclosed herewith.

5. An organization chart applicable to activities conducted in accordance with License No. SUA-1273 is enclosed herewith and should be inserted in the text of the license renewal application as P.4a.

   As noted on P.4 in the SER, Cotter's Senior Projects Engineer from the corporate office will serve as the on-site Project Manager. The Project Manager will be responsible for overall activities. The Radiation Safety Technician, who will report to the Project Manager, will be authorized to stop plant process or maintenance activities which are being conducted in a manner which is contrary to the Radiation Safety Procedures Manual, ISL Facility Operator's Manual, or Radiation Work Permits.

6. Section 5.1 at P.8 in the SER has been revised to indicate that the operating procedures consider pertinent radiation safety practices.

7. Section 5.2 at P.9 in the SER has been revised to be consistent with Cotter's Radiation Safety Procedure 1-1, dated May 18, 1982.

8. Section 5.3.2 at P.11 in the SER pertaining to personnel dosimeters has been revised to be consistent with Cotter's Radiation Safety Procedure 4-1, dated May 18, 1982.

9. Section 5.3.4 at P.13 in the SER has been revised to indicate that workers who handle or repair equipment contaminated with yellowcake will wear non-surgical weight rubber gloves.

10. Referring to Figure 3-6, a separate ventilation system for the non-process area and process area will be provided.

    Also, referring to Figure 3-6, as originally proposed, all storage and process tanks open to the air within the building will be hooded and vented to the outside atmosphere.

Based on internal volume within the plant of about 179,764 cubic feet and wall ventilation fans with a total capacity of 6,000 cfm, the estimated plant ventilation rate is approximately 2 plant volumes per hour.

Assuming an average liquid level in each tank of 1.5 feet, the total void space about all four tanks to be vented to the outside atmosphere is about 450 cubic feet. Referring to the drawing entitled "Conceptual Tank Ventilation System" which accompanied Cotter's May 18, 1982 letter to the NRC, if a 1,000 cfm volume flow rate is used at the facility, an hourly void volume rate of approximately 133 is expected.

11. Section 5.3.4 at P.15 of the SER has been revised to contain Cotter's commitment to file a QA program within 90 days of the issuance of the renewed license.

12. Section 5.3.4 at P.15 in the SER has been revised to indicate that if a problem requiring remedial action is observed during the daily walk-through inspection, the Project Manager will be notified and the necessary action taken.

13. Section 6.0 at P.17 of the SER has been revised to indicate that a general emergency plan which establishes the procedures and authorities to be followed for coping with the accidents described in Section 6.0 will be filed with the NRC within 90 days of the issuance of the renewed license.

14. Referring to Figure 3-6, as revised, Cotter has planned the construction of a sump in the process area, and has indicated that the concrete floor in the process area will be sloped toward the sump so that all process liquids are contained within the confines of the process area and flow into the sump.

    For the purpose of alerting plant personnel to the possibility of tankage overflow, all open tanks will be equipped with level alarms and automatic level control systems.

15. Section 2.3 in Cotter's Radiation Procedure 1-2 has been revised to indicate that the gamma survey instrument will be calibrated at least semiannually or as recommended by the manufacturer, whichever is more frequent.

As noted in Cotter's September 3, 1982 letter, further detailed engineering still is necessary. This detailed engineering affects the economics of the project. At this time, with severely depressed market conditions, Cotter is seeking the opportunity to defer further engineering studies necessary to properly design an R&D facility. Accordingly, Cotter requests that the NRC temporarily suspend further activity on Docket No. 40-8511 until these studies are completed. The project will continue under close scrutiny by Cotter management with the intent to move forward when conditions permit.

If you have any questions regarding the information enclosed herewith, please contact me or Mr. Dave Munger.

Sincerely,

J. P. McCluskey
Executive Vice President

JPMc/lb

Encl.(s)

File: 8111K8674-12-7

Referring to Figure 3-1, Cotter will construct a site perimeter fence, including the area affected by the proposed impoundment area, in accordance with Wyoming DEQ/LQD Guideline No. 10, dated August, 1979. The fence will be a Type II, "tall sheep-tight" fence, which, according to Guideline No. 10, has the purpose of keeping out "deer or other high jumping wildlife" from the project site. In addition, this fence will preclude antelope from entering the site.

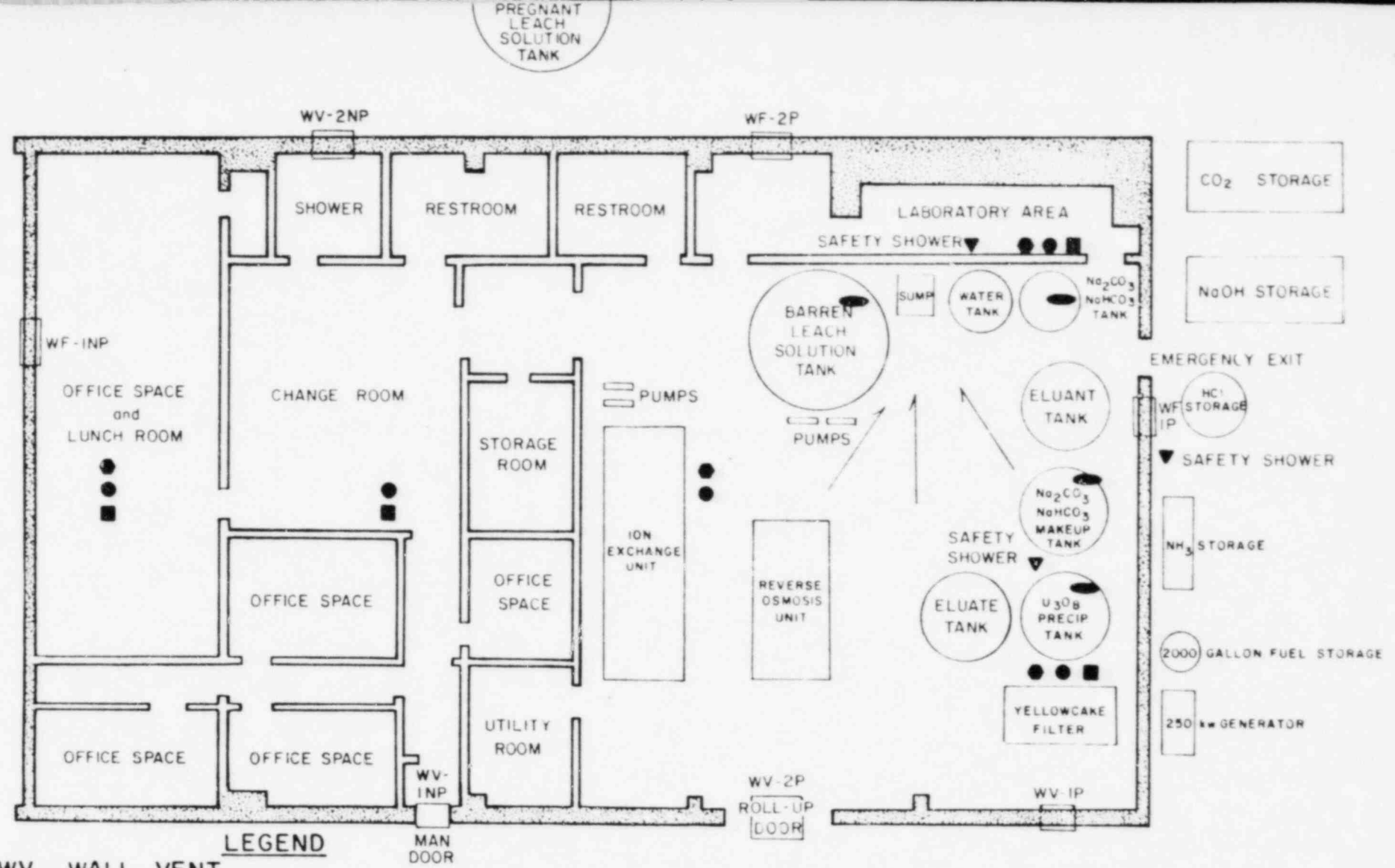
event that recovery inefficiency warrants a change in the basic lixiviant character during the R&D operation, Cotter will apply to, and request approval by, the NRC in the form of a license amendment for such a variation.

Dissolution of the uranium ore from the sand grain host of the two subsurface ore zones will be accomplished by employing either dissolved oxygen (O_2) or hydrogen peroxide (H_2O_2) as the oxidizing agent in a solution of formation water and sodium carbonate-bicarbonate (Na_2CO_3 - $NaHCO_3$) leachant solution (lixiviant). The sodium carbonate-bicarbonate will be introduced into circulating water from the ore zone aquifer along with measured amounts of oxidant and pumped back into the ore zone. The anticipated production flow rate from the well field is not expected to exceed 100 gpm.

3.5 URANIUM RECOVERY PROCESS

The uranium, mobilized as a carbonate-complex will be produced from the well field pattern and will be directed, at a flow rate less than the maximum plant capacity of 100 gpm, to ion exchange columns housed in the recovery plant. There, the extracted uranium will be absorbed by the ion exchange medium and eluted with a sodium chloride (NaCl) - sodium carbonate (Na_2CO_3) solution or a sodium bicarbonate ($NaHCO_3$) solution as laboratory tests may indicate. The resulting uranium rich elute will be acidified with hydrochloric acid (HCl) to release the uranyl ions (UO_2^{++}) to the solution. Uranium will then be precipitated with hydrogen peroxide (H_2O_2) in the form $UO_4 \cdot nH_2O$. The precipitate will be thickened, forming a yellowcake slurry which will be transported to Cotter's Canon City, Colorado mill for drying and packaging. All yellowcake shipments will be

Any solids remaining in the evaporation or impoundment pond will be removed and disposed of in a licensed mill tailings pond. The pond sites will be leveled and contoured to blend with the natural terrain, covered with topsoil, and revegetated. If it is decided to expand the pilot operation into a commercial scale operation, the reclamation will be deferred and completed as per the approved plan for the commercial scale operation. A bond for the total amount of the estimated reclamation costs will be posted with the Wyoming Department of Environmental Quality, Land Quality Division, to ensure funds are available for the reclamation program.



LEGEND

WV WALL VENT

WF WALL FAN

▬ VENTED TO OUTSIDE BUILDING

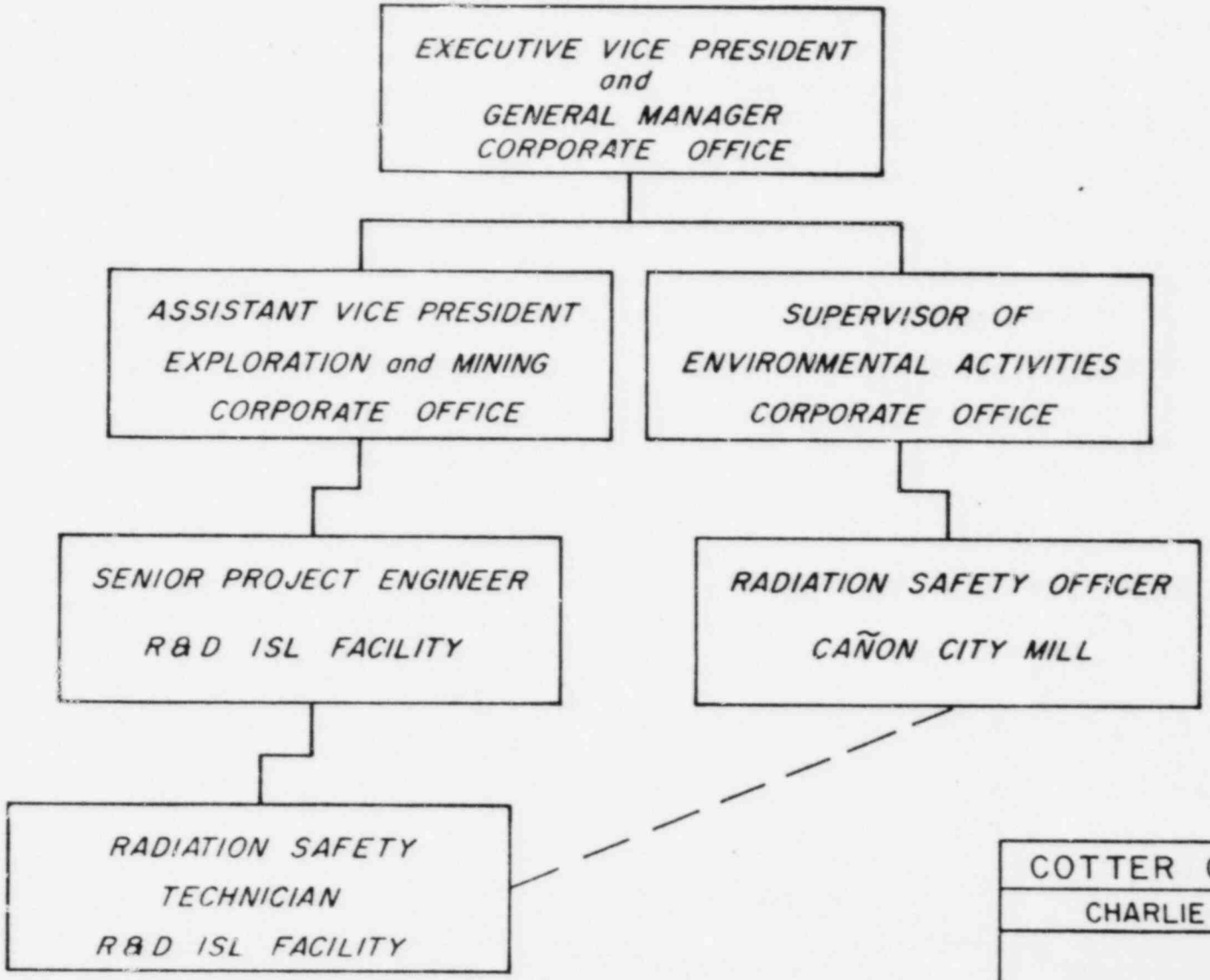
● LOCATION FOR AIRBORNE URANIUM and RADON SAMPLING

● LOCATION FOR GAMMA RADIATION SURVEYS

■ LOCATION FOR ALPHA RADIATION SURVEYS

↑ FLOOR SLOPE

COTTER CORPORATION	
CHARLIE PROJECT ISL	
PRELIMINARY PLANT LAYOUT OFFICE and PROCESS EQUIPMENT	
DRAWN BY S.W.	REVISION #1
DATE 10-82	#2
SCALE 1"=14.5'	#3



COTTER CORPORATION

CHARLIE PROJECT ISL

ORGANIZATION CHART

DRAWN BY S.W. REVISION #1 _____
DATE 10-82 #2 _____
SCALE _____ #3 _____

will be completed in the aquifers above and below the "A" sand. The well field site is located in the S½ of the SW¼ of Section 36, about 3,000 feet southwest of Cotter's test pit/pilot plant site which is in the NE¼ of Section 36, T45N, R77W. The recovery plant will be connected to a well field header building by buried pipelines (See Figure 3-8).

4.0 RADIATION SAFETY ORGANIZATION, RESPONSIBILITIES, AND QUALIFICATIONS

4.1 ORGANIZATION

Cotter proposes that the Radiation Safety Officer for Cotter Corporation's Canon City, Colorado, mill serve as the Radiation Safety Officer (RSO) for this project. The Senior Projects Engineer from the Corporate office will serve as the Project Manager. The Project Manager will be responsible for the overall supervision of the project, including the responsibility to assure the proper execution of the radiation safety program.

In addition, Cotter will assign an appropriately qualified Radiation Safety Technician to the site to conduct and supervise the radiation safety program. The minimum qualifications of the site RST are presented in Section 4.3.1. Further, the RST shall report directly to the Project Manager on matters dealing with the radiological safety, but will be authorized to stop plant process or maintenance activities which are being conducted in a manner contrary to the Radiation Safety Procedures Manual, the ISL Plant Operator's Manual, or Radiation Work Permits. The RST will be assigned other production-related duties only after radiation safety duties are completed. The RST will have other safety-related duties, such as responsibility for programs of industrial hygiene and fire safety.

4.2 RADIATION SAFETY RESPONSIBILITIES

The purpose of the radiation safety program at a uranium recovery facility is to maintain radiation exposures as low as reasonably achievable (ALARA) for all employees, contractors, visitors, and members of the general public.

5.0 RADIATION SAFETY PROGRAM

5.1 OPERATING PROCEDURES

Standard written operating procedures, which consider pertinent radiation safety practices, have been established for all operational activities involving radioactive materials that are handled, processed, stored, or transported. Written procedures have also been established for nonoperational activities, to include health physics and environmental monitoring, sampling, analysis, and instrument calibration. A copy of the procedure manuals will be kept in each operation area of the R&D facility where the procedures are used.

All written procedures for both operational and nonoperational activities will be reviewed and approved in writing by the RSO or other expert with equivalent qualifications before being implemented and whenever a change in a procedure is proposed to ensure that proper radiation protection principles are applied. The RST will review all existing operating procedures on an annual basis. For work or nonroutine maintenance work where the potential for exposure to radioactive material exists and for which no standard written operating procedures already exists, a radiation work permit (RWP) shall be required. Such permits shall describe the following:

1. The scope of the work to be performed.
2. Any precautions necessary to reduce exposure to uranium and its daughters.
3. The supplemental radiological monitoring and sampling necessary during and following the completion of the work. Nonroutine maintenance involving exposure of workers to airborne radioactivity will require the use of continuous breathing zone monitoring.

the RST will indicate by signature the review of each RWP prior to the initiation of work, and the work will be carried out in strict adherence to the conditions of the RWP. When the RST is not available, a supervisory member of the production staff who has received specialized radiation protection training may review and sign RWPs.

5.2 TRAINING

Pursuant to the requirements of Radiation Safety Procedure 1-1, a training program will be conducted by the RSO or other expert with equivalent qualifications. This training program will include: the basic principles of radiation safety, the biological effects of radiation, the personal hygiene practices for a uranium recovery facility, the facility radiation safety procedures, and the appropriate response to emergenices and accidents involving exposure to radioactive materials.

On a quarterly basis, all permanent site workers will attend a general facility safety meeting at which radiation safety problems will be offered for discussion. Safety meeting minutes, attendance records, and training program records will be maintained on file. These meetings also will be used to provide ongoing, annual refresher training for each permanent facility worker. Retraining will include: a discussion of relevant information that has become available during the past year, a review of safety problems during the past year, a discussion of changes in regulations and license conditions, an explanation of exposure trends, and a discussion of any other pertinent topics.

5.3 IN-PLANT RADIATION SURVEYS AND SAFETY PRACTICES

5.3.1 Area Monitoring

Cotter will conduct monthly general air sampling for natural uranium in all

work record and exposure history to identify the source of the exposure. Necessary corrective measures will be taken to ensure reduction of future exposures to as low as is reasonably achievable.

Cotter will conduct quarterly gamma radiation surveys in enclosed areas. The locations for the gamma radiation surveys are shown in Figure 3-6 in the Environmental Statement.

Cotter will corduct alpha contamination surveys of the process facility, laboratory and offices monthly, and of the eating and change areas weekly. If the alpha contamination levels exceed 1000 dpm/100cm^2 the area will be decontaminated. The RST will determine the source of the contamination and control measures will be initiated.

5.3.2 Personnel Monitoring

Pursuant to the requirements of Radiation Safety Procedure 4-1, Cotter will use TLD type, external personnel dosimeters that are designed to measure exposure to penetrating radiation (e.g., gamma radiation and beta particles with a range greater than 7 mg/cm^2).

With the exceptions noted below, Cotter will implement a urinalysis program as outlined in Regulatory Guide 8.22, "Bioassay at Uranium Mills".

1. The licensee shall perform a baseline urinalysis for all permanent employees prior to their initial assignment at the facility.
2. The frequency of urine sample collection shall be monthly.
3. If an action level of 15 µg U/l urine is reached or exceeded for any worker, Cotter will report to the U.S. Nuclear Regulatory Commission the corrective actions that are performed to satisfy the requirements of Regulatory Guide 8.22.

4. Daily inspection log entries and summary reports of the monthly reviews.
5. In-plant radiological survey and monitoring data as well as environmental radiological effluent and monitoring data.
6. Surveys required by radiation work permits.
7. Reports on overexposure submitted to NRC, MSHA, or the State.
8. Reviews of operating and monitoring procedures completed during this period.

The annual report filed with the NRC will be specific in addressing any noticeable trends in personnel exposures for identifiable categories of workers and types of activities, any trends in radiological effluent data, and the performance of exposure and effluent control equipment and whether it is being properly used, maintained, and inspected. Any recommendations to further reduce personnel exposures or environmental releases of uranium or radon and radon progeny will be included in the report.

5.3.4 Operational Considerations

All storage and process tanks within the process building will be vented to the outside atmosphere through a central ceiling or wall vent to prevent radon accumulation within an enclosed structure. Cotter will file with NCR a more detailed description of the ventilation systems, including equipment specifications, airflow paths, and estimated air turnover rates.

Cotter will insure that all process and maintenance workers who work in yellowcake areas or work on equipment contaminated with yellowcake, wear protective clothing provided by the company, including non-surgical weight rubber gloves, coveralls, and boots or shoe covers. Also, workers who package yellowcake slurry for transport will be provided gloves. Before leaving the change area, all process workers

a quality assurance program specified in Regulatory Guide 4.15, "Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Stream and the Environment". Within 90 days of the issuance of the renewal license, Cotter will file with the U.S. Nuclear Regulatory Commission, Uranium Recovery Licensing Branch, complete specifications for this quality assurance program.

The Project Manager, or his designated representative, will perform a daily walk-through inspection of the operating area to ensure that all personnel maintain a safe working environment. Any items of noncompliance or violations of procedures, policies, regulations or license conditions will be documented in a log and maintained on file, and the Project Manager will be notified and necessary remedial action will be taken.

A facility inspection program will include a monthly written summary of all documented radiological surveys, radiation work permits, operating program logs, all personnel exposure data, and environmental monitoring data. The monthly inspection summary will be submitted to the Project Manager and will include recommended remedial actions, if necessary.

Degraded resin will be transferred to Cotter's Canon City, Colorado, mill for disposal in the tailings impoundment or to another licensed mill or a licensed radioactive waste disposal site.

Eating will be allowed only in the offices and lunchroom.

5.4 ENVIRONMENTAL SURVEYS

The details of an unrestricted area environmental monitoring program are described in Section 5.0 of the Environmental Statement.

transferred from supply truck to storage on-site. Sufficient limestone, about 1000 lbs., will be kept on site to consume the total amount of acid should rupture occur.

If used, the acid storage tanks will be kept empty during movement of equipment to their area while the site is under construction. Consequently, the chance of rupture of a tank while containing solution is remote. In event of such occurrence, however, any spill will be contained within the defined boundary limits of a containment berm enclosing the process facility. This area will contain a volume in excess of maximum capacity of the storage tanks. The NRC and corresponding state agencies will be contacted should contamination of air or groundwater occur.

A first aid kit will be kept on-site at all times with complete instructions on use in case of accident. A safety shower and eye wash unit will be available as part of the plant. Several 10-lb. protable ABC-type fire extinguishers also will be available. A vehicle will be available on-site for transport of injured personnel to adequate health treatment facilities.

MSHA and the state mine safety agencies will be informed of any injuries to personnel on site.

Within 90 days of the issuance of the renewed license, Cotter will file with the NRC a general emergency plan which establishes the procedures and authorities to be followed for coping with accidents described above.

PROCEDURE: _____
DATE: 5/28/82
REPLACES PROCEDURE: _____
DATE: _____

COTTER CORPORATION

RADIOLOGICAL SAFETY PROCEDURES

PLANT GAMMA RADIATION SURVEYS

1.0 Purpose

To specify the methods to be used to conduct gamma radiation surveys at the R&D ISL Facility.

2.0 Procedures

2.1 Survey Frequency and Schedule

Gamma radiation surveys will be conducted once each calendar quarter at the locations designated in Exhibit A. The surveys will be conducted at times when the facility is in operation.

2.2 Locations to be Surveyed

The specific locations to be surveyed are depicted on Exhibit A.

2.3 Instrument to be Used

Gamma radiation surveys will be made using an Eberline PRM-6 scintillation detector or an Eberline E-400/HP-270 probe G-M detector. Instruments used for such s[illegible]ill be calibrated at least semi-annually, or as recomme[illegible]e manufacturer, whichever is more frequent, after repa[illegible]ll be checked against a standard source immediately p[illegible]h usage. The detection head of the instrument used to su[illegible]y gamma activity will be positioned at a distance of 1-meter from the floor or platform from which the survey reading is being taken. Calibration of instruments will be conducted using the attached Calibration Procedure, Exhibit B.

2.4 Recording of Readings

The gamma radiation level at each survey point will be recorded by the Radiation Safety Technician on a Radiometric Survey Report (Exhibit C).

In addition, the person conducting the survey will enter a notation on the report as to which sections of the plant were (1) operating and/or contained radioactive materials in production quantities and (2) inoperative and/or contained either little or no radioactive materials. Upon completion, the person conducting the survey will date and sign the Radiometric Survey Report and will submit it to the Radiation Safety Officer for review.