CIMARRON CORPORATION

ANNUAL SUBMITTAL OF 27(e) CHANGES FOR (2005)

DOCKET NO. 070-00925
LICENSE NO. SNM-928

FEBRUARY 2006

CIMARRON CORPORATION
P.O. BOX • CRESCENT, OK 73028

February 09, 2006

Mr. Ken Kalman
Low-Level Waste & Decommissioning Projects Branch
Division of Waste Management
Office of Nuclear Materials Safety & Safeguards
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Docket No. 070-00925; License No. SNM-928
Annual Submittal of 27(e) Changes

Dear Mr. Kalman:

License No. SNM-928, Condition 27(e) requires an annual report of all changes, tests, and experiments made during the previous year and approved by the ALARA Committee. Cimarron Corporation made six changes in the Radiation Protection Plan during 2005. Enclosed please find documentation of the changes which were made, consisting of a summary of the change evaluation and a copy of the revised Radiation Protection Plan (Annex A).

Full documentation of these changes is maintained on site in the Cimarron Quality Assurance records and is available for NRC inspection.

If you have questions or comments, please call me at (405) 282-5680.

Sincerely,

Karen Morgan
Radiation Safety Officer

xc: D. Blair Spitzberg, NRC Region IV

attachments

NMSS01

Retention Time T+20
ACE # 2005-1

QAQC-167
REV. 2

LICENSE SNM-928, CONDITION #27(e) CHANGE EVALUATION FORM

1.0 Description of Proposed Revision, Test, and/or Experiment:

Revision to Radiation Protection Plan Sections 1 thru 5.

2.0 Does the proposed revision, test, and/or experiment change the NRC-approved DP and/or RPP?

X	Yes	If "yes", proceed to section 3.0 for evaluation of proposed revision, test, and/or experiment.
	No	If "no", complete section 6.0. Provide basis for determination of non-applicability in section 5.0, as appropriate.

3.0 Evaluation:

LICENSE REQUIREMENT	YES	NO	N/A
3.1 Does the proposed change, test, or experiment conflict with the ALARA principle or the decommissioning process?		X	
3.2 Does the proposed change, test, or experiment conflict with requirements specifically stated in the license, or impair Cimarron's ability to meet all applicable NRC regulations?		X	
3.3 Will the proposed change, test, or experiment cause degradation in safety or environmental commitments addressed in the NRC-approved RPP and/or DP, or have a significant adverse effect on the quality of the work, the remediation objectives, or health and safety?		X	
3.4 Does the proposed change, test, or experiment conflict with the conclusions of actions analyzed in the Environmental Assessment, dated July 29, 1999 and Safety Evaluation Report dated August 20, 1999?		X	

NOTE: If "YES" was answered in any of the section 3.0 evaluation questions, the proposed item cannot be performed without NRC approval. Provide any basis for determination of each answer in section 5.0, as appropriate.

4.0 Results:

Revision, Test, or Experiment Approved:	Yes	X	[redacted]	No	

5.0 Comments:

6.0 Performed By (Signature/Date):

Corporate Management:	[signature]	Date: 2/24/05
Project Manager:	[signature]	Date: 2/23/05
RSO:	[signature]	Date: 2/23/05

7.0 Implemented By and Date:

Site Manager:	[signature]	Date: 2/28/05

ACE # 2005-1

Change Evaluation
ALARA Committee Approval of Revision to
(Radiation Protection Plan Sections 1 thru 5)
February 23rd, 2005

Description of Action/Change

The change does not conflict with the requirements stated in the license (including those aspects addressed in License Condition 27(e)), or impair the licensee's ability to meet all applicable NRC regulations.

- Revisions to Radiation Protection Plan (Annex A) Sections 1 thru 5:
  - Section 1 – Reviewed no changes
  - Section 2 – verbiage, 2.3 Site Manager responsibilities, 2.4 deleted different levels of training and refocused on RCA entry training commensurate to potential radiation safety problems, Training personnel will be approved by the RSO
  - Section 3 – verbiage
  - Section 4 – 4.3 added the third member title of the ALARA Committee to meet license requirements
  - Section 5 – verbiage and page layout

Is this a change that the ALARA Committee Can Approve Under License Condition 27(e)?
The ALARA Committee is allowed to approve changes to the Decommissioning Plan / Radiation Protection Plan (Annex A) in accordance with license condition 27(e) if the following conditions are all satisfied. A listing of the considerations stipulated by the license condition follows, with the discussion of the impact of the proposed change in italics.

1) Does the proposed change, test or experiment conflict with the ALARA principle or the decommissioning process? *No it does not.*
   a) The action must provide for measurement prior to removal – *not applicable.*
   b) The action must provide for off site disposal of all material exceeding the decommissioning criteria – *not applicable.*
   c) Final surveys must demonstrate compliance with decommissioning criteria as stipulated in the decommissioning plan – *not applicable.*
   d) The action must not result in an increase in anticipated exposures or otherwise violate the ALARA principle – *This action will not result in an increase in exposures or otherwise violate the ALARA principle.*

2) Does the proposed change, test, or experiment conflict with requirements specifically stated in the license, or impair Cimarron's ability to meet all applicable NRC regulations? ***No it does not.***

   a) The action must involve only material authorized by the license – *not applicable.*
   b) Both the use and the place must be authorized – *satisfied.*
   c) The action must not violate training requirements – *it does not.*

d) Revisions to the RPP must be approved by the ALARA Committee – *The required parties are required to approve this revision.*
e) All work with licensed material shall be in accordance with radiation protection procedures– *not applicable.*
f) Option #2 on-site disposal must be in accordance with License Condition #23 – *not applicable.*
g) Liquid and airborne effluents will not exceed 10 CFR 20, Appendix B limits – *not applicable.*

3) Will the proposed change, test, or experiment cause degradation in safety or environmental commitments addressed in the NRC-approved RPP and/or DP, or have a significant adverse effect on the quality of the work, the remediation objectives, or health and safety? ***No it will not.***
   a) The action must comply with dose limits for workers and members of the public – *not applicable.*
   b) Liquid and airborne effluents will not exceed 10 CFR 20, Appendix B limits – *This does not affect compliance with 10 CFR 20, Appendix B limits.*
   c) The action must comply with approved decommissioning criteria – *This does not affect compliance with decommissioning criteria.*
   d) The action must not violate requirements for surveys and monitoring, control of internal and external exposure, and storage of licensed material – *This does not violate requirements for surveys and monitoring, control of internal and/or external exposure and storage of licensed material..*
   e) The action must include precautionary procedures (posting, labeling, etc.) – *not applicable.*
   f) The action must not violate waste disposal or record keeping requirements – *not applicable.*
   g) The action must not result in the loss of control over licensed material – *not applicable.*
   h) The action must not result in greater release of licensed material to air or liquid effluents than planned actions – *not applicable.*
   i) The action must not result in the spread of licensed material to uncontaminated areas more than planned actions – *not applicable.*
   j) The action must not modify the intent to release the site for unrestricted use, result in significant increase in the volume of material contaminated above the criteria, or contaminate restricted areas to the extent they will require decommissioning – *It does not.*
   k) The action must not result in non-compliance with the Cimarron Quality Assurance Plan – *It does not.*

4) Does the proposed change, test, or experiment conflict with the conclusions of actions analyzed in the Environmental Assessment, dated July 29, 1999 and Safety Evaluation Report dated August 20, 1999? ***No it does not.***
   a) The action must not increase the release of licensed material to groundwater, surface water, or air – *It does not.*
   b) The action must not impact the environment as evidenced by the environmental monitoring program – *It does not.*

c) The action must not create the potential for an accident worse than that assumed in the dose assessment – *It does not.*
d) The action must not result in an adverse socioeconomic impact to Cimarron and the surrounding community. – *It does not.*
e) The action must not create other than short duration and minor impacts to air – *It does not.*
f) The action must not change potential future land use – *It does not.*
g) The action must not adversely impact transportation plans for shipments to a licensed disposal site – *It does not.*
h) The action must not adversely impact endangered species – *Not applicable.*
i) The action must not impact historic or archeological sites – *Not applicable.*

Conclusions and Recommendation

The ALARA Committee is authorized under condition 27(e) to approve this change to the Radiation Protection Plan (Annex A) without regulatory approval.

2.0 GENERAL INFORMATION

2.1 Section Overview

This section provides requirements for radiation safety definitions, gives the responsibilities of those involved in Cimarron Corporation radiological operations, and discusses radiation safety training requirements.

2.2 Definitions

Definitions are required to ensure that individuals understand the requirements of the regulations and the RPP at Cimarron Corporation. Cimarron Corporation shall utilize regulatory definitions whenever possible, or may use definitions that are more restrictive than the regulatory definition. In addition, Cimarron Corporation uses definitions which are consistent with standard industry guideline documents.

2.3 Responsibilities

Each individual at Cimarron shares responsibility for their own radiation protection as well as for their co-workers and individual members of the public. Key responsibilities under the Radiation Protection Program are outlined below. Specific responsibilities under the Radiation Protection Program shall be outlined in the Radiation Protection Program Procedures.

The Vice President, Cimarron Corporation, provides corporate oversight of site activities of the Cimarron facility. The Vice President, Cimarron Corporation has ultimate responsibility for assuring that the RPP at Cimarron Corporation is developed and implemented in a manner consistent with regulatory requirements and company policies. This responsibility is delegated to the Radiation Safety Officer.

The Project Manager is responsible to provide sufficient resources to implement the Radiation Safety Program and to perform site activities. The Project Manager oversees site staffing, monitors regulatory requirements, site activities, scheduling and budget status.

The Site Manager is responsible for coordinating site activities and management of site staff.

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The ALARA Committee is responsible for reviewing, evaluating and approving the RPP and changes to the plan in accordance with License Condition 27(e), reviewing operations dealing with radioactive materials and radiological controls, and providing direction to the Radiation Safety Officer for decisions involving

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ALARA, methods of operations, and approving annual ALARA goals for the Cimarron Facility.

The Radiation Safety Officer (RSO) is responsible for development, implementation, and oversight of the Radiation Protection Program. The RSO chairs the ALARA Committee and is responsible for bringing pertinent radiation protection and safety issues to the attention of the ALARA Committee.

The Quality Assurance Coordinator is responsible for assessments of the performance of work to evaluate compliance with the radiation protection program, for the maintenance and distribution of controlled documents, and for long-term storage of quality assurance documents after they are no longer required for operational purposes.

Each Activity Supervisor is responsible for the effective implementation of radiation protection procedures as required for their scope of activities.

Each worker is responsible for complying with regulatory requirements and Cimarron Corporation radiation protection procedures to the best of his/her ability and knowledge. These responsibilities include proper use of protective and personnel monitoring equipment, notifying management of any potential or real radiation hazards or improper practices, and maintaining his/her individual radiation exposure and that of others ALARA. All workers should be aware of and heed the instructions on the "Notice to Employees" (NRC Form 3).

Each worker has the authority to stop work in the event that the health and safety of workers or members of the public may be compromised or if regulatory non-compliance may occur. Workers are requested to contact site management regarding potential regulatory or license violations before contacting regulatory agencies. However, any worker who is not satisfied with the management response regarding the potential violation is encouraged to contact the regulatory agency for resolution of the concern.

2.4 Training Requirements and Policy

All persons who are permitted to enter any restricted area/radiologically controlled area (RCA) shall receive information and training in radiation safety. Training will be commensurate with the potential radiation safety problems and will comply with 10 CFR 19 and 10 CFR 20. Training will ensure that individuals are:

- Aware of radioactive materials are present in the RCA's;
- Informed regarding risks that may result in exposure of the individual;
- Informed regarding precautions or procedures to minimize exposure to radioactive materials or radiation;

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- Informed of the purpose and functions of protective devices and monitoring devices that will be used; and
- Informed regarding additional protection available for the embryo/fetus, as applicable.

Training for radiation workers will also include:

- Applicable provisions of the regulations and licenses for the protection of personnel from exposure to radiation or radioactive material;
- Responsibility of the worker to report promptly to the site manager any conditions that may lead to or cause a violation of regulations or licenses or unnecessary exposure to radioactive material or radiation.
- Appropriate responses to warnings made in the event of any unusual occurrence or malfunction involving exposure to radiation or radioactive material; and
- Radiation exposure reports that may be requested by the worker pursuant to the regulations.

The Radiation Safety Officer is responsible for the oversight of the training program of onsite workers and visitors. Training requirements are approved by the RSO, but training may be performed by radiation workers approved by the RSO.

The radiation training program may meet these requirements by using any of the following techniques: Classroom training, videotapes, reading assignments, on-the-job training, demonstrations, drills, and discussions. Radiation workers attend an appropriate classroom training session upon employment and receive periodic review training at least annually. Training records for all individuals shall be maintained in accordance with the Quality Assurance Plan.

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3.0 ADMINISTRATION

3.1 Section Overview

This section describes the administration of Cimarron Corporation's Radiation Protection Program. Administration of the Radiation Protection Program requires coordination between the Radiation Safety Officer, Project Manager, Site Manager, Quality Assurance Coordinator, Activity Supervisors, the ALARA Committee, and workers. Organization and staffing requirements of the Radiation Protection organization are presented, as well as the requirements of the ALARA Committee.

Compliance with the Radiation Protection Program policies is achieved through the implementation of procedures. Requirements for the development, review, approval, and control of procedures are presented in this section.

Regulations and/or the Radiation Protection Program require the generation of documents, notifications, reports, and other records. This section specifies documents containing the requirements for proper generation, storage, and turnover of documents and notifications for regulatory compliance.

3.2 Radiation Protection Organization

The current organizational structure for Cimarron Corporation is presented in Figure 3-1. Radiation Protection staffing levels shall be appropriate for activities being performed.

3.3 Radiation Protection Program Document Hierarchy

Hierarchy of the Radiation Protection Program documents shall be as follows:

Federal and State Regulations (e.g.,10 CFR)

Radioactive Materials Licenses and Permits issued by the Nuclear Regulatory Commission, other Federal offices, and the State of Oklahoma, including all documents incorporated by reference, such as the Cimarron Corporation RPP.

Radiation Protection Program Procedures. These procedures shall administer and implement the RPP.

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3.4 Procedure Development

Radiation Protection Procedures shall be developed in accordance with the Quality Assurance Plan. Procedures shall comply with regulatory requirements and the RPP and should incorporate or reference applicable technical guidance documents (e.g., ICRP, NCRP, U.S. NRC Regulatory Guides, ANSI Standards, ASME Standards, etc.).

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3.5 Procedure Review, Approval, and Control

Procedures shall undergo technical verification and review to ensure compliance with regulatory requirements, all applicable licenses and permits, the RPP, and conformance, to the extent practicable, with applicable technical guidance documents. Procedure review shall also assess compatibility with all other Cimarron Corporation procedure manuals and documents. Reviews shall ensure that the procedure can be performed as written. All Radiation Protection Program procedures shall be reviewed and approved by the Radiation Safety Officer. Procedures shall be reviewed, issued and controlled by the Quality Assurance Coordinator in accordance with the Quality Assurance Plan.

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3.6 Radiation Protection Program Documentation

Implementation of the Radiation Protection Program results in generation of documents demonstrating the quality of services performed and compliance with federal and state regulations. Radiation Protection documents shall be controlled in accordance with regulatory requirements and the requirements of the Quality Assurance Plan.

3.7 Notifications and Reports

Notifications and reports shall be made in accordance with the requirements of 10 CFR 19, 10 CFR 20, 10 CFR 21, and 10 CFR 70.

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Figure 3-1

Kerr-McGee Corporation
Safety & Environmental Affairs Division
(Cimarron)

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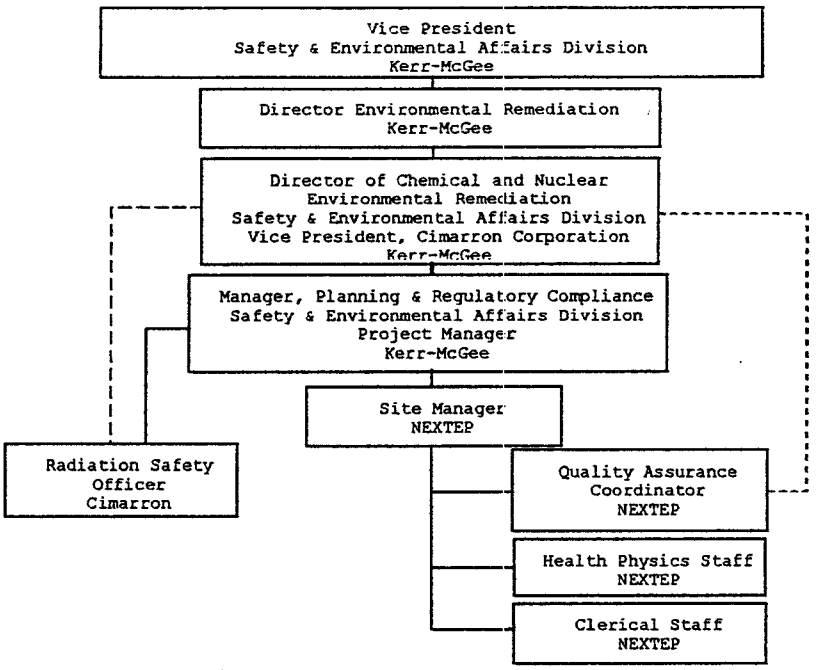

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4.0 ALARA PROGRAM

4.1 Section Overview

This section describes and provides the requirements, responsibilities, and philosophy of the As Low As is Reasonably Achievable (ALARA) program.

4.2 ALARA Policy

Cimarron Corporation operations shall be performed in a manner such that doses are maintained As Low As is Reasonably Achievable (ALARA). The basic philosophy of radiation protection is to maintain radiation exposures ALARA below the regulatory requirements. "Reasonable" means that the costs, benefits, and risks are considered in trying to minimize dose.

In accordance with the Code of Federal Regulations, Cimarron Corporation has developed, documented, and implemented a radiation protection program commensurate with the scope and extent of licensed activities. The Cimarron Radiation Protection Program embraces the ALARA philosophy through its use, to the extent practicable, of procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are ALARA. Cimarron is committed to providing all necessary resources, in the form of personnel, training, engineering controls, preparation and planning, design, equipment, monitoring devices, and controls to achieve ALARA doses at its facility.

Each worker is expected to be knowledgeable of work activities, and to abide by all ALARA requirements such as those found on Special Work Permits. In addition to the responsibility for their own dose minimization, each worker is responsible for minimizing dose to other workers and members of the public. Cimarron Corporation has an ALARA Suggestion Program for workers to provide comments and suggestions for dose minimization and improving the safety and efficiency of operations. Cimarron Corporation encourages worker participation in the ALARA Suggestion Program.

4.3 ALARA Committee

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Cimarron shall have an ALARA Committee whose purpose is to ensure that ALARA policy, philosophy, commitments and regulatory requirements are integrated into all appropriate work activities.

The responsibilities of the ALARA Committee are:

- Ensuring that ALARA policy, philosophy, commitments, and regulatory requirements are integrated into all appropriate work activities.
- Reviewing and approving ALARA Program goals for Cimarron Corporation.
- Reviewing the effectiveness of the ALARA Program.
- Reviewing plans for activities to ensure that ALARA considerations are met.
- Annual review of the Radiation Protection Program to ensure compliance and to incorporate any necessary changes.
- Evaluate and approve changes to the Decommissioning Plan or RPP in accordance with License Condition 27(e).

The ALARA committee shall be chaired by the RSO. The Vice-Chair shall be the Cimarron Project Manager and the third member shall be the Cimarron Vice President. Other individuals with appropriate authority and technical expertise shall serve on the committee as deemed necessary by the Chair or Vice-Chair.

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5.0 ASSESSMENTS

5.1 Section Overview

Assessments are audits and/or surveillances which provide a systematic review of key activities and the overall quality of radiation protection activities. These assessments help to ensure that:

- Activities comply with license and regulatory requirements,
- Activities are performed in accordance with established policies, procedures and recognized good practices,
- Unsatisfactory performance is identified and corrected, and
- Programmatic weaknesses are targeted and corrected.

5.2 Audits

Periodic audits shall evaluate the effectiveness of selected aspects of the Radiation Protection Program and determine the adequacy of and adherence to established procedures, instructions, specifications, regulations and standards, and other applicable permitting and licensing requirements.

5.3 Surveillances

Surveillances are job specific observations performed by Health Physics or Quality Assurance personnel to evaluate the implementation of the radiation protection program with respect to accepted practices (e.g., procedures, management directives, etc.), industry standards, and regulatory requirements.

5.4 Radiological Occurrence Reports

A Radiological Occurrence Report (ROR) is generated to document the facts, record the apparent and/or root cause, track the resolution and aid in trending radiological events. RORs are issued, responded to, corrected, and documented in accordance with the Quality Assurance Plan.

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LICENSE SNM-928, CONDITION #27(e) CHANGE EVALUATION FORM

1.0 Description of Proposed Revision, Test, and/or Experiment:

Revisions to KM-CI-RP-52 Rev 2 – Instrument Calibration and Use of Ludlum 2224 with 43/89 α/β Probe

2.0 Does the proposed revision, test, and/or experiment change the NRC-approved DP and/or RPP?

	Yes	If "yes", proceed to section 3.0 for evaluation of proposed revision, test, and/or experiment.
X	No	If "no", complete section 5.0. Provide basis for determination of non-applicability in section 4.0, as appropriate.

3.0 Evaluation:

LICENSE REQUIREMENT	YES	NO	N/A
3.1 Does the proposed change, test, or experiment conflict with the ALARA principle or the decommissioning process?		X	
3.2 Does the proposed change, test, or experiment conflict with requirements specifically stated in the license, or impair Cimarron's ability to meet all applicable NRC regulations?		X	
3.3 Will the proposed change, test, or experiment cause degradation in safety or environmental commitments addressed in the NRC-approved RPP and/or DP, or have a significant adverse effect on the quality of the work, the remediation objectives, or health and safety?		X	
3.4 Does the proposed change, test, or experiment conflict with the conclusions of actions analyzed in the Environmental Assessment, dated July 29, 1999 and Safety Evaluation Report dated August 20, 1999?		X	

NOTE: If "YES" was answered in any of the section 3.0 evaluation questions, the proposed item cannot be performed without NRC approval. Provide any basis for determination of each answer in section 5.0, as appropriate.

4.0 Comments:

Revisions to procedure reflect calibration methods and forms used to document steps taken.

5.0 Approved By (Signature/Date):

Corporate Management:		Date: 2/24/05
Project Manager:		Date: 2/23/05
RSO:		Date: 2/23/05

6.0 Implemented By and Date:

Site Manager:		Date: 2/28/05

ACE # 2005-2

Change Evaluation
ALARA Committee Approval of Revision to
(Radiation Procedure-52 Calibration and Use of Ludlum 2224 with 43/89 α/β Probe)
February 23, 2005

Description of Action/Change

The change does not conflict with the requirements stated in the license (including those aspects addressed in License Condition 27(e)), or impair the licensee's ability to meet all applicable NRC regulations.

- Revisions to Radiation Procedure-52:
  - Incorporate new calibration forms and fine tune the calibration steps.

Is this a change that the ALARA Committee Can Approve Under License Condition 27(e)? The ALARA Committee is allowed to approve changes to the Decommissioning Plan / Radiation Protection Plan (Annex A) in accordance with license condition 27(e) if the following conditions are all satisfied. A listing of the considerations stipulated by the license condition follows, with the discussion of the impact of the proposed change in italics.

1) Does the proposed change, test or experiment conflict with the ALARA principle or the decommissioning process? *No it does not.*
   a) The action must provide for measurement prior to removal – *not applicable.*
   b) The action must provide for off site disposal of all material exceeding the decommissioning criteria – *not applicable.*
   c) Final surveys must demonstrate compliance with decommissioning criteria as stipulated in the decommissioning plan – *not applicable.*
   d) The action must not result in an increase in anticipated exposures or otherwise violate the ALARA principle – *This action will not result in an increase in exposures or otherwise violate the ALARA principle.*

2) Does the proposed change, test, or experiment conflict with requirements specifically stated in the license, or impair Cimarron's ability to meet all applicable NRC regulations? ***No it does not.***

   a) The action must involve only material authorized by the license – *not applicable.*
   b) Both the use and the place must be authorized – *satisfied.*
   c) The action must not violate training requirements – *it does not.*
   d) Revisions to the RPP must be approved by the ALARA Committee – *The required parties are required to approve this revision.*
   e) All work with licensed material shall be in accordance with radiation protection procedures– *not applicable.*
   f) Option #2 on-site disposal must be in accordance with License Condition #23 – *not applicable.*

g) Liquid and airborne effluents will not exceed 10 CFR 20, Appendix B limits – *not applicable.*

3) Will the proposed change, test, or experiment cause degradation in safety or environmental commitments addressed in the NRC-approved RPP and/or DP, or have a significant adverse effect on the quality of the work, the remediation objectives, or health and safety? ***No it will not.***
   a) The action must comply with dose limits for workers and members of the public – *not applicable.*
   b) Liquid and airborne effluents will not exceed 10 CFR 20, Appendix B limits – *This does not affect compliance with 10 CFR 20, Appendix B limits.*
   c) The action must comply with approved decommissioning criteria – *This does not affect compliance with decommissioning criteria.*
   d) The action must not violate requirements for surveys and monitoring, control of internal and external exposure, and storage of licensed material – *This does not violate requirements for surveys and monitoring, control of internal and/or external exposure and storage of licensed material..*
   e) The action must include precautionary procedures (posting, labeling, etc.) – *not applicable.*
   f) The action must not violate waste disposal or record keeping requirements – *not applicable.*
   g) The action must not result in the loss of control over licensed material – *not applicable.*
   h) The action must not result in greater release of licensed material to air or liquid effluents than planned actions – *not applicable.*
   i) The action must not result in the spread of licensed material to uncontaminated areas more than planned actions – *not applicable.*
   j) The action must not modify the intent to release the site for unrestricted use, result in significant increase in the volume of material contaminated above the criteria, or contaminate restricted areas to the extent they will require decommissioning – *It does not.*
   k) The action must not result in non-compliance with the Cimarron Quality Assurance Plan – *It does not.*

4) Does the proposed change, test, or experiment conflict with the conclusions of actions analyzed in the Environmental Assessment, dated July 29, 1999 and Safety Evaluation Report dated August 20, 1999? ***No it does not.***
   a) The action must not increase the release of licensed material to groundwater, surface water, or air – *It does not.*
   b) The action must not impact the environment as evidenced by the environmental monitoring program – *It does not.*
   c) The action must not create the potential for an accident worse than that assumed in the dose assessment – *It does not.*
   d) The action must not result in an adverse socioeconomic impact to Cimarron and the surrounding community. – *It does not.*
   e) The action must not create other than short duration and minor impacts to air – *Not applicable.*
   f) The action must not change potential future land use – *Not applicable.*

g) The action must not adversely impact transportation plans for shipments to a licensed disposal site – *Not applicable.*
h) The action must not adversely impact endangered species – *Not applicable.*
i) The action must not impact historic or archeological sites – *Not applicable.*

Conclusions and Recommendation

The ALARA Committee is authorized under condition 27(e) to approve this change to the Radiation Protection Plan (Annex A) without regulatory approval.

CIMARRON RADIATION PROTECTION PROCEDURES	KM-CI-RP-52 REVISION: 3
INSTRUMENT CALIBRATION AND USE OF LUDLUM 2224/43-89 α/β DETECTOR	PAGE 1 OF 23 DATE: 11/04/04

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REVIEWED BY: _____ DATE: _____
QUALITY ASSURANCE COORDINATOR

APPROVED BY: _____ DATE: _____
RADIATION SAFETY OFFICER

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1.0 PURPOSES

1.1 The purpose of this procedure is to provide instruction for the calibration and use of the Ludlum 2224 with 43-89 Alpha/Beta probe.

1.2 The Ludlum 2224 is a radiation survey instrument used to measure and discriminate low level alpha/beta radiation, when used with the Ludlum 43-89, alpha/beta scintillation detector.

2.0 RESPONSIBILITY

2.1 **Radiation Safety Officer/Designee**

2.1.1 Responsible for oversight and development of instrumentation procedures.

2.1.2 Responsible for the implementation of the requirements of this procedure.

2.2 **Health Physics Technicians**

2.2.1 Responsible for using and calibrating instruments and generating records in accordance with this procedure.

2.3 **Operators**

2.3.1 Responsible for using instruments in accordance with Section 5.3 of this procedure.

2.4 **Quality Assurance Coordinator/Designee**

2.4.1 Responsible for document control and record retention in accordance with the Quality Assurance Plan.

3.0 PRECAUTIONS

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3.1 Avoid contact with high voltage points on all instruments being calibrated or used. There are numerous H.V. points located internal to this instrument.

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3.2 Keep instruments clean and dry.

Deleted: 3

3.3 Handle all instruments carefully, do not drop or rub Mylar faceplate over rough surfaces.

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4.0 EQUIPMENT AND MATERIALS

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2.1 Ludlum 2224 to be calibrated.

2.2 Ludlum 43-89 alpha/beta probe

2.3 Pulser Ludlum Model 500 or equivalent

2.4 Sources

2.4.1 U-238, beta source or equivalent

2.4.2 Pu-239, alpha source or equivalent

2.4.3 Pu-239, alpha source or equivalent

2.5 Screw driver

2.6 110 volt power supply

2.7 Applicable Calibration documents (see Section 8)

3.0 PROCEDURE

3.1 Overview

The Model 2224 is a portable microprocessor based radiation survey instrument used to measure and discriminate low level alpha/beta radiation when used with an alpha/beta scintillation or proportional detector.

The data is displayed by an analog rate meter and a six-digit liquid crystal display (LCD) counter. The rate meter dial indicated 50-500 CPM with four linear range multipliers of X1-X1000 producing an overall range of 0-500,000 CPM. The LCD is used to display the counts accumulated during the preset count time. There are four count times available via internal switches. These count times are 6 seconds, 30 seconds, 60 seconds, and 120 seconds. The counter is reset and started by pressing the Count button located in the end of the carrying handle.

The rate meter and LCD can display alpha only, beta only, or alpha plus beta by selecting the corresponding toggle switch selection. Audible click per event tones can also be selected to discriminate beta (low pitch tone) from alpha (high pitch tone) via the side mounted speaker. Beta threshold, window, and alpha threshold are adjustable to optimize alpha/beta

efficiency and count separation.

A regulated high voltage power supply adjustable from 200 to 2000 volts with detector overload detection is utilized to operate a wide range of scintillation detectors. Other operating features of the instrument include programmable audio divide by (beta channel only), a two-position switch (internal) for selecting the audio discrimination mode, and adjustable volume, pushbutton battery test switch, pushbutton high voltage test switch and meter reset.

3.2 External Controls (Attachment 52-1) Deleted: 5

3.2.1 OFF/BAT/X1000/X100/X10/X1 Switch: A six position rotary switch to select the analog meter range multipliers and check the battery status. When switched to the BAT position the meter pointer should deflect above the left vertical mark on the BAT OK line. Moving the range selector switch to one of the range multiplier positions (X1, X10, X100, X1000) provides the operator with an overall range of 0-500,000 cpm. Multiply the scale reading by the multiplier to determine the actual reading. Deleted: 5

Immediately after turning the instrument ON, the meter will be driven full scale for about 2 seconds and then return to zero. The LCD will show "888888", display the processor program version, and then 0.

3.2.2 Liquid Crystal Display (LCD): 6 digit display that displays the scaler count for the selected channel. The display also indicates when a count is in progress by turning on two colons. The colons are turned off when the count is completed. If the counter exceeds 999999, an arrow in the upper left corner of the display turns on to indicate the overflow and the counter rolls over to zero and continues counting. Deleted: 5

3.2.3 VOL: the volume control for the speaker. Turning this control clockwise will increase the speaker volume and counterclockwise will decrease the volume. Deleted: 5

NOTE: The volume should be turned down when not

required to reduce battery drain.

3.2.4 α/α+β/β Switch: A three-position toggle switch used to select the sum of both alpha and beta count channels (a+B), alpha count only (a), or beta count only (B), for display. This switch affects both the rate meter and the counter. The separate rate meter and counter channels are active regardless of the switch position and will continue to function when the channel is not selected for display. This allows the operator to view each channel separately or together by simply selecting the appropriate switch position.

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3.2.5 HV: When depressed, provides a readout of the detector high voltage on the meter. Use the 0-2kV meter scale.

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3.2.6 RESET: Depress to reset the analog rate meter to zero.

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3.2.7 Count Pushbutton Switch (located in carrying handle): When depressed, resets the counter to zero and starts the timer. The colons on the display will turn on and stay on until the count time has expired.

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3.2.8 HV Adjustment: Provides a means to vary the high voltage from 200 to 2000 volts.

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3.3 Internal Controls

Deleted: 5

3.3.1 AUDIO Divide Select Switch: A two-pole DIP switch (1 & 2) used to select the audio divide ratios of 1, 10, 100, 1000.

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NOTE: The AUDIO divide function only effects the lower frequency beta tones. The higher frequency alpha clicks per events will be unaffected by the divide by selection.

The ratio is selected from the following table. O is open and C is closed.

SWITCH	DIVIDE BY

1	2	RATIO
C	C	1
O	C	10
C	O	100
O	O	1000

3.3.2 COUNT TIME Select Switch: A two-pole DIP switch (3 & 4) used to select the count times of 6, 30, 60, and 120 seconds. Deleted: 5

The count time is selected from the following table. O is open and C is closed.

SWITCH 3	SWITCH 4	COUNT TIME
C	C	6 seconds
O	C	30 seconds
C	O	60 seconds
O	O	120 seconds

3.3.3 TONE: A one-pole DIP switch (5) used to select tone discrimination between alpha and beta count channels. When in the DUAL mode, alpha and beta puise tones will be audible in all selector switch positions (i.e. if in the 'α' only position and 'β' is detected, the 'β' tones will be heard in addition to the 'α' tones and visa versa). Deleted: 5

When the Single tone position is selected, both alpha and beta pulse tones can be heard in the α+β selection, but alpha pulses cannot be heard in the beta only channel selection and beta pulse tones will not be heard in the alpha only channel selection.

SWITCH 5	TONE MODE
C	DUAL
O	SINGLE

3.3.4 MTR: A multi-turn potentiometer used to calibrate the meter to the cpm reading. Deleted: 5

3.3.5 AT: A multi-turn potentiometer used to vary the alpha pulse threshold from ≈ 40 to 700 mV. Deleted: 5

3.3.6 BW: A multi-turn potentiometer used to vary the beta pulse upper window limit from the beta threshold to the alpha threshold setting and anywhere in between those two parameters. The beta Deleted: 5

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window can be disabled by adjusting the BW control to the maximum clockwise position allowing the upper beta threshold limit to equal the alpha threshold.

3.3.7 BT: A multi-turn potentiometer used to vary the beta pulse threshold from ≈ 2 to 15 millivolts. Deleted: 5

3.3.8 OL: A multi-turn potentiometer which provides a means to vary the detector current overload set point. Deleted: 5

3.3.9 LIM: A multi-turn potentiometer used to set the maximum HV limit to 2000 VDC. Deleted: 5

3.3.10 HV: A multi-turn potentiometer used to adjust the high voltage test reading to correspond with the actual high voltage output. **The HV switch must be depressed during adjustment.** Deleted: 5

3.3.11 LB: A multi-turn potentiometer used to adjust the minimum battery voltage level corresponding to the low battery indication on the meter dial. **The BAT switch must be depressed during adjustment.** Deleted: 5

3.4 Specifications Deleted: 5

3.4.1 POWER: two standard "D" size batteries. Deleted: 5

3.4.2 RANGES: four linear range multiplies of X1, X10, X100, and X1000; used in combination with the 0-500 CPM meter dial - 0-500,000 CPM is achieved with the range multiplier. Deleted: 5

3.4.3 SENSITIVITY: Beta Threshold (BT) is adjustable from 2 to 15 millivolts (mV), Beta Window (BW) is adjustable from the Beta Threshold up to the Alpha Threshold setting; Alpha Threshold (AT) is adjustable from 40 mV to 700 mV. Deleted: 5

3.4.4 AUDIO: Dual or single tone click per event through a built-in speaker with an adjustable volume control and internally switchable divide by of 1, 10, 100, and 1000 counts per click (beta only). Deleted: 5

3.4.5 HIGH VOLTAGE: externally adjustable from 200 to 2000 volts. Deleted: 5

3.4.6 LINEARITY: within ± 5% of full scale for analog rate meter; ± 2% for the LCD.

3.4.7 RESPONSE TIME: X1 range multiplier = 10 seconds, X10 = 7 sec., X100 = 2 sec., X1000 = 1.5 sec.; all response times measured from 10-90% of full scale.

3.4.8 BATTERY DEPENDENCE: Instrument calibration change less than 3% to battery endpoint.

3.4.9 METER: 1mA, with pivot-and-jewel suspension.

3.4.10 LCD: 6 digit Liquid Crystal Display with 6.4 mm characters and a counter overflow arrow, colons indicate count in process.

3.4.11 CONNECTOR: Series "C".

3.4.12 SIZE: 10.67cm (4.2") H x 8.9cm (3.5" W x 21.6cm (8.5") L, exclusive of handle.

3.4.13 WEIGHT: 1.36kg (3 lbs.) less detector and batteries.

3.4.14 FINISH: drawn-and-cast aluminum, with computer-beige polyurethane enamel and silk-screened nomenclature.

3.4.15 BATTERY LIFE: Exceeds 350 hours with a fresh set of alkaline "D" batteries.

3.4.16 TEMPERATURE RANGE:-10°C to 50°C (14°F to 122°F)

3.5 CALIBRATION PROCEDURE (SEMI-ANNUAL)

3.5.1 Precalibration Requirements

3.5.1.1 The cable installed on the Ludlum 2224 is used for pulser calibration. Disconnect detector from cable and connect cable to Ludlum Series "C" fitting on front of Ludlum Model 500 pulser.

3.5.1.2 Document alpha survey of instrument to be calibrated on Attachment 52-2, "Certificate of Calibration".

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5.1.3 Before instrument is turned on, adjust meter "zero" using screw on front of meter bezel, if necessary.

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5.1.4 Instrument shall be turned on and allowed to warm up for at least 30 seconds.

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5.1.5 Check battery response on meter and replace batteries if needed. Record on Attachment 52-2, "Certificate of Calibration".

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5.1.6 Check geotropic effects on meter needle movement in 2 perpendicular planes. Needle movement shall be 0 CPM. Record results on Attachment 52-2, "Certificate of Calibration".

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5.2 Pulser Calibration for Ludlum 2224/43-89 α/β detector shall be semi-annual. The calibration shall be performed with the ambient temperature between 65° - 85°F. Humidity and atmospheric pressure present no significant problems for this instrument. But, they may be documented during calibration.

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5.2.1 Connect Ludlum 2224 to the pulser.

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5.2.2 Set the Ludlum 2224 to the α/β channel on 3-position toggle switch.

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5.2.3 Set the Ludlum 2224 for 60 second count time (See Section 5.3.2). Then turn on the instrument.

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5.2.4 Set the pulser multiplier switch to X1, and pulse selector switch to negative pulse, set pulser coarse/fine tuning knobs to minimum on the pulser.

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5.2.5 Use the pulser coarse and fine tuning knobs, to set the digital readout on the pulser to 100.

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5.2.6 Adjust the pulser amplitude until a meter movement is noticed on the Ludlum 2224.

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5.2.7 Compare the needle movement of the Ludlum 2224's count rate meter, with the pulser setting. This should read within ±10% pulser setting.

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5.2.8 Push the count button on the Ludlum 2224. The LCD reading should read ±2% of the pulser setting. Record the results on Attachment 52.2.

5.2.9 The Ludlum 2224 range multiplier switch should be increased by one position, each time the needle on the scaler rate meter reaches 3/4 deflection.

5.2.10 Repeat this process for pulser output of 100, 400, 1000, 4000, 10,000, and 40,000 pulses/min. Note the needle deflection and LCD readout of each setting and log the results on the calibration certificate. If results are not within parameters, then instrument repair is required.

5.2.11 If the needle on the Ludlum 2224's scaler rate meter does not read correctly, this can be adjusted by taking the cover off and adjusting the MTR potentiometer.

5.2.12 Turn instrument and pulser off.

5.3 The following procedure is an example of determining the beta threshold, beta window and alpha threshold. These settings are factory set and should not need adjustment unless instrument is out of tolerance.

5.3.1 The Ludlum operating manual suggests the beta threshold should be set at 3.5 M.V., the beta window at 30 M.V., and the alpha threshold at 120 M.V. These are suggested settings and can be set at different levels to get the best effect with the lowest background and the lowest crosstalk.

5.3.2 Connect a Ludlum Model 500 Pulser or equivalent to the Model 2224.

5.3.3 Set the 2224 on the X100 scale.

5.3.4 Set the Pulser output to 40,000 Pulses. Set the Pulser, pulse amplitude to 3.5 M.V. This is done by multiplying the analog meter

reading labeled 0.5 by the setting of the amplitude selector switch. Adjust the beta threshold for 3.5 M.V. and the beta window for 30 M.V. The pulse counts should be detected on the 2224's rate meter above 3.5 M.V. and should shut off above 30 M.V.

5.3.5 Switch the 2224 to the alpha position, set the pulser for 120 M.V. output. Then adjust the alpha threshold control until counts are detected on the 2224 rate meter. Deleted: 5

5.4 High Voltage Calibration Deleted: 5

5.4.1 Disconnect the Ludlum 2224 from the pulser and connect to the 43-89 probe. Deleted: 5

5.4.2 The windows and thresholds have been factory set with the 43-89 probe and should not need to be adjusted. If adjustment is required, refer to Instrument Tech. Manual. Deleted: 5

5.4.3 Turn the Ludlum 2224 to the X10 scale. Deleted: 5

5.4.4 The HV control is located on the front of the instrument. Remove the cover from the HV potentiometer and turn counter clockwise. This turns off the HV. Deleted: 5

5.4.5 Select α (alpha) on 3-position toggle switch. Place the Pu-239, alpha source, or equivalent, on the faceplate and turn the HV up until movement is noted on the scaler rate meter. NOTE: HV button must be pushed to read HV. The tube manufacturer recommends not to exceed 1500 volts. Deleted: 5

5.4.6 Push the count PUSH button switch and record the LCD results on the High Voltage Plateau form (Attachment 52-3). Deleted: 5

5.4.7 Turn to the β (Beta) channel on 3-position toggle switch. Record the LCD Beta results in the Alpha to Beta X-Talk column on the High Voltage Plateau form (Attachment 52-3). Deleted: 5

5.4.8 Remove the alpha source from the probe face and replace with the Beta. Push the count Deleted: 5

button and record the LCD reading in the Beta column on the H.V. Plateau form (Attachment 52.3).

3.5.4.9 Remove the Beta source and push the count button and record the results in the Beta Bkg. column on the H.V. Plateau form. Then turn the 3-position toggle switch to the Alpha channel and record the results in the Alpha Bkg. column on the H.V. Plateau form. This is the starting point for the H.V. Plateau. On the 2224, this is approximately 600 volts. There is some difference between instruments and this voltage could vary ± 100 volts.

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3.5.4.10 Repeat steps 5.5.3.5 through 5.5.3.9 by turning the H.V. up 25 volts at a time and recording the readings on the H.V. Plateau form (Attachment 52-3).

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NOTE: The Photo multiplier tube operates between 500-1000 volts. The tube manufacturer recommends no more than 1500 volts.

3.5.4.11 You can now pick a H.V. operating point, to get the best efficiency for Alpha and Beta with the lowest Bkg. and Alpha to Beta Crosstalk. Alpha to Beta X-Talk should be <10%. Alpha Bkg should be <10cpm and Beta Bkg should be <500cpm.

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3.5.5 Chi^2 Test

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3.5.5.1 Chi^2 tests should be performed when the instrument is calibrated or repaired .

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3.5.5.2 Before starting the Chi^2's, record the temperature, humidity, and barometric pressure on the Chi^2 certificate (Attachment 52.5). Reset the count time on the Ludlum 2224 to 1 minute (see 5.3.2)

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3.5.5.3 Take five background counts for alpha (selector switch in α mode) and beta (selector switch in β mode). These are simultaneous readings. Average the alpha background and the beta background and record on the appropriate calibration certificates.

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Add Cost Attachment

3.5.5.4 As you record each alpha count, in steps 5.5 through 5.7, flip the α/β switch to β. Subtract the beta background from the reading and log on a separate Chi² certificate. This is to check alpha to beta crosstalk.

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3.5.5.5 Place the Pu-239 alpha source, or equivalent, on the toe of the probe . Take seven readings and subtract Bkg. and log on the alpha Chi² certificate.

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3.5.5.6 Repeat this process on the middle of the probe.

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3.5.5.7 Place the source on the heel of the probe and take 6 readings and subtract Alpha Bkg. and log on the alpha Chi² Certificate (Attachment 52-).

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3.5.5.8 Remove the alpha source and replace with the beta source. Ensure selector switch to β. Chi² only needs to be completed on a semi-annual basis.

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3.5.5.9 Take (7) 1.0 minute readings on the toe, subtract the beta background and log on the beta Chi² Certificate.

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3.5.5.10 Repeat 5.5.5.9 for the middle of the probe.

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3.5.5.11 Move the source to the heel of the probe and take six readings, and subtract the beta background and log the net counts on the beta Chi² Certificate.

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3.5.5.12 Check all Chi² data for correctness. Ensure results fall within acceptable 95% confidence level parameters.

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3.5.5.13 Present all paperwork to the RSO/Designee for review and signature.

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3.5.5.14 RSO/Designee will submit paperwork to Document Control who will maintain records.

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3.5.5.15 Place calibration sticker (Attachment 52-) on the instrument and fill in the necessary information.

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5.5.6 Complete the Daily Source Check Control graphs and keep them with the instrument (Attachment 52-).

5.5.7 Update the Instrument Calibration and Repair History Log (Attachment 52-). Record the date of calibration, calibration due date, calibration and repairs performed, H.P. Tech. or authorized Repair Person's initials.

5.6 OPERATING PROCEDURE

5.6.1 Check calibration sticker to verify current calibration is in effect.

5.6.2 Turn the Ludlum 2224 to battery position and check for proper battery response.

5.6.3 Push and hold down the H.V. button and check the H.V.

5.6.4 Turn the Ludlum 2224 to the X10 scale.

5.6.5 Turn the Alpha/Beta switch to Alpha.

5.6.6 Take background reading, and log on the Alpha source check control chart.

5.6.7 Turn the Alpha/Beta switch to Beta.

5.6.8 Take background reading, and record on the Beta source check control chart.

Note: Readings in Steps 5.6.6 and 5.6.8 are simultaneous readings.

5.6.9 Place the Beta Source on the middle of the probe and take a reading. Subtract the beta background and record reading on the Beta Source Check Control Chart. Remove the Beta Source and replace with the Alpha Source. Move switch to Alpha. Take 1 reading on the middle of the probe and record on the Control Chart. If readings fall out of parameters, contact Health Physics. Record source and background information on appropriate maps or worksheets as applicable.

5.6.10 The instrument is ready to be used. Care should be taken to keep the instrument clean and dry.

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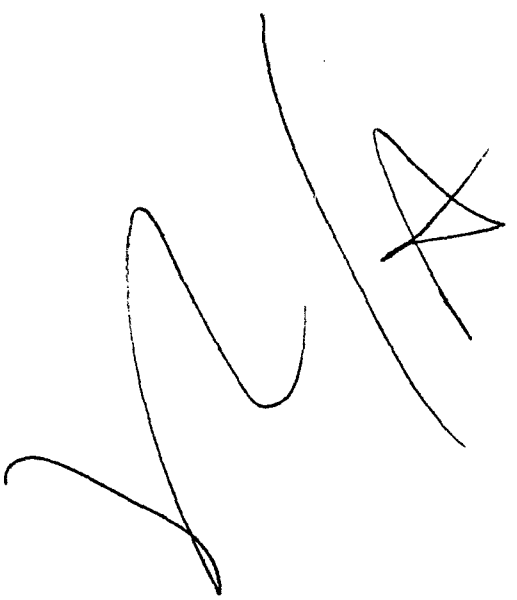

5.6.11 When rveying, be careful not to drag th robe face er the surface being surveyed. Make , the Alpha/Beta switch is in the proper position.

5.6.12 Record all readings in the proper place and on the proper worksheets. All readings taken should be the same count time as the Chi² readings.

6.0 RECORDS

6.1 Records generated by this procedure shall be controlled in accordance with KM-CI-RP-7 "Control of Health Physics Procedures, Records, and Documents".

7.0 REFERENCE

7.1.1 Ludlum 2224 Instruction Manual

7.1.2 Ludlum 43-89 Instruction Manual

7.1.3 Ludlum 500 Pulser Instruction Manual

7.1.4 ANSI N323-1978, "Radiation Protection Instrumentation Test and Calibration"

7.1.5 Procedure KM-CI-RP-46, "Calibration and use of Radiation Detection Instrumentation"

8.0 ATTACHMENTS

NOTE: The attachments are examples and may not necessarily be the exact form to be used. The HPS shall approve the use of any form which is significantly different from the Attachments in this Procedure.

8.7 Attachment 52-1, Calibration Certificate

8.8 Attachment 52-2 HV Plateau Certificate

8.4 Attachment 52-3 Chi² Certificate(95% Confidence Level)

8.6 Attachment 52-4 Daily Source Chi² Control Chart

8.7 Attachment 52-5 Calibration and Repair History

Add Cal Sticker

Add Cross talk - Sheet

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ATTACHMENT 52-1

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ATTACHMENT 52-2

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ATTACHMENT 52-3

ATTACHMENT 52-4

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ATTACHMENT 52-5

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ATTACHMENT 52-6

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Retention Time T+20
ACE # 2005-3

QAQC-167
REV. 3

LICENSE SNM-928, CONDITION #27(e) CHANGE EVALUATION FORM

1.0 Description of Proposed Revision, Test, and/or Experiment:

Review of Sections 6 – 10 of the Radiation Protection Plan with revisions to Sections 9 & 10.

2.0 Does the proposed revision, test, and/or experiment change the NRC-approved DP and/or RPP?

X	Yes	If "yes", proceed to section 3.0 for evaluation of proposed revision, test, and/or experiment.
	No	If "no", complete section 5.0. Provide basis for determination of non-applicability in section 4.0, as appropriate.

3.0 Evaluation:

LICENSE REQUIREMENT	YES	NO	N/A
3.1 Does the proposed change, test, or experiment conflict with the ALARA principle or the decommissioning process?		X	
3.2 Does the proposed change, test, or experiment conflict with requirements specifically stated in the license, or impair Cimarron's ability to meet all applicable NRC regulations?		X	
3.3 Will the proposed change, test, or experiment cause degradation in safety or environmental commitments addressed in the NRC-approved RPP and/or DP, or have a significant adverse effect on the quality of the work, the remediation objectives, or health and safety?		X	
3.4 Does the proposed change, test, or experiment conflict with the conclusions of actions analyzed in the Environmental Assessment, dated July 29, 1999 and Safety Evaluation Report dated August 20, 1999?		X	

NOTE: If "YES" was answered in any of the section 3.0 evaluation questions, the proposed item cannot be performed without NRC approval. Provide any basis for determination of each answer in section 5.0, as appropriate.

4.0 Comments:

5.0 Approved By (Signature/Date):

Corporate Management:		Date: 8/19/05
Project Manager:		Date: 8/18/05
RSO:		Date: 8/29/05

6.0 Implemented By and Date:

Site Manager:		Date: 9/6/05

ACE # 2005-3

Change Evaluation
ALARA Committee Approval of Revision to
(Radiation Protection Plan Sections 6 thru 10)
June 2nd, 2005

Description of Action/Change

The change does not conflict with the requirements stated in the license (including those aspects addressed in License Condition 27(e)), or impair the licensee's ability to meet all applicable NRC regulations.

- Revisions to Radiation Protection Plan (Annex A) Sections 6 thru 10:
  - Section 6 – Reviewed no changes
  - Section 7 – Reviewed no changes
  - Section 8 – Reviewed no changes
  - Section 9 – Reviewed with revisions to sections 9.1 – what information the SWP provides – Section 9.4 – added who approves the final SWP
  - Section 10 – Reviewed with revisions to section 10.1 – added explanation to what delineates 40 DAC-hour time frame.

Is this a change that the ALARA Committee Can Approve Under License Condition 27(e)? The ALARA Committee is allowed to approve changes to the Decommissioning Plan / Radiation Protection Plan (Annex A) in accordance with license condition 27(e) if the following conditions are all satisfied. A listing of the considerations stipulated by the license condition follows, with the discussion of the impact of the proposed change in italics.

1) Does the proposed change, test or experiment conflict with the ALARA principle or the decommissioning process? *No it does not.*
   a) The action must provide for measurement prior to removal – *not applicable.*
   b) The action must provide for off site disposal of all material exceeding the decommissioning criteria – *not applicable.*
   c) Final surveys must demonstrate compliance with decommissioning criteria as stipulated in the decommissioning plan – *not applicable.*
   d) The action must not result in an increase in anticipated exposures or otherwise violate the ALARA principle – *This action will not result in an increase in exposures or otherwise violate the ALARA principle.*

2) Does the proposed change, test, or experiment conflict with requirements specifically stated in the license, or impair Cimarron's ability to meet all applicable NRC regulations? ***No it does not.***

   a) The action must involve only material authorized by the license – *not applicable.*
   b) Both the use and the place must be authorized – *satisfied.*
   c) The action must not violate training requirements – *it does not.*

d) Revisions to the RPP must be approved by the ALARA Committee – *The required parties are required to approve this revision.*
e) All work with licensed material shall be in accordance with radiation protection procedures– *not applicable.*
f) Option #2 on-site disposal must be in accordance with License Condition #23 – *not applicable.*
g) Liquid and airborne effluents will not exceed 10 CFR 20, Appendix B limits – *not applicable.*

3) Will the proposed change, test, or experiment cause degradation in safety or environmental commitments addressed in the NRC-approved RPP and/or DP, or have a significant adverse effect on the quality of the work, the remediation objectives, or health and safety? ***No it will not.***
a) The action must comply with dose limits for workers and members of the public – *not applicable.*
b) Liquid and airborne effluents will not exceed 10 CFR 20, Appendix B limits – *This does not affect compliance with 10 CFR 20, Appendix B limits.*
c) The action must comply with approved decommissioning criteria – *This does not affect compliance with decommissioning criteria.*
d) The action must not violate requirements for surveys and monitoring, control of internal and external exposure, and storage of licensed material – *This does not violate requirements for surveys and monitoring, control of internal and/or external exposure and storage of licensed material..*
e) The action must include precautionary procedures (posting, labeling, etc.) – *not applicable.*
f) The action must not violate waste disposal or record keeping requirements – *not applicable.*
g) The action must not result in the loss of control over licensed material – *not applicable.*
h) The action must not result in greater release of licensed material to air or liquid effluents than planned actions – *not applicable.*
i) The action must not result in the spread of licensed material to uncontaminated areas more than planned actions – *not applicable.*
j) The action must not modify the intent to release the site for unrestricted use, result in significant increase in the volume of material contaminated above the criteria, or contaminate restricted areas to the extent they will require decommissioning – *It does not.*
k) The action must not result in non-compliance with the Cimarron Quality Assurance Plan – *It does not.*

4) Does the proposed change, test, or experiment conflict with the conclusions of actions analyzed in the Environmental Assessment, dated July 29, 1999 and Safety Evaluation Report dated August 20, 1999? ***No it does not.***
a) The action must not increase the release of licensed material to groundwater, surface water, or air – *It does not.*
b) The action must not impact the environment as evidenced by the environmental monitoring program – *It does not.*

c) The action must not create the potential for an accident worse than that assumed in the dose assessment – *It does not.*
d) The action must not result in an adverse socioeconomic impact to Cimarron and the surrounding community. – *It does not.*
e) The action must not create other than short duration and minor impacts to air – *It does not.*
f) The action must not change potential future land use – *It does not.*
g) The action must not adversely impact transportation plans for shipments to a licensed disposal site – *It does not.*
h) The action must not adversely impact endangered species – *Not applicable.*
i) The action must not impact historic or archeological sites – *Not applicable.*

Conclusions and Recommendation

The ALARA Committee is authorized under condition 27(e) to approve this change to the Radiation Protection Plan (Annex A) without regulatory approval.

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9.0 SPECIAL WORK PERMITS

9.1 Section Overview

A Special Work Permit (SWP) is a document or series of documents prepared by the Activity Supervisor, with input and approval from appropriate personnel, to inform individuals of the conditions that exist in the work area and radiological and non-radiological job safety requirements. SWP's are required only when hazardous or radioactive materials are present in quantities that could result in health hazards due to the work to be performed.

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9.2 SWP Preparation

SWP documentation shall consider all safety and radiological hazards and protective equipment needed for the work. SWPs should include information on the nature of the work, equipment needed to perform the job, work procedures, work plans, Health & Safety requirements, personal protective equipment, radiological requirements and conditions, necessary surveys, training requirements, and records to be maintained. Evaluations are performed based upon the above documentation, and the SWP requirements shall be written to incorporate all health and safety considerations.

9.3 SWP Requirements

The SWP job description shall be consistent with the activities or task to be performed. Personnel monitoring requirements, radiological survey requirements, and health physics oversight requirements shall be written onto the SWP. In addition, any special sampling requirements, such as air sampling, shall be included as SWP requirements. The location identified on the SWP shall be consistent with the work being performed. The job Activity Supervisor or designee shall review the provisions of specific SWPs with their workers prior to work starting.

9.4 SWP Approval

The Radiation Safety Officer, Site Manager, QA/QC Coordinator, and Activity Supervisor or designees, shall approve all SWPs.

9.5 SWP Training

Each individual who performs work governed by a SWP shall receive training regarding the SWP. SWP training shall be documented by having the worker sign a form acknowledging that training was received.

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10.0 RADIATION PROTECTION SURVEYS

10.1 General Requirements

Survey information is used to assist in the development of Special Work Permits, to inform individuals of the radiological conditions/hazards in the area, to determine area postings (if required), to determine the type(s) of personnel protective equipment necessary, and to ensure personnel exposures to radiation and radioactive materials are maintained ALARA. Cimarron shall conduct radiation and contamination surveys, perform air sampling, and take samples when required to assess radiological conditions and to establish specific radiological controls for work to be performed. Decommissioning surveys shall be performed, to the extent practical, to conform with NUREG/CR-5849, the U.S.NRC Branch Technical Position for Onsite Storage and Disposal of Uranium and Thorium, and the 1987 U.S. 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."

Contact dose rates are used to locate and identify radiation levels to which personnel are exposed.

Indirect (smears) and direct (fixed) contamination surveys are performed to detect and quantify radioactive contaminants. Loose-surface contamination surveys should be performed when necessary to ensure that radioactive contamination has not inadvertently spread.

Cimarron shall incorporate the guidance of U.S. NRC Regulatory Guide 8.25, "Air Sampling in the Workplace" as an acceptable method for meeting certain survey and dose assessment requirements of 10 CFR 20. Air samples shall be collected whenever the airborne activity levels are expected to exceed 10 percent of the Derived Air Concentration (DAC).

Breathing zone (BZ) air sampling shall be performed whenever respiratory protection devices are worn by personnel. If air sample data indicates a measured level greater than 40 DAC-hours in any shift or operation, whichever is shorter in time duration, the RSO shall conduct an investigation and take corrective actions to reduce airborne contamination levels.

Air sample collection media shall be appropriate to address the radionuclide mixture(s) present. In addition, the analysis of air samples (including preliminary field screening) shall be performed in a timely and expeditious manner.

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10.2 Routine Surveys

Surveys shall be conducted at a frequency commensurate with the hazards present and the personnel occupancies in a given area. Survey frequencies should maintain personnel exposures ALARA.

10.3 Investigative Surveys

Investigative surveys shall be performed as soon as practicable following the discovery or indication of abnormal radiological conditions.

10.4 Personnel Contamination Monitoring

Personnel shall routinely perform contamination monitoring (frisking) prior to exiting a Radiologically Controlled Areas that have the potential for spreading contamination or per SWP requirement . A hand and foot frisk shall be performed at a minimum, when exiting these areas.

10.5 *Survey Training and Documentation*

Surveys shall be performed by personnel who have been trained commensurate with the type of surveys to be performed. Training will address the appropriate instrumentation to be used, operational and response checks for survey instrumentation, survey methods, recording of data, calculations, data evaluation, and action levels, as applicable. Radiation and contamination surveys performed for compliance purposes, or to demonstrate that decommissioning criteria have been met, shall be documented and maintained in accordance with 10 CFR 20, Subpart L.

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Retention Time T+20
ACE # 2005-4

QAQC-167
REV. 3

LICENSE SNM-928, CONDITION #27(e) CHANGE EVALUATION FORM

1.0 Description of Proposed Revision, Test, and/or Experiment:

Revision to Section 3, Figure 3-1 (Organizational Chart) of the Radiation Protection Plan.

2.0 Does the proposed revision, test, and/or experiment change the NRC-approved DP and/or RPP?

X	Yes	If "yes", proceed to section 3.0 for evaluation of proposed revision, test, and/or experiment.
	No	If "no", complete section 5.0. Provide basis for determination of non-applicability in section 4.0, as appropriate.

3.0 Evaluation:

LICENSE REQUIREMENT	YES	NO	N/A
3.1 Does the proposed change, test, or experiment conflict with the ALARA principle or the decommissioning process?		X	
3.2 Does the proposed change, test, or experiment conflict with requirements specifically stated in the license, or impair Cimarron's ability to meet all applicable NRC regulations?		X	
3.3 Will the proposed change, test, or experiment cause degradation in safety or environmental commitments addressed in the NRC-approved RPP and/or DP, or have a significant adverse effect on the quality of the work, the remediation objectives, or health and safety?		X	
3.4 Does the proposed change, test, or experiment conflict with the conclusions of actions analyzed in the Environmental Assessment, dated July 29, 1999 and Safety Evaluation Report dated August 20, 1999?		X	

NOTE: If "YES" was answered in any of the section 3.0 evaluation questions, the proposed item cannot be performed without NRC approval. Provide any basis for determination of each answer in section 5.0, as appropriate.

4.0 Comments:

5.0 Approved By (Signature/Date):

Corporate Management:	[signature]	Date: 6/2/05
Project Manager:	[signature]	Date: 6/2/05
RSO:	Karen Morgan	Date: 6/2/05

6.0 Implemented By and Date:

Site Manager:	Rick Faulkner	Date: 6/10/05

ACE # 2005-4

Change Evaluation
ALARA Committee Approval of Revision to
(Radiation Protection Plan Section 3)
June 2nd, 2005

Description of Action/Change

The change does not conflict with the requirements stated in the license (including those aspects addressed in License Condition 27(e)), or impair the licensee's ability to meet all applicable NRC regulations.

- Revisions to Radiation Protection Plan (Annex A) Sections 6 thru 10:
  - Section 3 – Figure 3-1 Organizational Chart – Changed job title, Manager, Planning & Regulatory Compliance Safety & Environmental Affairs Division Project Manager to read – Safety & Environmental Affairs Division Project Manager, Kerr McGee

Is this a change that the ALARA Committee Can Approve Under License Condition 27(e)? The ALARA Committee is allowed to approve changes to the Decommissioning Plan / Radiation Protection Plan (Annex A) in accordance with license condition 27(e) if the following conditions are all satisfied. A listing of the considerations stipulated by the license condition follows, with the discussion of the impact of the proposed change in italics.

1) Does the proposed change, test or experiment conflict with the ALARA principle or the decommissioning process? *No it does not.*
   a) The action must provide for measurement prior to removal – *not applicable.*
   b) The action must provide for off site disposal of all material exceeding the decommissioning criteria – *not applicable.*
   c) Final surveys must demonstrate compliance with decommissioning criteria as stipulated in the decommissioning plan – *not applicable.*
   d) The action must not result in an increase in anticipated exposures or otherwise violate the ALARA principle – *This action will not result in an increase in exposures or otherwise violate the ALARA principle.*

2) Does the proposed change, test, or experiment conflict with requirements specifically stated in the license, or impair Cimarron's ability to meet all applicable NRC regulations? ***No it does not.***

   a) The action must involve only material authorized by the license – *not applicable.*
   b) Both the use and the place must be authorized – *satisfied.*
   c) The action must not violate training requirements – *it does not.*
   d) Revisions to the RPP must be approved by the ALARA Committee – *The required parties are required to approve this revision.*
   e) All work with licensed material shall be in accordance with radiation protection procedures– *not applicable.*

f) Option #2 on-site disposal must be in accordance with License Condition #23 – *not applicable.*
g) Liquid and airborne effluents will not exceed 10 CFR 20, Appendix B limits – *not applicable.*

3) Will the proposed change, test, or experiment cause degradation in safety or environmental commitments addressed in the NRC-approved RPP and/or DP, or have a significant adverse effect on the quality of the work, the remediation objectives, or health and safety? ***No it will not.***
   a) The action must comply with dose limits for workers and members of the public – *not applicable.*
   b) Liquid and airborne effluents will not exceed 10 CFR 20, Appendix B limits – *This does not affect compliance with 10 CFR 20, Appendix B limits.*
   c) The action must comply with approved decommissioning criteria – *This does not affect compliance with decommissioning criteria.*
   d) The action must not violate requirements for surveys and monitoring, control of internal and external exposure, and storage of licensed material – *This does not violate requirements for surveys and monitoring, control of internal and/or external exposure and storage of licensed material..*
   e) The action must include precautionary procedures (posting, labeling, etc.) – *not applicable.*
   f) The action must not violate waste disposal or record keeping requirements – *not applicable.*
   g) The action must not result in the loss of control over licensed material – *not applicable.*
   h) The action must not result in greater release of licensed material to air or liquid effluents than planned actions – *not applicable.*
   i) The action must not result in the spread of licensed material to uncontaminated areas more than planned actions – *not applicable.*
   j) The action must not modify the intent to release the site for unrestricted use, result in significant increase in the volume of material contaminated above the criteria, or contaminate restricted areas to the extent they will require decommissioning – *It does not.*
   k) The action must not result in non-compliance with the Cimarron Quality Assurance Plan – *It does not.*

4) Does the proposed change, test, or experiment conflict with the conclusions of actions analyzed in the Environmental Assessment, dated July 29, 1999 and Safety Evaluation Report dated August 20, 1999? ***No it does not.***
   a) The action must not increase the release of licensed material to groundwater, surface water, or air – *It does not.*
   b) The action must not impact the environment as evidenced by the environmental monitoring program – *It does not.*
   c) The action must not create the potential for an accident worse than that assumed in the dose assessment – *It does not.*
   d) The action must not result in an adverse socioeconomic impact to Cimarron and the surrounding community. – *It does not.*

e) The action must not create other than short duration and minor impacts to air – *It does not.*
f) The action must not change potential future land use – *It does not.*
g) The action must not adversely impact transportation plans for shipments to a licensed disposal site – *It does not.*
h) The action must not adversely impact endangered species – *Not applicable.*
i) The action must not impact historic or archeological sites – *Not applicable.*

Conclusions and Recommendation

The ALARA Committee is authorized under condition 27(e) to approve this change to the Radiation Protection Plan (Annex A) without regulatory approval.

3.0 ADMINISTRATION

3.1 Section Overview

This section describes the administration of Cimarron Corporation's Radiation Protection Program. Administration of the Radiation Protection Program requires coordination between the Radiation Safety Officer, Project Manager, Site Manager, Quality Assurance Coordinator, Activity Supervisors, the ALARA Committee, and workers. Organization and staffing requirements of the Radiation Protection organization are presented, as well as the requirements of the ALARA Committee.

Compliance with the Radiation Protection Program policies is achieved through the implementation of procedures. Requirements for the development, review, approval, and control of procedures are presented in this section.

Regulations and/or the Radiation Protection Program require the generation of documents, notifications, reports, and other records This section specifies documents containing the requirements for proper generation, storage, and turnover of documents and notifications for regulatory compliance.

3.2 Radiation Protection Organization

The current organizational structure for Cimarron Corporation is presented in Figure 3-1. Radiation Protection staffing levels shall be appropriate for activities being performed.

3.3 Radiation Protection Program Document Hierarchy

Hierarchy of the Radiation Protection Program documents shall be as follows:

Federal and State Regulations (e.g.,10 CFR)

Radioactive Materials Licenses and Permits issued by the Nuclear Regulatory Commission, other Federal offices, and the State of Oklahoma, including all documents incorporated by reference, such as the Cimarron Corporation RPP.

Radiation Protection Program Procedures. These procedures shall administer and implement the RPP.

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3.4 Procedure Development

Radiation Protection Procedures shall be developed in accordance with the Quality Assurance Plan. Procedures shall comply with regulatory requirements and the RPP and should incorporate or reference applicable technical guidance documents (e.g., ICRP, NCRP, U.S. NRC Regulatory Guides, ANSI Standards, ASME Standards, etc.).

3.5 Procedure Review, Approval, and Control

Procedures shall undergo technical verification and review to ensure compliance with regulatory requirements, all applicable licenses and permits, the RPP, and conformance, to the extent practicable, with applicable technical guidance documents. Procedure review shall also assess compatibility with all other Cimarron Corporation procedure manuals and documents. Reviews shall ensure that the procedure can be performed as written. All Radiation Protection Program procedures shall be reviewed and approved by the Radiation Safety Officer. Procedures shall be reviewed, issued and controlled by the Quality Assurance Coordinator in accordance with the Quality Assurance Plan.

3.6 Radiation Protection Program Documentation

Implementation of the Radiation Protection Program results in generation of documents demonstrating the quality of services performed and compliance with federal and state regulations. Radiation Protection documents shall be controlled in accordance with regulatory requirements and the requirements of the Quality Assurance Plan.

3.7 Notifications and Reports

Notifications and reports shall be made in accordance with the requirements of 10 CFR 19, 10 CFR 20, 10 CFR 21, and 10 CFR 70.

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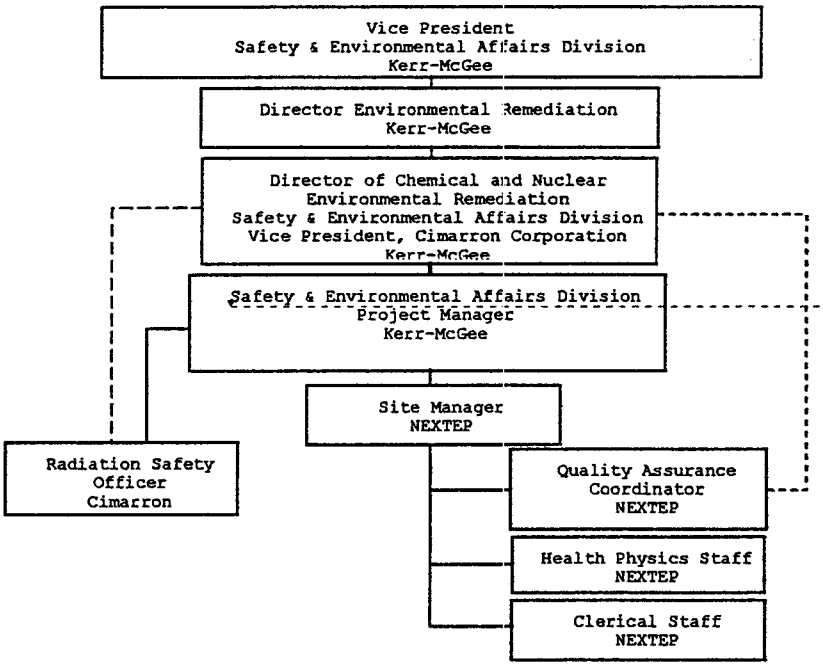
Figure 3-1

Kerr-McGee Corporation
Safety & Environmental Affairs Division
(Cimarron)



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LICENSE SNM-928, CONDITION #27(e) CHANGE EVALUATION FORM

1.0 Description of Proposed Revision, Test, and/or Experiment:

Review of Sections 11 – 15 of the Radiation Protection Plan with revisions to Sections 11,12,13, and 14.

2.0 Does the proposed revision, test, and/or experiment change the NRC-approved DP and/or RPP?

X	Yes	If "yes", proceed to section 3.0 for evaluation of proposed revision, test, and/or experiment.
	No	If "no", complete section 5.0. Provide basis for determination of non-applicability in section 4.0, as appropriate.

3.0 Evaluation:

LICENSE REQUIREMENT	YES	NO	N/A
3.1 Does the proposed change, test, or experiment conflict with the ALARA principle or the decommissioning process?		X	
3.2 Does the proposed change, test, or experiment conflict with requirements specifically stated in the license, or impair Cimarron's ability to meet all applicable NRC regulations?		X	
3.3 Will the proposed change, test, or experiment cause degradation in safety or environmental commitments addressed in the NRC-approved RPP and/or DP, or have a significant adverse effect on the quality of the work, the remediation objectives, or health and safety?		X	
3.4 Does the proposed change, test, or experiment conflict with the conclusions of actions analyzed in the Environmental Assessment, dated July 29, 1999 and Safety Evaluation Report dated August 20, 1999?		X	

NOTE: If "YES" was answered in any of the section 3.0 evaluation questions, the proposed item cannot be performed without NRC approval. Provide any basis for determination of each answer in section 5.0, as appropriate.

4.0 Comments:

5.0 Approved By (Signature/Date):

Corporate Management:		Date: 9/9/05
Project Manager:		Date: 9/9/05
RSO:	Rick	Date: 9/9/05

6.0 Implemented By and Date:

Site Manager:	Rick	Date: 10/12/05

ACE # 2005-5

Change Evaluation
ALARA Committee Approval of Revision to
(Radiation Protection Plan Sections 11 thru 15)
September 9, 2005

Description of Action/Change

The change does not conflict with the requirements stated in the license (including those aspects addressed in License Condition 27(e)), or impair the licensee's ability to meet all applicable NRC regulations.

- Revisions to Radiation Protection Plan (Annex A) Sections 11 thru 15:
  - Section 11 – Reviewed with revisions to section 11.2 – clean up verbiage in overview section to be in line with what section 11 covers – Section 11.3 – included CFR references
  - Section 12 – Reviewed with changes to Section 12.3 – removed Job from Activity Supervisor title and the verbiage particular type from containment options
  - Section 13 – Reviewed with changes to entire Section – cleaned up verbiage to bring this section more in line with current operations
  - Section 14 – Reviewed with revisions to Section 14.1 – removed verbiage, a variety of, to clean up types of airborne hazards
  - Section 15 – Reviewed with no changes due to license amendments requests being issued to completely revamp this section.

Is this a change that the ALARA Committee Can Approve Under License Condition 27(e)?
The ALARA Committee is allowed to approve changes to the Decommissioning Plan / Radiation Protection Plan (Annex A) in accordance with license condition 27(e) if the following conditions are all satisfied. A listing of the considerations stipulated by the license condition follows, with the discussion of the impact of the proposed change in italics.

1) Does the proposed change, test or experiment conflict with the ALARA principle or the decommissioning process? *No it does not.*
   a) The action must provide for measurement prior to removal – *not applicable.*
   b) The action must provide for off site disposal of all material exceeding the decommissioning criteria – *not applicable.*
   c) Final surveys must demonstrate compliance with decommissioning criteria as stipulated in the decommissioning plan – *not applicable.*
   d) The action must not result in an increase in anticipated exposures or otherwise violate the ALARA principle – *This action will not result in an increase in exposures or otherwise violate the ALARA principle.*

2) Does the proposed change, test, or experiment conflict with requirements specifically stated in the license, or impair Cimarron's ability to meet all applicable NRC regulations? ***No it does not.***

a) The action must involve only material authorized by the license – *not applicable.*
b) Both the use and the place must be authorized – *satisfied.*
c) The action must not violate training requirements – *it does not.*
d) Revisions to the RPP must be approved by the ALARA Committee – *The required parties are required to approve this revision.*
e) All work with licensed material shall be in accordance with radiation protection procedures– *not applicable.*
f) Option #2 on-site disposal must be in accordance with License Condition #23 – *not applicable.*
g) Liquid and airborne effluents will not exceed 10 CFR 20, Appendix B limits – *not applicable.*

3) Will the proposed change, test, or experiment cause degradation in safety or environmental commitments addressed in the NRC-approved RPP and/or DP, or have a significant adverse effect on the quality of the work, the remediation objectives, or health and safety? ***No it will not.***
   a) The action must comply with dose limits for workers and members of the public – *not applicable.*
   b) Liquid and airborne effluents will not exceed 10 CFR 20, Appendix B limits – *This does not affect compliance with 10 CFR 20, Appendix B limits.*
   c) The action must comply with approved decommissioning criteria – *This does not affect compliance with decommissioning criteria.*
   d) The action must not violate requirements for surveys and monitoring, control of internal and external exposure, and storage of licensed material – *This does not violate requirements for surveys and monitoring, control of internal and/or external exposure and storage of licensed material..*
   e) The action must include precautionary procedures (posting, labeling, etc.) – *not applicable.*
   f) The action must not violate waste disposal or record keeping requirements – *not applicable.*
   g) The action must not result in the loss of control over licensed material – *not applicable.*
   h) The action must not result in greater release of licensed material to air or liquid effluents than planned actions – *not applicable.*
   i) The action must not result in the spread of licensed material to uncontaminated areas more than planned actions – *not applicable.*
   j) The action must not modify the intent to release the site for unrestricted use, result in significant increase in the volume of material contaminated above the criteria, or contaminate restricted areas to the extent they will require decommissioning – *It does not.*
   k) The action must not result in non-compliance with the Cimarron Quality Assurance Plan – *It does not.*

4) Does the proposed change, test, or experiment conflict with the conclusions of actions analyzed in the Environmental Assessment, dated July 29, 1999 and Safety Evaluation Report dated August 20, 1999? ***No it does not.***
   a) The action must not increase the release of licensed material to groundwater, surface water, or air – *It does not.*

b) The action must not impact the environment as evidenced by the environmental monitoring program – *It does not.*
c) The action must not create the potential for an accident worse than that assumed in the dose assessment – *It does not.*
d) The action must not result in an adverse socioeconomic impact to Cimarron and the surrounding community. – *It does not.*
e) The action must not create other than short duration and minor impacts to air – *It does not.*
f) The action must not change potential future land use – *It does not.*
g) The action must not adversely impact transportation plans for shipments to a licensed disposal site – *It does not.*
h) The action must not adversely impact endangered species – *Not applicable.*
i) The action must not impact historic or archeological sites – *Not applicable.*

Conclusions and Recommendation

The ALARA Committee is authorized under condition 27(e) to approve this change to the Radiation Protection Plan (Annex A) without regulatory approval.

ANNEX A

CIMARRON CORPORATION

RADIATION PROTECTION

PLAN

for
Cimarron Corporation former Nuclear Fuels Fabrication Facility
near Crescent, OK

SNM-928 Amendment #19
Approved by NRC October 3, 2005

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11.0 RADIOACTIVE MATERIALS CONTROL

11.1 Section Overview

Radioactive material (RAM) controls are established to provide positive control of radioactive material, prevent inadvertent release of radioactive material to unrestricted areas, ensure protection of members of the public and workers, and to minimize the amount of radioactive waste generated during operations. This section of the Plan addresses receipt, labeling, storage, shipment, transfer, controls, theft and loss of radioactive materials.

Deleted: movement, control, transfer, shipment, and movement of RAM, as well as sealed source controls

11.2 Receipt, Labeling, and Storage of RAM

All radioactive materials shall be received in accordance with radioactive material license possession limits. The individual responsible for radioactive material receipt shall perform all surveys and paperwork review for the shipment to ensure compliance with 49 CFR. Each container of radioactive material shall be labeled as required by 10 CFR 20.

Radioactive material shall be secured against unauthorized access or removal. Radioactive material storage areas shall be posted and controlled using appropriate barriers and radiological postings.

11.3 Shipment and Transfer of Radioactive Material

RAM shipments shall comply with NRC (10CFR) and U.S. Department of Transportation (49CFR) regulations. Low-level radioactive waste shipments transferred for disposal shall be accompanied by a shipment manifest prepared in accordance with 10 CFR 20. Radioactive material shall only be transferred to authorized individuals in accordance with the appropriate regulations in 10 CFR 20, and 10 CFR 70.

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11.4 Controls for Radioactive Sources

The Radiation Safety Officer shall approve all requisitions for sealed radioactive sources and ensure that source inventories are performed on a quarterly basis. Sealed sources (except exempt quantities) shall be tested for leakage and/or contamination upon receipt and on a quarterly basis. The RSO shall approve locations for storage of sealed radioactive sources. Source storage areas shall be locked and posted per 10 CFR 20.

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11.5 Theft or Loss of Radioactive Material

Any individual who discovers that radioactive material is lost, stolen, or missing shall immediately notify the RSO. The RSO shall evaluate the physical and radiological characteristics of the missing material and the potential hazards to workers and the general public, initiate an investigation to locate the material, and perform a root cause evaluation of the incident. The RSO shall determine the need for notifications to regulatory authorities and make notifications if necessary.

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12.0 CONTAMINATION CONTROL

12.1 Section Overview

The purpose of contamination control is to prevent and/or minimize the spread of contamination to individuals, areas, and equipment. Control of radioactive surface contamination minimizes possible inhalation or ingestion of radioactivity by personnel, skin dose from small particles of radioactivity, and the spread to or build-up of radioactivity in the facility or environment from decommissioning operations.

12.2 General

Cimarron shall maintain restricted areas/RCA's of the facility and equipment, below the smearable contamination limit of 5,000 dpm/100cm^2 gross alpha. In addition, Cimarron shall establish Contaminated Area control, including posting, whenever smearable contamination in an area exceeds 1,000 dpm/100cm^2. Cimarron shall incorporate the ALARA philosophy when selecting decontamination methods and practices.

As a general rule, decontamination should be performed by working from areas of low contamination to areas of high contamination. Decontamination materials should be limited to the minimum required for the task. All decontamination materials shall be collected, monitored, and properly dispositioned.

12.3 Control and Use of Radiological Containments

The Health Physics Department, along with Activity Supervisors, shall determine the need for containment to control the spread of contamination.

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12.4 Contaminated Personnel

Decontamination of personnel shall be performed under the guidance of health physics personnel and shall incorporate good health physics practices and ALARA. Cimarron shall not allow an individual whose skin or personal clothing is found contaminated above background to exit a controlled area without prior approval of the Site Manager or RSO. Appropriate surveys and monitoring shall be performed to evaluate dose to the individual resulting from contamination.

12.5 Spill of Radioactive Material

A spill of radioactive material requires immediate actions which include stopping the spill, warning other personnel, isolating the area, and minimizing radiation exposure. Supplementary actions should include the performance of radiological surveys in immediate and adjacent areas, including downwind.

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13.0 UNCONDITIONAL RELEASE OF MATERIALS

13.1 Section Overview

Cimarron is authorized to unconditionally release tools, equipment, parts, and materials provided that radiation levels and surface contamination levels do not exceed the limits contained in the Cimarron license.

13.2 Survey Instrumentation

Instruments used to perform release surveys must be calibrated using NIST traceable, or equivalent, standards for energies and geometries similar to material being released. The energy dependence of the instruments to alpha, beta, and gamma radiation must be known and documented.

13.3 Release Surveys of Materials

Release surveys will consist of direct (fixed) and removable (smearable) monitoring. Such surveys will be performed and documented by qualified individuals.

Deleted: Material to be unconditionally released from RCA's shall be surveyed to ensure compliance with the unconditional release criteria.

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Deleted: The energy dependence of the monitoring instruments to alpha, beta, and gamma radiation shall be known and documented in accordance with the Instrumentation Program. In addition, all instruments used to survey material for unconditional release shall be calibrated with NIST traceable, or equivalent standard sources for similar energies and geometries to the materials being released.¶

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Radiological analysis shall be performed to identify radionuclides present when necessary. In general, all remaining materials at the Cimarron Facility have been demonstrated to have enriched uranium as the primary and limiting contaminant.

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Contamination levels for material to be unconditionally released for unrestricted use shall be less than the most restrictive values listed in 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," August, 1987, or Cimarron's radioactive materials license.¶

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Personnel shall monitor for contamination on their person and on hand carried items (e.g., tools and equipment). Materials to be released for unrestricted use from the RCA shall be surveyed by qualified individuals. These surveys shall be performed in such a manner and with appropr... [1]

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Unconditional release surveys shall consist of direct (fixed) and rem... [2]

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14.0 RESPIRATORY PROTECTION

14.1 Section Overview

Respiratory protection measures shall be employed when necessary to protect workers from airborne hazards. The hazards may be of a radiological or non-radiological nature. At this time, it has been determined that respiratory protection requirements to support the activities at the Cimarron facility are no longer needed. If the future conditions change and the RSO or designee determines through review of field conditions or anticipated work functions that respiratory protection is required, procedures and controls will be instituted in accordance with the requirements found in 10 CFR 20, Subpart H, "Respiratory Protection and Controls to Restrict Internal Exposure in Restricted Areas" for radiological hazards and the Code of Federal Regulations Title 29 Part 1910.134 for non-radiological hazards.

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Retention Time T+20
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QAQC-167
REV. 2

LICENSE SNM-928, CONDITION #27(e) CHANGE EVALUATION FORM

1.0 Description of Proposed Revision, Test, and/or Experiment:

Revision to Radiation Protection Plan Sections 1 thru 5 – 4th Quarter ALARA Review 2005

2.0 Does the proposed revision, test, and/or experiment change the NRC-approved DP and/or RPP?

X	Yes	If "yes", proceed to section 3.0 for evaluation of proposed revision, test, and/or experiment.
	No	If "no", complete section 6.0. Provide basis for determination of non-applicability in section 5.0, as appropriate.

3.0 Evaluation:

LICENSE REQUIREMENT	YES	NO	N/A
3.1 Does the proposed change, test, or experiment conflict with the ALARA principle or the decommissioning process?		X	
3.2 Does the proposed change, test, or experiment conflict with requirements specifically stated in the license, or impair Cimarron's ability to meet all applicable NRC regulations?		X	
3.3 Will the proposed change, test, or experiment cause degradation in safety or environmental commitments addressed in the NRC-approved RPP and/or DP, or have a significant adverse effect on the quality of the work, the remediation objectives, or health and safety?		X	
3.4 Does the proposed change, test, or experiment conflict with the conclusions of actions analyzed in the Environmental Assessment, dated July 29, 1999 and Safety Evaluation Report dated August 20, 1999?		X	

NOTE: If "YES" was answered in any of the section 3.0 evaluation questions, the proposed item cannot be performed without NRC approval. Provide any basis for determination of each answer in section 5.0, as appropriate.

4.0 Results:

Revision, Test, or Experiment Approved:	Yes	✓		No	

5.0 Comments:

6.0 Performed By (Signature/Date):

Corporate Management:	S Mfoy	Date: 1/27/06
Project Manager:	Jeff Kirk	Date: 1/27/06
RSO:	Karen Morgan	Date: 1/26/06

7.0 Implemented By and Date:

Site Manager:	Rick Crowell	Date: 2/2/06

ACE # _____

Change Evaluation
ALARA Committee Approval of Revision to
(Radiation Protection Plan Sections 1 thru 5 - 4th Quarter Review 2005)
January 23rd, 2006

Description of Action/Change

The change does not conflict with the requirements stated in the license (including those aspects addressed in License Condition 27(e)), or impair the licensee's ability to meet all applicable NRC regulations.

- Revisions to Radiation Protection Plan (Annex A) Sections 1 thru 5:
  - Section 1 – Reviewed no changes
  - Section 2 – Moved responsibilities for individuals to Section 3, Removed ALARA committee responsibilities which are outlined in section 4.3
  - Section 3 – 3.2 Added responsibilities from Section 2, 3.5 revised verbiage to clarify control of Radiation Procedures – Figure 3-1 Revised Organizational Chart to reflect Tronox personnel
  - Section 4 – 4.3 added discussion of new activities plans to ensure that ALARA considerations are met
  - Section 5 – 5.3 revised to state that surveillances are conducted under the guidance or direction of the Quality Assurance Coordinator

Is this a change that the ALARA Committee Can Approve Under License Condition 27(e)?
The ALARA Committee is allowed to approve changes to the Decommissioning Plan / Radiation Protection Plan (Annex A) in accordance with license condition 27(e) if the following conditions are all satisfied. A listing of the considerations stipulated by the license condition follows, with the discussion of the impact of the proposed change in italics.

1) Does the proposed change, test or experiment conflict with the ALARA principle or the decommissioning process? *No it does not.*
   a) The action must provide for measurement prior to removal – *not applicable.*
   b) The action must provide for off site disposal of all material exceeding the decommissioning criteria – *not applicable.*
   c) Final surveys must demonstrate compliance with decommissioning criteria as stipulated in the decommissioning plan – *not applicable.*
   d) The action must not result in an increase in anticipated exposures or otherwise violate the ALARA principle – *This action will not result in an increase in exposures or otherwise violate the ALARA principle.*

2) Does the proposed change, test, or experiment conflict with requirements specifically stated in the license, or impair Cimarron's ability to meet all applicable NRC regulations? ***No it does not.***

   a) The action must involve only material authorized by the license – *not applicable.*

b) Both the use and the place must be authorized – *satisfied.*
c) The action must not violate training requirements – *it does not.*
d) Revisions to the RPP must be approved by the ALARA Committee – *The required parties are required to approve this revision.*
e) All work with licensed material shall be in accordance with radiation protection procedures– *not applicable.*
f) Option #2 on-site disposal must be in accordance with License Condition #23 – *not applicable.*
g) Liquid and airborne effluents will not exceed 10 CFR 20, Appendix B limits – *not applicable.*

3) Will the proposed change, test, or experiment cause degradation in safety or environmental commitments addressed in the NRC-approved RPP and/or DP, or have a significant adverse effect on the quality of the work, the remediation objectives, or health and safety? ***No it will not.***
   a) The action must comply with dose limits for workers and members of the public – *not applicable.*
   b) Liquid and airborne effluents will not exceed 10 CFR 20, Appendix B limits – *This does not affect compliance with 10 CFR 20, Appendix B limits.*
   c) The action must comply with approved decommissioning criteria – *This does not affect compliance with decommissioning criteria.*
   d) The action must not violate requirements for surveys and monitoring, control of internal and external exposure, and storage of licensed material – *This does not violate requirements for surveys and monitoring, control of internal and/or external exposure and storage of licensed material..*
   e) The action must include precautionary procedures (posting, labeling, etc.) – *not applicable.*
   f) The action must not violate waste disposal or record keeping requirements – *not applicable.*
   g) The action must not result in the loss of control over licensed material – *not applicable.*
   h) The action must not result in greater release of licensed material to air or liquid effluents than planned actions – *not applicable.*
   i) The action must not result in the spread of licensed material to uncontaminated areas more than planned actions – *not applicable.*
   j) The action must not modify the intent to release the site for unrestricted use, result in significant increase in the volume of material contaminated above the criteria, or contaminate restricted areas to the extent they will require decommissioning – *It does not.*
   k) The action must not result in non-compliance with the Cimarron Quality Assurance Plan – *It does not.*

4) Does the proposed change, test, or experiment conflict with the conclusions of actions analyzed in the Environmental Assessment, dated July 29, 1999 and Safety Evaluation Report dated August 20, 1999? ***No it does not.***
   a) The action must not increase the release of licensed material to groundwater, surface water, or air – *It does not.*

b) The action must not impact the environment as evidenced by the environmental monitoring program – *It does not.*
c) The action must not create the potential for an accident worse than that assumed in the dose assessment – *It does not.*
d) The action must not result in an adverse socioeconomic impact to Cimarron and the surrounding community. – *It does not.*
e) The action must not create other than short duration and minor impacts to air – *It does not.*
f) The action must not change potential future land use – *It does not.*
g) The action must not adversely impact transportation plans for shipments to a licensed disposal site – *It does not.*
h) The action must not adversely impact endangered species – *Not applicable.*
i) The action must not impact historic or archeological sites – *Not applicable.*

Conclusions and Recommendation

The ALARA Committee is authorized under condition 27(e) to approve this change to the Radiation Protection Plan (Annex A) without regulatory approval.

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2.0 GENERAL INFORMATION

2.1 Section Overview

This section provides requirements for radiation safety definitions, gives the responsibilities of those involved in Cimarron Corporation radiological operations, and discusses radiation safety training requirements.

2.2 Definitions

Definitions are required to ensure that individuals understand the requirements of the regulations and the RPP at Cimarron Corporation. Cimarron Corporation shall utilize regulatory definitions whenever possible, or may use definitions that are more restrictive than the regulatory definition. In addition, Cimarron Corporation uses definitions which are consistent with standard industry guideline documents.

2.3 Responsibilities

Each individual at Cimarron shares responsibility for their own radiation protection as well as for their co-workers and individual members of the public. Key responsibilities under the Radiation Protection Program are outlined in Section 3. Specific responsibilities under the Radiation Protection Program shall be outlined in the Radiation Protection Program Procedures.

2.4 Training Requirements and Policy

All persons who are permitted to enter any restricted area/radiologically controlled area (RCA) shall receive information and training in radiation safety. Training will be commensurate with the potential radiation safety problems and will comply with 10 CFR 19 and 10 CFR 20. Training will ensure that individuals are:

- Aware of radioactive materials are present in the RCA's;
- Informed regarding risks that may result in exposure of the individual;
- Informed regarding precautions or procedures to minimize exposure to radioactive materials or radiation;
- Informed of the purpose and functions of protective devices and monitoring devices that will be used; and
- Informed regarding additional protection available for the embryo/fetus, as applicable.

Training for radiation workers will also include:

- Applicable provisions of the regulations and licenses for the protection of personnel from exposure to radiation or radioactive material;

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¶
The Project Manager is responsible to provide sufficient resources to implement the Radiation Safety Program and to perform site activities. The Project Manager oversees site staffing, monitors regulatory requirements, site activities, scheduling and budget status.¶
¶
The Site Manager is responsible for coordinating site activities and management of site staff. ¶
¶
The ALARA Committee is responsible for reviewing, evaluating and approving the RPP and changes to the plan in accordance with License Condition 27(e), reviewing operations dealing with radioactive materials and radiological controls, and providing direction to the Radiation Safety Officer for decisions involving ALARA, methods of operations, and approving annual ALARA goals for the Cimarron Facility.¶
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Each Activity Supervisor is resp... [1]

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- Responsibility of the worker to report promptly to the site manager any conditions that may lead to or cause a violation of regulations or licenses or unnecessary exposure to radioactive material or radiation.
- Appropriate responses to warnings made in the event of any unusual occurrence or malfunction involving exposure to radiation or radioactive material; and
- Radiation exposure reports that may be requested by the worker pursuant to the regulations.

The Radiation Safety Officer is responsible for the oversight of the training program of onsite workers and visitors. Training requirements are approved by the RSO, but training may be performed by radiation workers approved by the RSO.

The radiation training program may meet these requirements by using any of the following techniques: Classroom training, videotapes, reading assignments, on-the-job training, demonstrations, drills, and discussions. Radiation workers attend an appropriate classroom training session upon employment and receive periodic review training at least annually. Training records for all individuals shall be maintained in accordance with the Quality Assurance Plan.

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The Quality Assurance Coordinator is responsible for assessments of the performance of work to evaluate compliance with the radiation protection program, for the maintenance and distribution of controlled documents, and for long-term storage of quality assurance documents after they are no longer required for operational purposes.

Each Activity Supervisor is responsible for the effective implementation of radiation protection procedures as required for their scope of activities.

Each worker is responsible for complying with regulatory requirements and Cimarron Corporation radiation protection procedures to the best of his/her ability and knowledge. These responsibilities include proper use of protective and personnel monitoring equipment, notifying management of any potential or real radiation hazards or improper practices, and maintaining his/her individual radiation exposure and that of others ALARA. All workers should be aware of and heed the instructions on the "Notice to Employees" (NRC Form 3).

Each worker has the authority to stop work in the event that the health and safety of workers or members of the public may be compromised or if regulatory non-compliance may occur. Workers are requested to contact site management regarding potential regulatory or license violations before contacting regulatory agencies. However, any worker who is not satisfied with the management response regarding the potential violation is encouraged to contact the regulatory agency for resolution of the concern.

3.0 ADMINISTRATION

3.1 Section Overview

This section describes the administration of Cimarron Corporation's Radiation Protection Program. Administration of the Radiation Protection Program requires coordination between the Radiation Safety Officer, Project Manager, Site Manager, Quality Assurance Coordinator, Activity Supervisors, the ALARA Committee, and workers. Organization and staffing requirements of the Radiation Protection organization are presented, as well as the requirements of the ALARA Committee.

Compliance with the Radiation Protection Program policies is achieved through the implementation of procedures. Requirements for the development, review, approval, and control of procedures are presented in this section.

Regulations and/or the Radiation Protection Program require the generation of documents, notifications, reports, and other records This section specifies documents containing the requirements for proper generation, storage, and turnover of documents and notifications for regulatory compliance.

3.2 Radiation Protection Organization

The current organizational structure for Cimarron Corporation is presented in Figure 3-1. Radiation Protection staffing levels shall be appropriate for activities being performed.

The Vice President, Cimarron Corporation, provides corporate oversight of site activities of the Cimarron facility. The Vice President, Cimarron Corporation has ultimate responsibility for assuring that the RPP at Cimarron Corporation is developed and implemented in a manner consistent with regulatory requirements and company policies. This responsibility is delegated to the Radiation Safety Officer.

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The Project Manager is responsible to provide sufficient resources to implement the Radiation Safety Program and to perform site activities. The Project Manager oversees site staffing, monitors regulatory requirements, site activities, scheduling and budget status.

The Site Manager is responsible for coordinating site activities and management of site staff. The Site Manager oversees the implementation of the Radiation Protection Plan by all site staff and that all personnel working on site comply with the Radiation Protection Plan requirements.

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The Radiation Safety Officer (RSO) is responsible for development, implementation, and oversight of the Radiation Protection Program. The RSO chairs the ALARA Committee and is responsible for bringing pertinent radiation protection and safety issues to the attention of the ALARA Committee.

The Quality Assurance Coordinator is responsible for assessments of the performance of work to evaluate compliance with the radiation protection program, for the maintenance and distribution of controlled documents, and for long-term storage of quality assurance documents after they are no longer required for operational purposes.

Each Activity Supervisor is responsible for the effective implementation of radiation protection procedures as required for their scope of activities and that each individual under their supervision has been properly training for the work requirements needed before beginning work.

Each worker is responsible for complying with regulatory requirements and Cimarron Corporation radiation protection procedures to the best of his/her ability and knowledge. These responsibilities include proper use of protective and personnel monitoring equipment, notifying management of any potential or real radiation hazards or improper practices, and maintaining his/her individual radiation exposure and that of others ALARA. All workers should be aware of and heed the instructions on the "Notice to Employees" (NRC Form 3).

Each worker has the authority to stop work in the event that the health and safety of workers or members of the public may be compromised or if regulatory non-compliance may occur. Workers are requested to contact site management regarding potential regulatory or license violations before contacting regulatory agencies. However, any worker who is not satisfied with the management response regarding the potential violation is encouraged to contact the regulatory agency for resolution of the concern.

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3.3 Radiation Protection Program Document Hierarchy

Hierarchy of the Radiation Protection Program documents shall be as follows:

Federal and State Regulations (e.g.,10 CFR)

Radioactive Materials Licenses and Permits issued by the Nuclear Regulatory Commission, other Federal offices, and the State of Oklahoma, including all documents incorporated by reference, such as the Cimarron Corporation RPP.

Radiation Protection Program Procedures. These procedures shall administer and implement the RPP.

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3.4 Procedure Development

Radiation Protection Procedures shall be developed in accordance with the Quality Assurance Plan. Procedures shall comply with regulatory requirements and the RPP and should incorporate or reference applicable technical guidance documents (e.g., ICRP, NCRP, U.S. NRC Regulatory Guides, ANSI Standards, ASME Standards, etc.).

3.5 Procedure Review, Approval, and Control

Procedures shall undergo technical verification and review to ensure compliance with regulatory requirements, all applicable licenses and permits, the RPP, and conformance, to the extent practicable, with applicable technical guidance documents. Procedure review shall also assess compatibility with all other Cimarron Corporation procedure manuals and documents. Reviews shall ensure that the procedure can be performed as written. All Radiation Protection Program procedures shall be reviewed and approved by the Radiation Safety Officer. Procedures shall be controlled in accordance with the Quality Assurance Plan.

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3.6 Radiation Protection Program Documentation

Implementation of the Radiation Protection Program results in generation of documents demonstrating the quality of services performed and compliance with federal and state regulations. Radiation Protection documents shall be controlled in accordance with regulatory requirements and the requirements of the Quality Assurance Plan.

3.7 Notifications and Reports

Notifications and reports shall be made in accordance with the requirements of 10 CFR 19, 10 CFR 20, 10 CFR 21, and 10 CFR 70.

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Figure 3-1

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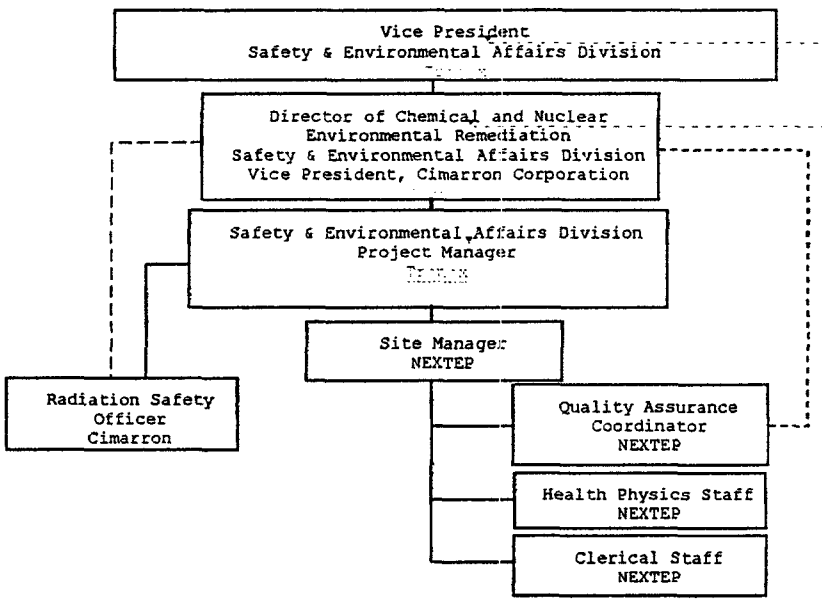
Tronox
Safety & Environmental Affairs Division
(Cimarron)



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4.0 ALARA PROGRAM

4.1 Section Overview

This section describes and provides the requirements, responsibilities, and philosophy of the As Low As is Reasonably Achievable (ALARA) program.

4.2 ALARA Policy

Cimarron Corporation operations shall be performed in a manner such that doses are maintained As Low As is Reasonably Achievable (ALARA). The basic philosophy of radiation protection is to maintain radiation exposures ALARA below the regulatory requirements. "Reasonable" means that the costs, benefits, and risks are considered in trying to minimize dose.

In accordance with the Code of Federal Regulations, Cimarron Corporation has developed, documented, and implemented a radiation protection program commensurate with the scope and extent of licensed activities. The Cimarron Radiation Protection Program embraces the ALARA philosophy through its use, to the extent practicable, of procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are ALARA. Cimarron is committed to providing all necessary resources, in the form of personnel, training, engineering controls, preparation and planning, design, equipment, monitoring devices, and controls to achieve ALARA doses at its facility.

Each worker is expected to be knowledgeable of work activities, and to abide by all ALARA requirements such as those found on Special Work Permits. In addition to the responsibility for their own dose minimization, each worker is responsible for minimizing dose to other workers and members of the public. Cimarron Corporation has an ALARA Suggestion Program for workers to provide comments and suggestions for dose minimization and improving the safety and efficiency of operations. Cimarron Corporation encourages worker participation in the ALARA Suggestion Program.

4.3 ALARA Committee

Cimarron shall have an ALARA Committee whose purpose is to ensure that ALARA policy, philosophy, commitments and regulatory requirements are integrated into all appropriate work activities.

The responsibilities of the ALARA Committee are:

- Ensuring that ALARA policy, philosophy, commitments, and regulatory requirements are integrated into all appropriate work activities.
- Reviewing and approving ALARA Program goals for Cimarron Corporation.
- Reviewing the effectiveness of the ALARA Program.
- Discussion of plans for new activities to ensure that ALARA considerations are met.
- Annual review of the Radiation Protection Program to ensure compliance and to incorporate any necessary changes.
- Evaluate and approve changes to the Decommissioning Plan or RPP in accordance with License Condition 27(e).

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The ALARA committee shall be chaired by the RSO. The Vice-Chair shall be the Cimarron Project Manager and the third member shall be the Cimarron Vice President. Other individuals with appropriate authority and technical expertise shall serve on the committee as deemed necessary by the Chair or Vice-Chair.

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5.0 ASSESSMENTS

5.1 Section Overview

Assessments are audits and/or surveillances which provide a systematic review of key activities and the overall quality of raciation protection activities. These assessments help to ensure that:

- Activities comply with license and regulatory requirements,
- Activities are performed in accordance with established policies, procedures and recognized good practices,
- Unsatisfactory performance is identified and corrected, and
- Programmatic weaknesses are targeted and corrected

5.2 Audits

Periodic audits shall evaluate the effectiveness of selected aspects of the Radiation Protection Program and determine the adequacy of and adherence to established procedures, instructions, specifications, regulations and standards, and other applicable permitting and licensing requirements

5.3 Surveillances

Surveillances are job specific observations performed under the guidance or direction of the Quality Assurance Coordinator to evaluate the implementation of the radiation protection program with respect to accepted practices (e.g., procedures, management directives, etc.), industry standards, and regulatory requirements.

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5.4 Radiological Occurrence Reports

A Radiological Occurrence Report (ROR) is generated to document the facts, record the apparent and/or root cause, track the resolution and aid in trending radiological events. RORs are issued, responded to, corrected, and documented in accordance with the Quality Assurance Plan.

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ANNEX A

CIMARRON CORPORATION

Radiation Protection

Plan

for
Cimarron Corporation former Nuclear Fuels Fabrication Facility
near Crescent, OK

Docket No. 070-00925
License No. SNM-928

CIMARRON CORPORATION

RADIATION PROTECTION PLAN

REVIEWED BY: _____ DATE: 02/02/06
QUALITY ASSURANCE COORDINATOR

APPROVED BY: _____ DATE: 1/26/06
RADIATION SAFETY OFFICER

APPROVED BY: _____ DATE: 1/26/06
PROJECT MANAGER

APPROVED BY: _____ DATE: 1/27/06
VICE PRESIDENT/CIMARRON

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ANNEX A

CIMARRON CORPORATION

RADIATION PROTECTION

PLAN

for
Cimarron Corporation former Nuclear Fuels Fabrication Facility
near Crescent, OK

SNM-928 Amendment #19
Approved by NRC October 3, 2005

1.0 INTRODUCTION

1.1 Section Overview

This introductory section to the Cimarron Radiation Protection Plan (RPP) is intended as an orientation to the overall purpose and scope of the Plan.

1.2 Purpose

The purpose of the Plan is to summarize the regulations and safety practices that apply to the radiological operations of Cimarron Corporation (Cimarron) and to establish Cimarron radiation protection policies. From these policies, specific procedures are developed to assure compliance with regulations and to maintain radiation exposures, resulting from decommissioning and related operations, to a level that is As Low As is Reasonably Achievable (ALARA). Cimarron Corporation shall comply with all applicable state and federal regulations, licenses, and permits during the decommissioning process.

This Plan was initially developed in response to NRC comments (dated August 16, 1996) regarding the Cimarron License SNM-928 amendment request dated November 15, 1994. This Plan, otherwise known as Annex A to License SNM-928 supercedes the original Appendix A/Annex A in License Amendment #13.

The policies stated in this Plan are not intended to restrict Cimarron operations more than required by regulations. Wherever a policy is more restrictive than the regulations, the policy is intended only as a practical means of achieving regulatory compliance. Any variation from these policies or subordinate procedures must be approved by the RSO and documented.

This RPP (Annex A) shall be reviewed at least annually by the ALARA Committee. The review will assess the effectiveness of the Plan in providing appropriate regulatory and radiation protection policy. The review will be documented and changes to the Plan will be made based upon the recommendations of the ALARA Committee.

1.3 Scope

The policies in this Plan apply to all routine and emergency radiological operations. All employees, contractors, and visitors are included within the scope of the policies in this Plan.

2.0 GENERAL INFORMATION

2.1 Section Overview

This section provides requirements for radiation safety definitions, gives the responsibilities of those involved in Cimarron Corporation radiological operations, and discusses radiation safety training requirements.

2.2 Definitions

Definitions are required to ensure that individuals understand the requirements of the regulations and the RPP at Cimarron Corporation. Cimarron Corporation shall utilize regulatory definitions whenever possible, or may use definitions that are more restrictive than the regulatory definition. In addition, Cimarron Corporation uses definitions which are consistent with standard industry guideline documents.

2.3 Responsibilities

Each individual at Cimarron shares responsibility for their own radiation protection as well as for their co-workers and individual members of the public. Key responsibilities under the Radiation Protection Program are outlined in Section 3. Specific responsibilities under the Radiation Protection Program shall be outlined in the Radiation Protection Program Procedures.

2.4 Training Requirements and Policy

All persons who are permitted to enter any restricted area/radiologically controlled area (RCA) shall receive information and training in radiation safety. Training will be commensurate with the potential radiation safety problems and will comply with 10 CFR 19 and 10 CFR 20. Training will ensure that individuals are:

- Aware of radioactive materials are present in the RCA's;
- Informed regarding risks that may result in exposure of the individual;
- Informed regarding precautions or procedures to minimize exposure to radioactive materials or radiation;
- Informed of the purpose and functions of protective devices and monitoring devices that will be used; and
- Informed regarding additional protection available for the embryo/fetus, as applicable.

Training for radiation workers will also include:

- Applicable provisions of the regulations and licenses for the protection of personnel from exposure to radiation or radioactive material;

- Responsibility of the worker to report promptly to the site manager any conditions that may lead to or cause a violation of regulations or licenses or unnecessary exposure to radioactive material or radiation.
- Appropriate responses to warnings made in the event of any unusual occurrence or malfunction involving exposure to radiation or radioactive material; and
- Radiation exposure reports that may be requested by the worker pursuant to the regulations.

The Radiation Safety Officer is responsible for the oversight of the training program of onsite workers and visitors. Training requirements are approved by the RSO, but training may be performed by radiation workers approved by the RSO.

The radiation training program may meet these requirements by using any of the following techniques: Classroom training, videotapes, reading assignments, on-the-job training, demonstrations, drills, and discussions. Radiation workers attend an appropriate classroom training session upon employment and receive periodic review training at least annually. Training records for all individuals shall be maintained in accordance with the Quality Assurance Plan.

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Compliance with the Radiation Protection Program policies is achieved through the implementation of procedures. Requirements for the development, review, approval, and control of procedures are presented in this section.

Regulations and/or the Radiation Protection Program require the generation of documents, notifications, reports, and other records This section specifies documents containing the requirements for proper generation, storage, and turnover of documents and notifications for regulatory compliance.

3.2 Radiation Protection Organization

The current organizational structure for Cimarron Corporation is presented in Figure 3-1. Radiation Protection staffing levels shall be appropriate for activities being performed.

The Vice President, Cimarron Corporation, provides corporate oversight of site activities of the Cimarron facility. The Vice President, Cimarron Corporation has ultimate responsibility for assuring that the RPP at Cimarron Corporation is developed and implemented in a manner consistent with regulatory requirements and company policies. This responsibility is delegated to the Radiation Safety Officer.

The Project Manager is responsible to provide sufficient resources to implement the Radiation Safety Program and to perform site activities. The Project Manager oversees site staffing, monitors regulatory requirements, site activities, scheduling and budget status.

The Site Manager is responsible for coordinating site activities and management of site staff. The Site Manager oversees the implementation of the Radiation Protection Plan by all site staff and that all personnel working on site comply with the Radiation Protection Plan requirements.

The Radiation Safety Officer (RSO) is responsible for development, implementation, and oversight of the Radiation Protection Program. The RSO chairs the ALARA Committee and is responsible for bringing pertinent radiation protection and safety issues to the attention of the ALARA Committee.

The Quality Assurance Coordinator is responsible for assessments of the performance of work to evaluate compliance with the radiation protection program, for the maintenance and distribution of controlled documents, and for long-term storage of quality assurance documents after they are no longer required for operational purposes.

Each Activity Supervisor is responsible for the effective implementation of radiation protection procedures as required for their scope of activities and that each individual under their supervision has been properly training for the work requirements needed before beginning work.

Each worker is responsible for complying with regulatory requirements and Cimarron Corporation radiation protection procedures to the best of his/her ability and knowledge. These responsibilities include proper use of protective and personnel monitoring equipment, notifying management of any potential or real radiation hazards or improper practices, and maintaining his/her individual radiation exposure and that of others ALARA. All workers should be aware of and heed the instructions on the "Notice to Employees" (NRC Form 3).

Each worker has the authority to stop work in the event that the health and safety of workers or members of the public may be compromised or if regulatory non-compliance may occur. Workers are requested to contact site management regarding potential regulatory or license violations before contacting regulatory agencies. However, any worker who is not satisfied with the management response regarding the potential violation is encouraged to contact the regulatory agency for resolution of the concern.

3.3 Radiation Protection Program Document Hierarchy

Hierarchy of the Radiation Protection Program documents shall be as follows:

Federal and State Regulations (e.g.,10 CFR)

Radioactive Materials Licenses and Permits issued by the Nuclear Regulatory Commission, other Federal offices, and the State of Oklahoma, including all documents incorporated by reference, such as the Cimarron Corporation RPP.

Radiation Protection Program Procedures. These procedures shall administer and implement the RPP.

3.4 Procedure Development

Radiation Protection Procedures shall be developed in accordance with the Quality Assurance Plan. Procedures shall comply with regulatory requirements and the RPP and should incorporate or reference applicable technical guidance documents (e.g., ICRP, NCRP, U.S. NRC Regulatory Guides, ANSI Standards, ASME Standards, etc.).

3.5 Procedure Review, Approval, and Control

Procedures shall undergo technical verification and review to ensure compliance with regulatory requirements, all applicable licenses and permits, the RPP, and conformance, to the extent practicable, with applicable technical guidance documents. Procedure review shall also assess compatibility with all other Cimarron Corporation procedure manuals and documents. Reviews shall ensure that the procedure can be performed as written. All Radiation Protection Program procedures shall be reviewed and approved by the Radiation Safety Officer. Procedures shall be controlled in accordance with the Quality Assurance Plan.

3.6 Radiation Protection Program Documentation

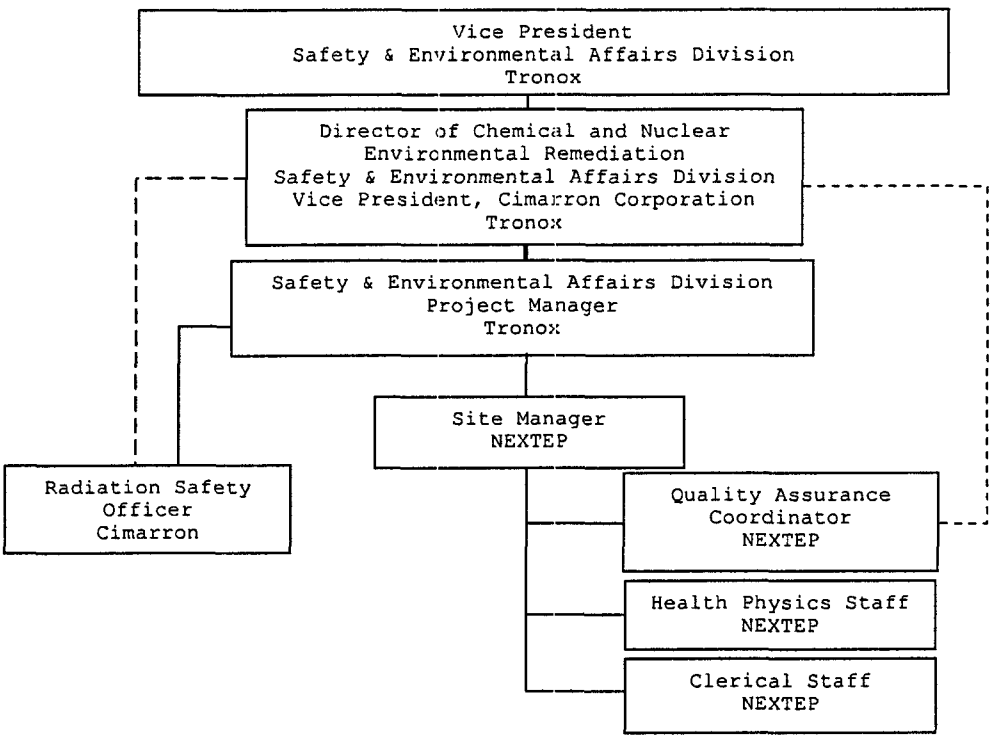
Implementation of the Radiation Protection Program results in generation of documents demonstrating the quality of services performed and compliance with federal and state regulations. Radiation Protection documents shall be controlled in accordance with regulatory requirements and the requirements of the Quality Assurance Plan.

3.7 Notifications and Reports

Notifications and reports shall be made in accordance with the requirements of 10 CFR 19, 10 CFR 20, 10 CFR 21, and 10 CFR 70.

Figure 3-1

Tronox
Safety & Environmental Affairs Division
(Cimarron)



4.0 ALARA PROGRAM

4.1 Section Overview

This section describes and provides the requirements, responsibilities, and philosophy of the As Low As is Reasonably Achievable (ALARA) program.

4.2 ALARA Policy

Cimarron Corporation operations shall be performed in a manner such that doses are maintained As Low As is Reasonably Achievable (ALARA). The basic philosophy of radiation protection is to maintain radiation exposures ALARA below the regulatory requirements. "Reasonable" means that the costs, benefits, and risks are considered in trying to minimize dose.

In accordance with the Code of Federal Regulations, Cimarron Corporation has developed, documented, and implemented a radiation protection program commensurate with the scope and extent of licensed activities. The Cimarron Radiation Protection Program embraces the ALARA philosophy through its use, to the extent practicable, of procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are ALARA. Cimarron is committed to providing all necessary resources, in the form of personnel, training, engineering controls, preparation and planning, design, equipment, monitoring devices, and controls to achieve ALARA doses at its facility.

Each worker is expected to be knowledgeable of work activities, and to abide by all ALARA requirements such as those found on Special Work Permits. In addition to the responsibility for their own dose minimization, each worker is responsible for minimizing dose to other workers and members of the public. Cimarron Corporation has an ALARA Suggestion Program for workers to provide comments and suggestions for dose minimization and improving the safety and efficiency of operations. Cimarron Corporation encourages worker participation in the ALARA Suggestion Program.

4.3 ALARA Committee

Cimarron shall have an ALARA Committee whose purpose is to ensure that ALARA policy, philosophy, commitments and regulatory requirements are integrated into all appropriate work activities.

The responsibilities of the ALARA Committee are:

- Ensuring that ALARA policy, philosophy, commitments, and regulatory requirements are integrated into all appropriate work activities.
- Reviewing and approving ALARA Program goals for Cimarron Corporation.
- Reviewing the effectiveness of the ALARA Program.
- Discussion of plans for new activities to ensure that ALARA considerations are met.
- Annual review of the Radiation Protection Program to ensure compliance and to incorporate any necessary changes.
- Evaluate and approve changes to the Decommissioning Plan or RPP in accordance with License Condition 27(e).

The ALARA committee shall be chaired by the RSO. The Vice-Chair shall be the Cimarron Project Manager and the third member shall be the Cimarron Vice President. Other individuals with appropriate authority and technical expertise shall serve on the committee as deemed necessary by the Chair or Vice-Chair.

5.0 ASSESSMENTS

5.1 Section Overview

Assessments are audits and/or surveillances which provide a systematic review of key activities and the overall quality of radiation protection activities. These assessments help to ensure that:

- Activities comply with license and regulatory requirements,
- Activities are performed in accordance with established policies, procedures and recognized good practices,
- Unsatisfactory performance is identified and corrected, and
- Programmatic weaknesses are targeted and corrected

5.2 Audits

Periodic audits shall evaluate the effectiveness of selected aspects of the Radiation Protection Program and determine the adequacy of and adherence to established procedures, instructions, specifications, regulations and standards, and other applicable permitting and licensing requirements

5.3 Surveillances

Surveillances are job specific observations performed under the guidance or direction of the Quality Assurance Coordinator to evaluate the implementation of the radiation protection program with respect to accepted practices (e.g., procedures, management directives, etc.), industry standards, and regulatory requirements.

5.4 Radiological Occurrence Reports

A Radiological Occurrence Report (ROR) is generated to document the facts, record the apparent and/or root cause, track the resolution and aid in trending radiological events. RORs are issued, responded to, corrected, and documented in accordance with the Quality Assurance Plan.

6.0 PERSONNEL MONITORING

6.1 Occupational Dose Limits

NRC regulations establish a total effective dose equivalent (TEDE) limit and a total organ dose equivalent (TODE) limit for occupationally exposed adults. The TEDE is the sum of the deep dose equivalent (DDE) from external exposures and the committed effective dose equivalent (CEDE) from internal exposures. The TODE is the sum of the DDE and the committed dose equivalent (CDE) to any individual organ and tissue. The following annual dose limits apply to all Cimarron employees, contractors, and visitors who receive occupational dose at Cimarron facilities. Occupational dose is defined as the radiation dose an individual receives in a restricted area and other work-related radiation dose the person receives, but does not include medical dose, dose due to background radiation, or dose received while a member of the public.

6.1.1 Occupational Dose Limits for Adults are as follows:

Whole Body - The more limiting of a total effective dose equivalent (TEDE) equal to 5 rem or the sum of the deep dose equivalent and committed dose equivalent to any individual organ or tissue, other than the lens of the eye, equal to 50 rem.

Skin - A shallow dose equivalent equal to 50 rem.

Lens of the Eye - An eye dose equivalent equal to 15 rem.

Extremities - A shallow dose equivalent equal to 50 rem.

6.1.2 Occupational Dose Limits to Minors are as follows:

The dose limits for minors shall be 10 percent of the corresponding limit for adults.

6.1.3 Occupational Dose Limits to Embryo/Fetus are as follows:

The dose to the embryo/fetus of declared pregnant women shall be limited to 500 mrem during the entire time of pregnancy. Substantial variations in dose rate shall be avoided.

6.2 Dose Limits for Individual Members of the Public

The TEDE received by individual members of the public from licensed operations shall not exceed 100 mrem above background in a year in restricted areas. In addition, the dose in any unrestricted area from external sources shall not exceed 2

mrem above background in any one hour. Members of the public are not subject to individual monitoring, record keeping, and reporting requirements of 10 CFR 20.

6.3 Determination of Prior Occupational Exposure

The occupational dose during the current year shall be determined and an attempt shall be made to obtain records of lifetime dose for all personnel who are likely to receive a dose in excess of 10% of the annual dose limit. The prior dose history shall be documented on Form NRC-4, or equivalent. Forms NRC-4 and NRC-5 and records used in their preparation shall be retained by Cimarron until the Department terminates each pertinent license requiring this record and in accordance with the Cimarron Quality Assurance Plan.

6.4 Personnel Monitoring for External Radiation

Cimarron shall issue individual monitoring devices to any individual who is likely to receive a dose in excess of 10 percent of the occupational limits. Monitoring shall also be performed to measure the dose to the embryo/fetus when declaration of pregnancy is made. Dosimetry devices shall be processed by a laboratory or vendor maintaining accreditation by the National Voluntary Laboratory Accreditation Program (NVLAP).

6.5 Internal Exposure Monitoring

Baseline in-vivo and/or in-vitro monitoring shall be performed for all individuals prior to performing radiation work involving respiratory protection equipment or work that could involve an intake of radioactive materials. Additional bioassay sampling shall be performed at the direction of the RSO.

Intakes shall normally be calculated based upon the results of the air monitoring program, unless the time of intake is well defined, the lung Class is known, or bioassay results are significantly higher than detection limits.

In-vivo and/or in-vitro bioassay sampling shall be performed whenever a calculated intake of 40 DAC-hours may have occurred in any one incident based on air sampling data, accident conditions, equipment failure, external contamination, or other conditions. In-vitro and/or in-vivo bioassay sampling should also be performed whenever it is likely that an individual may have received an intake of 10 milligrams uranium in any one week. In-vivo and/or in-vitro bioassay should also be considered upon termination of all radiation workers who may have had intakes of radioactive materials. In-vivo and/or in-vitro bioassay sampling shall be considered for all Declared Pregnant Women (DPW) at the time of declaration. The need for bioassay sampling shall be determined by the RSO.

6.6 Declared Pregnant Woman (DPW) Exposure Policy

Based on recommendations of the National Council on Radiation Protection and Measurements (NCRP) and on regulatory requirements, controls are established for the protection of the embryo/fetus during a declared female workers pregnancy. These controls shall ensure compliance with regulatory requirements and protect the rights of the female worker.

Declaration of pregnancy is at the discretion of the woman (medical proof is not required). Any woman who does not declare her pregnancy shall be subject to the normal occupational dose limits and shall not be subject to special controls or treatment with respect to work assignments involving exposure to radiation even if she is pregnant. Cimarron shall ensure the dose to the embryo/fetus of a declared pregnant woman does not exceed regulatory limits due to occupational dose during the pregnancy.

6.7 ALARA Dose Goals

The ALARA Committee establishes ALARA dose goals for the site. In cases where ALARA dose goals are exceeded without prior authorization, the RSO shall investigate to determine the cause and prepare a written report.

6.8 Personnel Exposure Reports

An annual summary report of the individual radiation dose received shall be sent to each worker who was issued primary dosimetry. When requested by an individual, a written exposure report shall be provided to each such individual within 30 days of the request or within 30 days of exposure determination, whichever is later.

Internal and external doses shall be summed whenever positive doses are measured. The dose to the lens of the eye, skin, and extremities are not included in the summation. Intakes through wounds or skin absorption shall be evaluated and, to the extent practical, accounted for in summation of internal and external doses independent of intakes by ingestion or inhalation.

Records of individual monitoring shall be kept in accordance with 10 CFR 20.1203 and the Cimarron Quality Assurance Plan. These records shall be updated at least annually. All radiation exposure records shall use the units curie, rem, rad, or multiples thereof and shall clearly and specifically indicate the quantities (e.g., deep dose equivalent) and units (e.g., rem or mrem) of all recorded values.

Records of embryo/fetus dose shall be maintained with those of the mother, including the declaration of pregnancy.

7.0 RADIATION PROTECTION INSTRUMENTATION

7.1 Section Overview

Many different types of radiological measurement instrumentation are utilized at Cimarron for radiation protection purposes. Operable and calibrated portable, semi-portable and fixed radiological instrumentation shall be maintained to adequately assess and monitor the radiological hazards.

7.2 Calibration

Calibration of radiation monitoring, counting, and air sampling instruments, should be performed in accordance with ANSI N323-1978, "Radiation Protection Instrumentation Test and Calibration."

The calibration frequency for portable radiation monitoring instruments and portable air sampling equipment shall be at least every 6 months. Semi-portable (e.g., continuous air monitors, personnel contamination monitors) and fixed (e.g., count room/laboratory instrumentation, portal monitors) instrumentation shall be calibrated at least annually.

7.3 Operation and Response Tests

Operation of radiation monitoring, counting, and air sampling instruments, shall only be performed by personnel qualified in the use of the instrument. Additionally, operation shall be performed in accordance with the operational procedure for each type of instrument in use. Operation shall be performed in accordance with regulatory requirements and should conform to industry standards and guidance.

Operation procedures shall include response test requirements and should be consistent with ANSI N323-1978, "Radiation Protection Instrumentation Test and Calibration."

7.4 Maintenance and Repair

Maintenance and repair of radiation protection instrumentation shall be performed by qualified personnel or an approved vendor. All maintenance and repair shall be documented.

7.5 Quality Control/Quality Assurance

A Quality Control (QC) Program for counting instruments shall be established and maintained to ensure reliability of counting results and sensitivities. QC for counting instruments should be proceduralized or based on manufacturer's instructions and

be consistent with ANSI N323-1978, "Radiation Protection Instrumentation Test and Calibration" and regulatory requirements.

Review and evaluation of instrumentation operability shall be performed on an on-going basis by the RSO or designee.

The Quality Assurance (QA) Program for laboratory instrumentation should be consistent, to the extent practicable, with the requirements of USNRC Regulatory Guide 4.15, "Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment."

8.0 ACCESS CONTROL

8.1 Section Overview

The Access Control program provides the access control requirements established for all entry into and exit from the Cimarron Facility. The Access Control Program is designed to ensure that all individuals have received appropriate qualifications, training, and authorization for entry. The access control requirements are applicable to all personnel, contractors and visitors who frequent a Controlled Area, Restricted Area/Radiologically Controlled Area (RCA).

8.2 Radiologically Controlled Area (RCA) / Controlled Area Access Controls

Controlled areas include all areas within the site boundary for which access can be limited for any reason.

RCAs are those areas within the fenced area of the Cimarron Facility that require the completion of specific training prior to entry. Only properly trained or escorted personnel shall be permitted inside any Radiologically Controlled Area. RCAs include Radioactive Materials Areas, Radiation Areas, and Airborne Radioactivity Areas. RCAs may be controlled through the use of guards, barriers, fences, signs, gates, or doors.

RCA boundaries shall be defined by the use of postings, barriers, walls, tape, ropes, markings, or locked doors. Each RCA shall be posted.

8.3 Posting Requirements

Each radiation area, airborne radioactivity area, and radioactive materials area shall be posted in accordance with 10 CFR 20.1902 unless excepted from posting under the provisions of 10 CFR 20.1903.

9.0 SPECIAL WORK PERMITS

9.1 Section Overview

A Special Work Permit (SWP) is a document or series of documents prepared by the Activity Supervisor, with input and approval from appropriate personnel, to inform individuals of the conditions that exist in the work area and radiological and non-radiological job safety requirements SWPs are required only when hazardous or radioactive materials are present in quantities that could result in health hazards due to the work to be performed.

9.2 SWP Preparation

SWP documentation shall consider all safety and radiological hazards and protective equipment needed for the work. SWPs should include information on the nature of the work, equipment needed to perform the job, work procedures, work plans, Health & Safety requirements, personal protective equipment, radiological requirements and conditions, necessary surveys, training requirements, and records to be maintained. Evaluations are performed based upon the above documentation, and the SWP requirements shall be written to incorporate all health and safety considerations.

9.3 SWP Requirements

The SWP job description shall be consistent with the activities or task to be performed. Personnel monitoring requirements, radiological survey requirements, and health physics oversight requirements shall be written onto the SWP. In addition, any special sampling requirements, such as air sampling, shall be included as SWP requirements. The location identified on the SWP shall be consistent with the work being performed. The job Activity Supervisor or designee shall review the provisions of specific SWPs with their workers prior to work starting.

9.4 SWP Approval

The Radiation Safety Officer, Site Manager, QA/QC Coordinator, and Activity Supervisor or designees, shall approve all SWPs.

9.5 SWP Training

Each individual who performs work governed by a SWP shall receive training regarding the SWP. SWP training shall be documented by having the worker sign a form acknowledging that training was received.

10.0 RADIATION PROTECTION SURVEYS

10.1 General Requirements

Survey information is used to assist in the development of Special Work Permits, to inform individuals of the radiological conditions/hazards in the area, to determine area postings (if required), to determine the type(s) of personnel protective equipment necessary, and to ensure personnel exposures to radiation and radioactive materials are maintained ALARA. Cimarron shall conduct radiation and contamination surveys, perform air sampling, and take samples when required to assess radiological conditions and to establish specific radiological controls for work to be performed. Decommissioning surveys shall be performed, to the extent practical, to conform with NUREG/CR-5849, the U.S.NRC Branch Technical Position for Onsite Storage and Disposal of Uranium and Thorium, and the 1987 U.S. 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."

Contact dose rates are used to locate and identify radiation levels to which personnel are exposed.

Indirect (smears) and direct (fixed) contamination surveys are performed to detect and quantify radioactive contaminants. Loose-surface contamination surveys should be performed when necessary to ensure that radioactive contamination has not inadvertently spread.

Cimarron shall incorporate the guidance of U.S. NRC Regulatory Guide 8.25, "Air Sampling in the Workplace" as an acceptable method for meeting certain survey and dose assessment requirements of 10 CFR 20. Air samples shall be collected whenever the airborne activity levels are expected to exceed 10 percent of the Derived Air Concentration (DAC).

Breathing zone (BZ) air sampling shall be performed whenever respiratory protection devices are worn by personnel. If air sample data indicates a measured level greater than 40 DAC-hours in any shift or operation, whichever is shorter in time duration, the RSO shall conduct an investigation and take corrective actions to reduce airborne contamination levels.

Air sample collection media shall be appropriate to address the radionuclide mixture(s) present. In addition, the analysis of air samples (including preliminary field screening) shall be performed in a timely and expeditious manner.

10.2 Routine Surveys

Surveys shall be conducted at a frequency commensurate with the hazards present and the personnel occupancies in a given area. Survey frequencies should maintain personnel exposures ALARA.

10.3 Investigative Surveys

Investigative surveys shall be performed as soon as practicable following the discovery or indication of abnormal radiological conditions.

10.4 Personnel Contamination Monitoring

Personnel shall routinely perform contamination monitoring (frisking) prior to exiting a Radiologically Controlled Areas that have the potential for spreading contamination or per SWP requirement. A hand and foot frisk shall be performed at a minimum, when exiting these areas.

10.5 Survey Training and Documentation

Surveys shall be performed by personnel who have been trained commensurate with the type of surveys to be performed. Training will address the appropriate instrumentation to be used, operational and response checks for survey instrumentation, survey methods, recording of data, calculations, data evaluation, and action levels, as applicable. Radiation and contamination surveys performed for compliance purposes, or to demonstrate that decommissioning criteria have been met, shall be documented and maintained in accordance with 10 CFR 20, Subpart L.

11.0 RADIOACTIVE MATERIALS CONTROL

11.1 Section Overview

Radioactive material (RAM) controls are established to provide positive control of radioactive material, prevent inadvertent release of radioactive material to unrestricted areas, ensure protection of members of the public and workers, and to minimize the amount of radioactive waste generated during operations. This section of the Plan addresses receipt, labeling, storage, shipment, transfer, controls, theft and loss of radioactive materials.

11.2 Receipt, Labeling, and Storage of RAM

All radioactive materials shall be received in accordance with radioactive material license possession limits. The individual responsible for radioactive material receipt shall perform all surveys and paperwork review for the shipment to ensure compliance with 49 CFR. Each container of radioactive material shall be labeled as required by 10 CFR 20.

Radioactive material shall be secured against unauthorized access or removal. Radioactive material storage areas shall be posted and controlled using appropriate barriers and radiological postings.

11.3 Shipment and Transfer of Radioactive Material

RAM shipments shall comply with NRC (10CFR) and U.S. Department of Transportation (49CFR) regulations. Low-level radioactive waste shipments transferred for disposal shall be accompanied by a shipment manifest prepared in accordance with 10 CFR 20. Radioactive material shall only be transferred to authorized individuals in accordance with the appropriate regulations in 10 CFR 20, and 10 CFR 70.

11.4 Controls for Radioactive Sources

The Radiation Safety Officer shall approve all requisitions for sealed radioactive sources and ensure that source inventories are performed on a quarterly basis. Sealed sources (except exempt quantities) shall be tested for leakage and/or contamination upon receipt and on a quarterly basis. The RSO shall approve locations for storage of sealed radioactive sources. Source storage areas shall be locked and posted per 10 CFR 20.

11.5 Theft or Loss of Radioactive Material

Any individual who discovers that radioactive material is lost, stolen, or missing shall immediately notify the RSO. The RSO shall evaluate the physical and radiological characteristics of the missing material and the potential hazards to workers and the general public, initiate an investigation to locate the material, and perform a root cause evaluation of the incident. The RSO shall determine the need for notifications to regulatory authorities and make notifications if necessary.

12.0 CONTAMINATION CONTROL

12.1 Section Overview

The purpose of contamination control is to prevent and/or minimize the spread of contamination to individuals, areas, and equipment. Control of radioactive surface contamination minimizes possible inhalation or ingestion of radioactivity by personnel, skin dose from small particles of radioactivity, and the spread to or build-up of radioactivity in the facility or environment from decommissioning operations.

12.2 General

Cimarron shall maintain restricted areas/RCA's of the facility and equipment, below the smearable contamination limit of 5,000 dpm/100cm^2 gross alpha. In addition, Cimarron shall establish Contaminated Area control, including posting, whenever smearable contamination in an area exceeds 1,000 dpm/100cm^2. Cimarron shall incorporate the ALARA philosophy when selecting decontamination methods and practices.

As a general rule, decontamination should be performed by working from areas of low contamination to areas of high contamination. Decontamination materials should be limited to the minimum required for the task. All decontamination materials shall be collected, monitored, and properly dispositioned.

12.3 Control and Use of Radiological Containments

The Health Physics Department, along with Activity Supervisors, shall determine the need for containment to control the spread of contamination.

12.4 Contaminated Personnel

Decontamination of personnel shall be performed under the guidance of health physics personnel and shall incorporate good health physics practices and ALARA. Cimarron shall not allow an individual whose skin or personal clothing is found contaminated above background to exit a controlled area without prior approval of the Site Manager or RSO. Appropriate surveys and monitoring shall be performed to evaluate dose to the individual resulting from contamination.

12.5 Spill of Radioactive Material

A spill of radioactive material requires immediate actions which include stopping the spill, warning other personnel, isolating the area, and minimizing radiation exposure. Supplementary actions should include the performance of radiological surveys in immediate and adjacent areas, including downwind.

13.0 UNCONDITIONAL RELEASE OF MATERIALS

13.1 Section Overview

Cimarron is authorized to unconditionally release tools, equipment, parts, and materials provided that radiation levels and surface contamination levels do not exceed the limits contained in the Cimarron license.

13.2 Survey Instrumentation

Instruments used to perform release surveys must be calibrated using NIST traceable, or equivalent, standards for energies and geometries similar to material being released. The energy dependence of the instruments to alpha, beta, and gamma radiation must be known and documented.

13.3 Release Surveys of Materials

Release surveys will consist of direct (fixed) and removable (smearable) monitoring. Such surveys will be performed and documented by qualified individuals.

14.0 RESPIRATORY PROTECTION

14.1 Section Overview

Respiratory protection measures shall be employed when necessary to protect workers from airborne hazards. The hazards may be of a radiological or non-radiological nature. At this time, it has been determined that respiratory protection requirements to support the activities at the Cimarron facility are no longer needed. If the future conditions change and the RSO or designee determines through review of field conditions or anticipated work functions that respiratory protection is required, procedures and controls will be instituted in accordance with the requirements found in 10 CFR 20, Subpart H, "Respiratory Protection and Controls to Restrict Internal Exposure in Restricted Areas" for radiological hazards and the Code of Federal Regulations Title 29 Part 1910.134 for non-radiological hazards.

15.0 ENVIRONMENTAL MONITORING

15.1 Section Overview

Environmental monitoring shall be performed at the controlled area boundary and at various locations outside of the restricted areas to ensure that the conditions of Cimarron's radioactive materials license and all applicable regulations are complied with. Cimarron shall monitor all potential environmental pathways through appropriate measurements. This program will be modified as decommissioning activities reduce the potential for exposure to the general public. The following sections describe the environmental monitoring program that is currently in place.

15.2 Surface Water Monitoring

Surface water samples are collected annually and are analyzed for Fluoride, NO_3 (as N), gross alpha, and gross beta. Additional analysis for isotopic uranium is performed if the gross alpha action level of 15 pCi/L or gross beta action level of 20 pCi/l is exceeded. Analysis for Tc-99 shall be performed if the gross beta to gross alpha ratio exceeds 3:1 and gross beta exceeds 30 pCi/L. Sampling locations and analyses are summarized in Table 15-1. Figure 15-1 shows the sampling locations. The RSO notification action level (see Section 15.4) for surface water is 50 percent of the effluent concentration limit found in Appendix B to 10 CFR 20.

15.3 Ground Water Well Monitoring

Ground water well samples are collected annually and are analyzed for the same constituents as given above for surface water. Additional analysis for isotopic uranium is performed if the gross alpha action level of 15 pCi/L or gross beta action level of 20 pCi/l is exceeded. Analysis for Tc-99 shall be performed if the gross beta to gross alpha ratio exceeds 3:1 and gross beta exceeds 30 pCi/L. Sampling locations and analyses are summarized in Table 15-1. Figure 15-2 shows the ground water sampling locations. The RSO notification action level for ground water is 50 percent of the effluent concentration limit found in Appendix B to 10 CFR 20.

15.4 Samples Exceeding Action Levels

Immediate notification shall be made to the RSO of any samples or doses exceeding action levels. In the event that sample analytical results exceed action levels, the RSO shall perform an investigation consisting of one or more of the following actions, as appropriate.

- Verification of laboratory data and calculations;
- Analyze and review probable causes;

- Evaluate the need for sample re-analysis or additional analysis;
- Evaluate the need for re-sampling;
- Evaluate the need for sampling of other environmental pathways;
- Evaluate the need for notifications to regulatory agencies;
- Evaluate the need to perform dose assessment.

Notifications and reports shall be made to the NRC in accordance with 10 CFR §20.2202 and §20.2203 when necessary based upon the above evaluation.

15.5 Laboratory and Environmental Monitoring Program Quality Control Requirements

Laboratory counting performed for purposes of environmental or effluent stream monitoring should comply with the requirements of U.S. NRC Regulatory Guide 4.15. Laboratory minimum detectable limits shall be less than or equal to 50 percent of the action levels for all environmental media.

15.6 Records

Records of environmental monitoring data shall be kept indefinitely after license termination until they are determined to be of no further use by management. The minimum time period for record retention shall be ten years after termination of the licenses.

15.7 Quality Control in Sampling

Steps should be taken to ensure that samples collected are representative of the material sampled. Sample integrity should be maintained from the time of collection to time of analysis. Cimarron shall utilize sample chain of custody documentation to track environmental samples sent to off-site laboratories for analysis.

Quality control records for laboratory counting systems shall include the results of measurements of radioactive check sources, calibration sources, backgrounds, and blanks.

15.8 Reference Standards

All standards used for calibration of laboratory equipment shall be NIST traceable when such standards are available.

15.9 Performance Checks of Radiation Measurement Systems

Scheduled checks should be performed on laboratory equipment to determine background counting rate and response to check sources. Corrective actions shall be taken whenever measurement values fall outside of predetermined control values. Background counting should normally be performed daily or before each use. Check source measurements are usually measured daily or with each batch of samples counted on automated equipment.

15.10 Calculations and Computations

Calculations and computations used in determining concentrations of radioactive materials shall be independently checked prior to implementation. The calculations shall be proceduralized and implemented in accordance with quality assurance requirements for procedure development.

15.11 Audits

Periodic audits shall be made of the laboratory and environmental monitoring program to verify implementation of the quality assurance program. Audit results shall be documented and follow-up actions taken when required.

TABLE 15-1
CIMARRON FACILITY ENVIRONMENTAL SAMPLING SCHEDULE

SURFACE WATER

LOCATION	DESCRIPTION	FREQUENCY	ANALYSIS	ACTION LEVEL*
1201	Cimarron River - Upstream	Annually	Gross Alpha	15 pCi/l
1202	Cimarron River - Downstream		Gross Beta	20 pCi/l
1204	KM Pond West of Hwy 74		Fluorides	None
1205	East KM Lake		Nitrates	None
1206	Stream West of Area M			
1208	Seep – North of U-Pond 2			
1209	West KM Lake			

GROUNDWATER WELLS

LOCATION	DESCRIPTION	FREQUENCY	ANALYSIS	ACTION LEVEL*
1311	South of former U-Pond 1 (Area O)	Annually	Gross Alpha	15 pCi/l
1312	West of former U-Pond 1 (Area O)		Gross Beta	20 pCi/l
1313	North of former U-Pond 1 (Area O)		Fluorides	None
1314	South of former BG-1 (Area F)		Nitrates	None
1315R	North of former BG-1 (Area F)			
1316R	Northwest of former BG-1 (Area F)			
TMW-13	North of former BG-1 (Area F)			
1319B-1	East U-Yard (Area K)			
1319C-1	East U-Yard (Area K)			
1320	Southwest of former U-Pond 2 (Area O)			
1321	Southwest of former U-Pond 2 (Area O)			
1322	Northwest U-Yard (Area I)			
1323	Northwest U-Yard (Area I)			
1324	East of BG-4 (Area N)			
1325	South of BG-4 (Area N)			
1326	East U-Yard (Area N)			
1327B	West U-Yard (Area I)			
1328	South U-Yard (Area K) Deep Well			
1329	South U-Yard (Area K)			
1330	South of U-Yard (Area K)			
1331	Northeast of MOFF Yard (Area L)			
1332	West of former San Lagoons (Area H) Deep			
1333	West of former Sanitary Lagoons (Area H)			
1334	North of former Sanitary Lagoons (Area H)			
1335A	West of BG-4 (Area N)			
1336A	North of former U-Pond 2 (Area G)			

Tc-99 analysis must be run (wells only) if β to α ratio exceeds 3:1 AND gross β is >30pCi/L

* See (Samples Exceeding Action Levels) section of Radiation Protection Plan for specific requirements when action level is exceeded.

FIGURE 15-1
Surface Water Sampling Locations

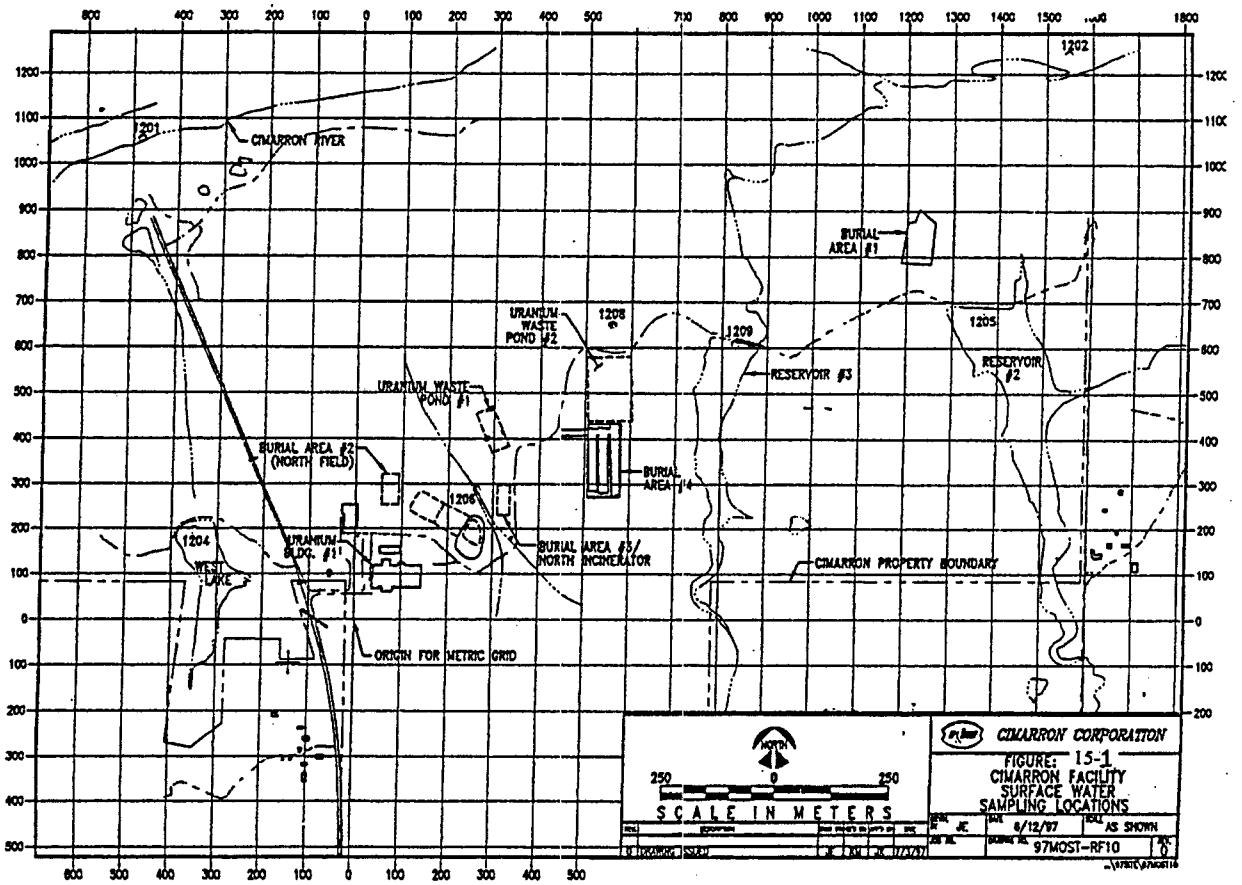


FIGURE 15-2
Groundwater Well Locations