

# CIMARRON CORPORATION

P.O. BOX 315 • CRESCENT, OK 73028

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March 29, 2005

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 twelve changes in the Radiation Protection Plan during 2004. 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

NMS501

# **CIMARRON CORPORATION**

**ANNUAL SUBMITTAL OF  
27(e) CHANGES FOR (2004)**

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

**MARCH 2005**

# Change #1

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

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

Revision to Organizational Chart – Removal of Program Manager – Sections 2, 3, Table of Contents and Review and Approval Signature Page

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	

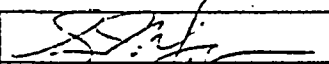
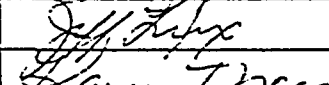
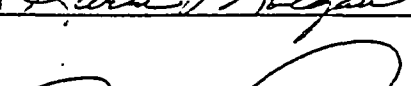
NOTE: If "YES" was answered in any of the section 3.0 evaluation questions, the proposed item cannot be performed without NRC approval. Provide any basis for determination of each answer in section 5.0, as appropriate.

4.0 Results:

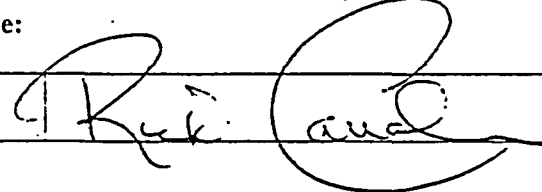
Revision, Test, or Experiment Approved:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
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5.0 Comments:

6.0 Performed By (Signature/Date):

Corporate Management:		Date: 11/17/03
Project Manager:		Date: 11/17/03
RSO:		Date: 11-17-03

7.0 Implemented By and Date:

Site Manager:		Date: 1/7/04
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Change Evaluation  
ALARA Committee Approval of Revision to  
Cimarron Annex A (Radiation Protection Plan)  
November 17, 2003

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 the Cimarron Organizational Chart.
- Revisions to facility titles and responsibilities.
- Revisions to Sections 2 and 3 reflecting the above changes.
- Table of Contents page.
- Signature Page.

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 – *not applicable.*
  - 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.

CIMARRON CORPORATION  
RADIATION PROTECTION PLAN

REVIEWED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
QUALITY ASSURANCE COORDINATOR

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
RADIATION SAFETY OFFICER

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
~~PROGRAM MANAGER~~  
Project

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
VICE PRESIDENT/CIMARRON

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APPROVED BY:	DATE:
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PROJECT MANAGER	



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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, 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. Relationships between documents used to achieve compliance with the regulations and Cimarron Corporation's radioactive materials licenses are presented.

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 also provided.

The Radiation Protection Program results in the generation of documents and records. In addition, notifications and reports are required by the regulations. Requirements for proper generation, storage, and turnover of documents and notifications are described to ensure 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 maintained in consistency with current and planned activities.

Deleted: Duties and responsibilities that are required for health physics procedure shall be clearly defined.

#### 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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### 3.5 Procedure Development

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

### 3.6 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 assure compatibility with all other Cimarron Corporation procedure manuals and documents. Reviews shall ensure that the procedure can be performed as written. Review of procedures shall be performed by the Quality Assurance Coordinator, and the Radiation Safety Officer. All Radiation Protection Program procedures shall be approved by the Radiation Safety Officer. Procedures shall be issued and controlled by the Quality Assurance Coordinator in accordance with the Quality Assurance Plan.

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### 3.7 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.

### 3.8 Notifications and Reports

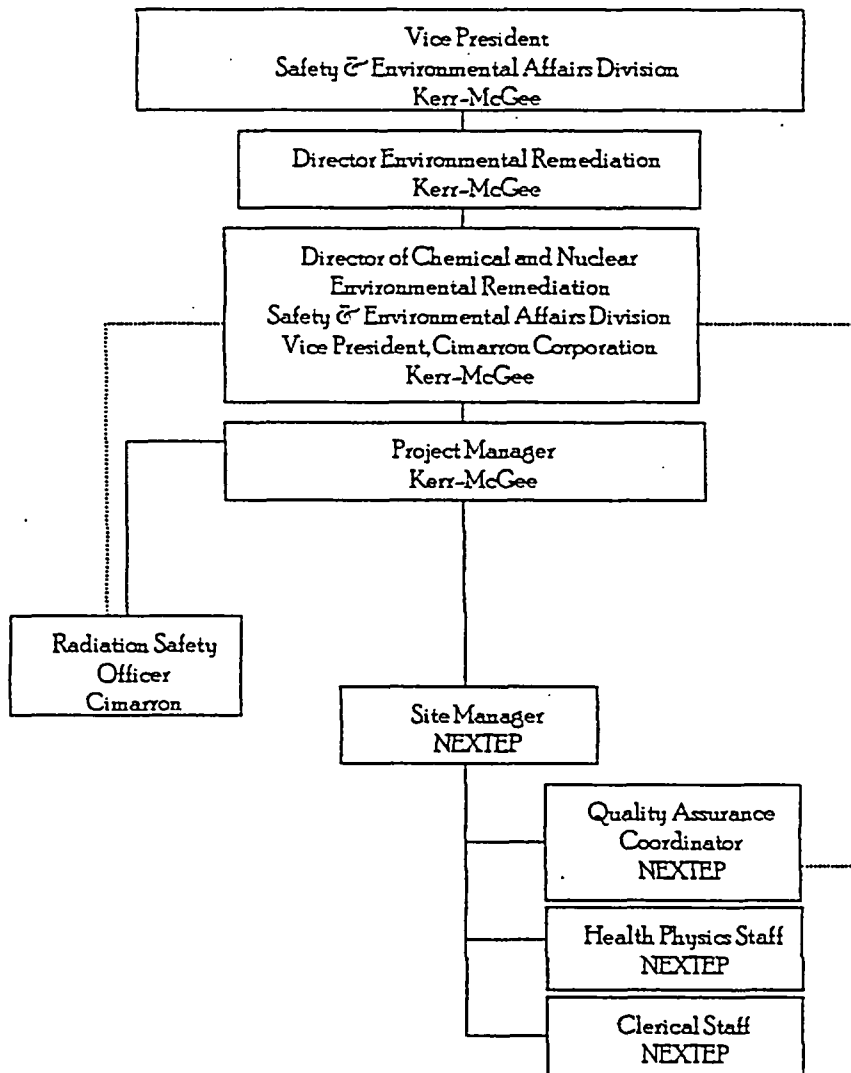
Notifications and reports shall be made in accordance with the requirements of 10 CFR 19, 10 CFR 20, 10 CFR 21, and 10 CFR 70.

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Figure 3-1

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



## 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

Cimarron Corporation shall incorporate clearly defined responsibilities in the RPP. 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. Job 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 Radiation Protection Plan 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 staff, monitors regulatory requirements, site activities, scheduling and budget status.

The Site Manager is responsible for daily site activities and oversees on site staff. The Site Manager has authority to stop work in the event that the health and safety of workers or member of the public may be compromised or if regulatory non-compliance may occur.

Deleted: The Program Manager provides project oversight through the development of longer range goals and strategy and is responsible for administrative and long-term management of the Cimarron Facility.¶

Deleted: The Manager of Planning and Regulatory Compliance functions as the Project Manager for the site. 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 staff, monitors regulatory requirements, site activities, scheduling and budget status. ¶

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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 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 RSO has 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.

The Quality Assurance Coordinator is responsible for assessments of the performance of work in compliance with requirements of 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. The QA Coordinator has 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.

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

Each worker is responsible for following 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).

Workers are requested to contact site management first 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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## 2.4 Training Requirements and Policy

All persons who are permitted to enter the Cimarron Corporation restricted area shall receive information and training in radiation safety. The depth of the training will be commensurate with the potential radiation safety problems and will be in compliance with the requirements in 10 CFR 19 and 10 CFR 20. Cimarron may have several levels of training, such as visitor, escorted radiation worker, radiation worker, and health physics technician training. Each of the levels of training will ensure that individuals are:

- Aware that radioactive materials are present in the restricted areas;
- Informed regarding additional risks that may arise due to the anticipated 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 workers will include:

- Applicable provisions of the regulations and licenses for the protection of personnel from exposure to radiation or radioactive materials;
- Responsibility of the worker to report promptly to the Cimarron Corporation 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 that may involve 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 training of workers. Visitor training requirements are approved by the RSO, but may be administered by radiation workers.

The Cimarron Corporation training program should may meet these requirements by using any of the following techniques: Classroom training, videotapes, reading assignments, on-the-job training, demonstrations, drills, and discussions. Cimarron Corporation 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 Quality Assurance Plan.

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# **Change #2**



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

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

Revisions to Sections 6, 7, 8, 9, 10, Table of Contents and Signature Page from 3rd Quarter ALARA Committee review meeting.

## 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	<input checked="" type="checkbox"/>	No	
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## 5.0 Comments:

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## 6.0 Performed By (Signature/Date):

Corporate Management:	<i>[Signature]</i>	Date: <i>1/29/04</i>
Project Manager:	<i>[Signature]</i>	Date: <i>1/29/04</i>
RSO:	<i>Karen Morgan</i>	Date: <i>1/29/04</i>

## 7.0 Implemented By and Date:

Site Manager:	<i>Rick [Signature]</i>	Date: <i>2/5/04</i>
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**Change Evaluation**  
**ALARA Committee Approval of Revision to**  
**Cimarron Annex A (Radiation Protection Plan)**  
**January 29, 2004**

**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 Sections 6, 8, 9 and 10 reflecting changes made during the 3<sup>rd</sup> quarter ALARA Committee review process.
- Table of Contents page.
- Signature Page.

**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 – *not applicable.*
  - 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.

## 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 Administrative Dose Limits for Occupationally Exposed Individuals

Administrative limits are used to control doses to insure that regulatory limits are not exceeded and that occupational exposures are maintained as low as is reasonably achievable (ALARA).

#### Deleted: Section Overview

Deleted: The policies outlined in this section also address requirements for protection of individual members of the public, whether living in the vicinity of Cimarron facilities or visiting. Policies are also presented for embryo/fetus monitoring and dose assessments.

#### 6.2 - Occupational Dose Limits

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Deleted: The administrative limits also serve to alert health physics personnel to practices or trends in the work environment that are resulting in additional or excessive exposure to individuals. The company goal is that no individual shall exceed the administrative limits in any calendar year.

<#>Administrative Dose Limits for Occupationally Exposed Adults are as follows:

Whole Body - The more limiting of a total effective dose equivalent (TEDE) equal to 4 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 40 rem TEDE of 500 mrem per year if dose for the current year has not been determined and documented via NRC Form 5 (no dose extension permitted).

Skin - A shallow dose equivalent to 40 rem.

Lens of the Eye - An eye dose equivalent equal to 12 rem.

Extremities - A shallow dose equivalent equal to 40 rem.

Administrative dose limit extensions for occupationally exposed adults will be considered based upon the necessity of the operation. Approvals for dose extension shall only be made by the RSO after first reviewing the individual's exposure records and assessing the expected exposure.

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### 6.3 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.

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### 6.4 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.

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### 6.5 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).

### 6.6 Visitors

Visitors are not subject to individual monitoring, record keeping, and reporting requirements of 10 CFR 20. However, they (or one person in their group) may be issued a dosimeter for verification purposes. A permanent record may be maintained of the individual's dosimeter readings to document that monitoring was not required. Written reports of any measured dose shall be issued to the individual upon request. All Visitors shall be escorted by a qualified escort or under the direct observation of a qualified escort at all times while in a Restricted Area.

### 6.7 Skin Monitoring

Due to the difficulty of assessing skin exposure, skin dose rates should be minimized as much as practicable by shielding or decontamination. The non-penetrating radiation energies and dose rates should be determined and sufficient protective clothing should be used to prevent substantial skin doses. The shallow

dose equivalent to the skin from external radiation sources should be monitored by a dosimeter.

#### 6.8 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-vitro 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.

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#### 6.9 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.

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#### 6.10 Exposures Exceeding Annual Dose Goals

In cases where ALARA dose goals are exceeded without prior authorization, the RSO shall investigate to determine the cause and prepare a written report. A Radiological Occurrence Report shall be initiated and a copy of the investigation report shall be sent to the individual's exposure records file. The objective of the investigation shall be to establish the sequence of events resulting in the exposure and the level of dose received. The individual shall not be allowed to enter a Restricted Area until the investigation has been completed.

#### 6.11 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.

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## 7.0 RADIATION PROTECTION INSTRUMENTATION

### 7.1 Section Overview

Many different types of radiological measurement instrumentation are utilized at Cimarron for radiation protection purposes. A sufficient inventory and variety of operable and calibrated portable, semi-portable and fixed radiological instrumentation shall be established and 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

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¶ 7.2 - Instrument Inventory¶

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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."

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## 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).

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### 8.2 General Requirements

- All personnel who normally work with radioactive material shall be issued dosimetry.
- Only properly trained or escorted personnel shall be permitted inside the Radiologically Controlled Area.
- All personnel and contractors shall store personal dosimetry badges in proper storage locations prior to leaving the facility.
- Unescorted individuals working in a RCA shall be required to receive radiation worker training.

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### 8.3 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.

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RCAs are those areas within the fenced area of the Cimarron Facility that require the completion of specific training prior to entry. 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.

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

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### 8.4 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.

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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 radiological and non-radiological conditions that exist in the work area and the safety requirements for the job. The review process includes an evaluation for ALARA considerations.

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, or designee, 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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Deleted: Cimarron does not intend for a SWP to be automatically required whenever work is performed in a restricted area. However, radiation work shall require a SWP when it is performed in posted Radiation Areas, and Airborne Radioactivity Areas. Work performed in posted Radioactive Materials Areas may or may not require an SWP, depending on the type of work to be performed. For example, maintenance activities such as clean oil changes, light bulb changes, equipment maintenance, lawn mowing, site tours, management inspections, environmental monitoring and measurements, work with check sources, and security patrols shall not normally be performed under the controls of a SWP. These types of activities are routine activities and past experience has demonstrated that they are not a source of dose to participants. Activities such as contaminated earthmoving, placement of materials in the disposal cell, decontamination of buildings and equipment, and work that could generate contaminated airborne material shall be performed under the direction of a SWP.¶

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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 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 periodically performed 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, 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. General Requirements¶

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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 Area. A hand and foot frisk shall be performed at a minimum, when exiting a Radiologically Controlled Area. These surveys are qualitative in nature. Personnel are instructed to notify Health Physics when radioactivity levels exceeding background are found on the skin, clothing, or personal items. Health Physics personnel will then determine the need for decontamination. In accordance with the ALARA concept, radioactive materials on skin, clothing, or personal items will be minimized to the extent practicable before allowing an individual to leave the facility. Any individual who cannot be decontaminated to background levels will be instructed by the RSO or designee regarding the risks involved and follow-up actions that may be necessary. RSO and/or Site Manager approval is required prior to departure of any contaminated individual from a RCA, except when emergency conditions dictate other actions.

## 10.5 Survey Training and Documentation

Surveys are performed by radiation workers 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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Deleted: Cimarron has not established administrative limits for personnel radioactive contamination. Personnel surveys are performed by workers as they leave contaminated areas and also upon egress from the Restricted Area.

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# **Change #3**

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

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

Removal of well 1319 from the Environmental Monitoring Program and replace with new wells 1319B-1 and 1319C-1.

## 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	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
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## 5.0 Comments:

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## 6.0 Performed By (Signature/Date):

Corporate Management:	<i>[Signature]</i>	Date: <i>2/25/04</i>
Project Manager:	<i>[Signature]</i>	Date: <i>03/17/04</i>
RSO:	<i>[Signature]</i>	Date: <i>2/17/04</i>

## 7.0 Implemented By and Date:

Site Manager:	<i>[Signature]</i>	Date: <i>3/3/04</i>
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Change Evaluation  
ALARA Committee Approval of Revision to  
Cimarron Annex A (Radiation Protection Plan)  
February 12, 2004

**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.

- Well 1319 to be replaced with a new wells 1319B-1 and 1319C-1 on the Environmental Monitoring Program.

**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 – *satisfied.*
  - b) Both the use and the place must be authorized – *satisfied.*
  - c) The action must not violate training requirements – *satisfied.*
  - 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 – *All dose, both public and workers, is far below the limits. This action will not result in any increase in dose.*
  - 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 – *It does not.*
- 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.

## 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,  $\text{NO}_3$  (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 15.8) 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;

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- 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.

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#### 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.

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**TABLE 15-1  
CIMARRON FACILITY ENVIRONMENTAL SAMPLING SCHEDULE**

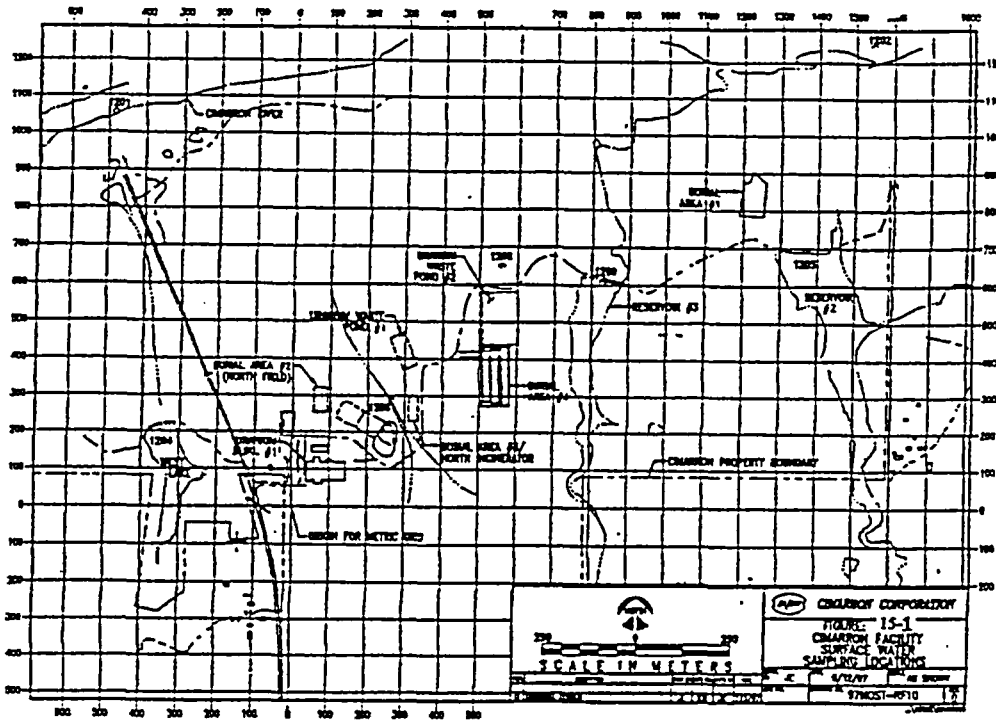
Location	Description	Frequency	Analysis	Action Level
<b>SURFACE WATER</b>				
1201	Cimarron River - Upstream	(Annually)	F	None
1202	Cimarron River - Downstream		NO <sub>3</sub>	None
1204	Pond - West of Plant		Gross Alpha	15 pCi/l
1205	Kerr-McGee Lake - East		Gross Beta	20 pCi/l
1206	Slough - NW of Incinerator			
1208	Stream North of Uranium Pond #2			
1209	Kerr-McGee Lake - West			
<b>GROUNDWATER WELLS</b>				
1311	Monitor Well - South of Landfill	(Annually)	F	None
1312	Monitor Well - West of Landfill		NO <sub>3</sub>	None
1313	Monitor Well - North of Landfill		Gross Alpha	15 pCi/l
1314	Monitor Well - South of Burial Pit		Gross Beta	20 pCi/l
1315R	Monitor Well - North of Burial Pit			
1316R	Monitor Well - Northwest of Burial Pit			
TMW-13	Monitor Well - North of Burial Pit			
<del>1319B-1</del>	<del>Monitor Well - U-Plant Yard East of Building</del>			
<del>1319C-1</del>	<del>Monitor Well - U-Plant Yard East of Building</del>			
1320	Monitor Well - North of Designated Area			
1321	Monitor Well - North of Designated Area (deep)			
1322	Monitor Well - By Flammable Liquid Storage Pad			
1323	Monitor Well - By Flammable Liquid Storage Pad (deep)			
1324	Monitor Well - East of Designated Area			
1325	Monitor Well - South of Designated Area			
1326	Monitor Well - East of U-Plant Yard			
1327B	Monitor Well - West of U-Plant Yard			
1328	Monitor Well - South of U-Plant Yard (deep)			
1329	Monitor Well - South of U-Plant Yard			
1330	Monitor Well - Southwest of U-Plant Yard			
1331	Monitor Well - Northeast of Pu-Plant Yard			
1332	Monitor Well - West of Sanitary Lagoons (deep)			
1333	Monitor Well - West of Sanitary Lagoons			
1334	Monitor Well - North of Sanitary Lagoons			
1335A	Monitor Well - West of Designated Area			
1336A	Monitor Well - North of U Pond #2			

**Deleted:** 1319 - Monitor Well - U-Plant Yard East of Building

\* See applicable section of Radiation Protection Plan for specific requirements when action level is exceeded.

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**FIGURE 15-1**  
**Surface Water Sampling Locations**

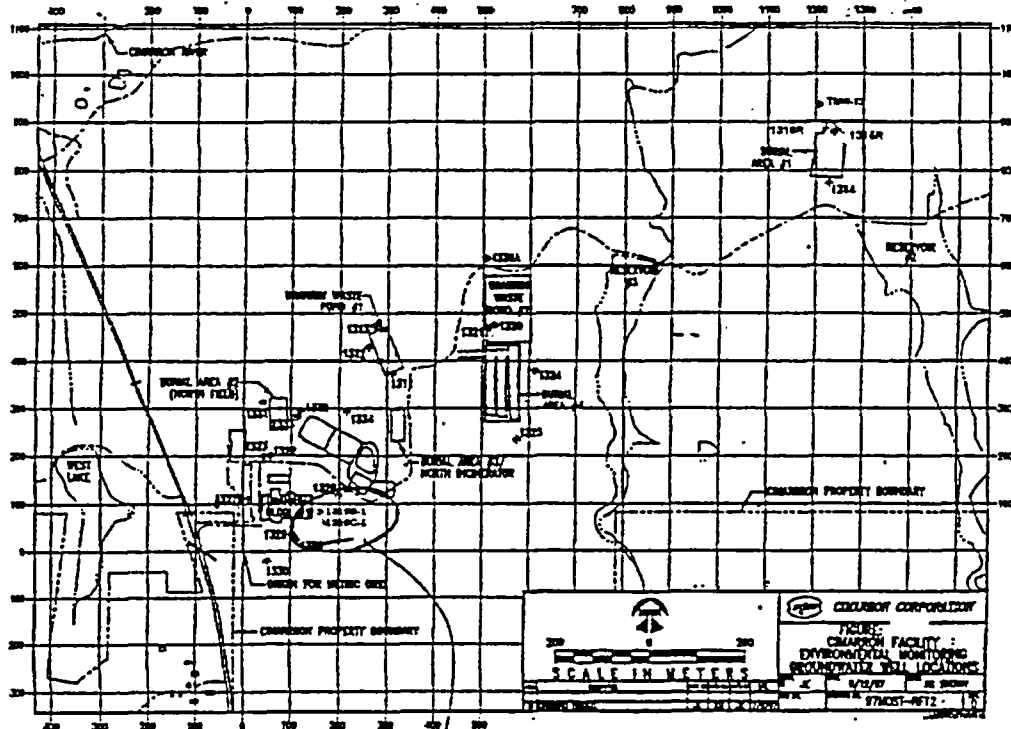


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FIGURE 15-2  
Groundwater Well Locations



ADDED  
NEW  
WELLS

# **Change #4**

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

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

Revision to Radiation Procedures. 1.5.6.7.8.11,13.16.17,34,43,54 and 59.

## 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.

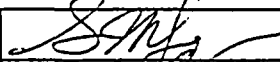
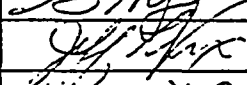
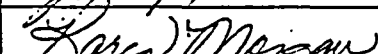
## 4.0 Results:

Revision, Test, or Experiment Approved:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
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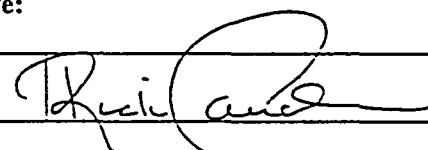
## 5.0 Comments:

--

## 6.0 Performed By (Signature/Date):

Corporate Management:		Date: 2/26/04
Project Manager:		Date: 02/17/04
RSO:		Date: 2/17/04

## 7.0 Implemented By and Date:

Site Manager:		Date: 3/3/04
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Change Evaluation  
ALARA Committee Approval of Revision to  
(Radiation Protection Procedures)  
February 12, 2004

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 Procedures:
  - RP-1, 5, 6, 7, 8, 11, 16 - Organizational and Title Changes
  - RP-13 - Organizational and Title Changes - Make Restricted Area and Radiologically Controlled Area Interchangeable
  - RP-17 - Make Restricted Area and Radiologically Controlled Area Interchangeable - Film Badge Handling Process Revisions - No Longer Issue of Permanent Personnel Film Badges
  - RP-34 - Delete - No Longer Laundering Clothing
  - RP-43 - Delete - Environmental Monitoring Process Covered Under Sampling and Analysis Plan
  - RP-54 - Delete - No Longer Using High Volume Environmental Air Monitoring Equipment
  - RP-59 - Delete - No Longer Using Eberline PRM6 Alpha Survey Meters

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 – *not applicable*.
  - 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.

CIMARRON RADIATION  
PROTECTION PROCEDURES

KM-CI-RP-1  
REVISION 10

ORGANIZATION AND  
RESPONSIBILITIES

PAGE 1 OF 6  
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REVIEWED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
QUALITY ASSURANCE COORDINATOR

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
RADIATION SAFETY OFFICER

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## 1.0 PURPOSE

This procedure provides a description of the Cimarron Radiation Protection Organization and describes the positions and functions contained within that Organization. The Cimarron Radiation Protection Program ensures that all employees, visitors and the general public are protected from any radiological hazards, which may be present due to licensed activities conducted at the Cimarron Facility.

## 2.0 RESPONSIBILITY

### 2.1 Vice President Cimarron Corporation

2.1.1 Reports directly to the Director of Environmental Remediation, Kerr McGee Corporation.

2.1.2 Responsible for the supervision of the Project Manager and the Quality Assurance Coordinator.

2.1.3 Responsible for the corporate oversight of site activities.

2.1.4 Responsible for assuring that the Radiation Protection Plan is developed and implemented in a manner consistent with regulatory requirements and company policies.

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### 2.2 Project Manager Cimarron Corporation

2.2.1 Reports directly to the Vice President, Cimarron Corporation.

2.2.2 Responsible for providing sufficient resources to implement the Radiation Safety Program and to perform site activities.

2.2.3 Responsible for overseeing site staff, monitoring regulatory requirements, site activities, scheduling and budget status.

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### 2.3 Site Manager / Designee

2.3.1 Reports directly to the Project Manager Cimarron Corporation.

2.3.1 Responsible for daily site activities and the supervision of the Health Physics Technicians, Activity Supervisor and site staff.

2.3.2 Responsible for ensuring that adequate resources to maintain procedural and

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regulatory requirements are provided to the RSO/HPS, Quality Assurance Coordinator, and the ~~ALARA~~ Supervisor.

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2.3.3 Responsible for maintaining accurate organizational charts and informing personnel of changes when made.

2.3.4 Serves on the ALARA Committee.

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2.3.5 The ~~Quality Assurance Coordinator~~ on site will assume the responsibility of the Site Manager when the Site Manager is not on site.

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## 2.4 Radiation Safety Officer/Health Physics Supervisor (RSO/HPS) / Designee

2.4.1 Reports to the ~~Project Manager~~.

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2.4.2 Responsible for approval of Radiation Protection Procedures.

2.4.3 Responsible for updating this procedure in accordance with Cimarron facility organizational changes.

2.4.4 Responsible for maintaining Cimarron Facility radioactive materials license.

2.4.5 Responsible for compliance with all license requirements and the overall implementation of the Cimarron Radiation Protection Program.

2.4.6 Responsible for the development and the oversight of the Radiation Protection Program.

2.4.7 Serves as Chairman of the ALARA Committee.

2.4.8 Responsible for incorporating ALARA controls and practices.

2.4.9 Responsible for review and conduct of Industrial Safety Program.

2.4.10 Responsible for ensuring proper document control for the Cimarron Radiation Protection Program.

2.4.11 Responsible for decontamination activities.

2.4.12 Responsible for decontamination worker and contractor adherence to Cimarron policies and procedures.

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2.5 Quality Assurance Coordinator / Designee

2.5.1 Reports directly to the Quality Assurance.

2.5.2 Responsible for reviewing the Radiation Protection Procedures for approval.

2.5.3 Responsible for Administrative and Accounting functions for the Cimarron Facility.

2.5.4 Responsible for managing and directing the overall Cimarron Quality Assurance Program as delineated in the Cimarron QA Plan and Procedures.

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2.6 ACTIVITY SUPERVISOR

2.6.1 Reports directly to the Site Manager

2.6.2 Responsible for training all designated personnel on the Special Work Permit, Work Plan, and Project Procedures.

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Responsible for following all radiation procedures.

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Responsible for following all regulatory and procedural guidance.

2.7 All Facility Personnel

2.7.1 Responsible for following all regulatory and procedural guidance

2.7.2 Responsible for working within the guidelines identified in each Special Work Permit, Work Plan, and Project Procedures.

3.0 PRECAUTIONS

N/A

4.0 EQUIPMENT AND MATERIALS

N/A

5.0 PROCEDURE

N/A

6.0 RECORDS

N/A

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7.0 REFERENCES

- 7.1 Cimarron Quality Assurance Plan and Procedures

8.0 ATTACHMENTS

- 8.1 Attachment 1-1, Kerr McGee Corporation Safety and Environmental Affairs  
Division Organizational Chart (Cimarron)

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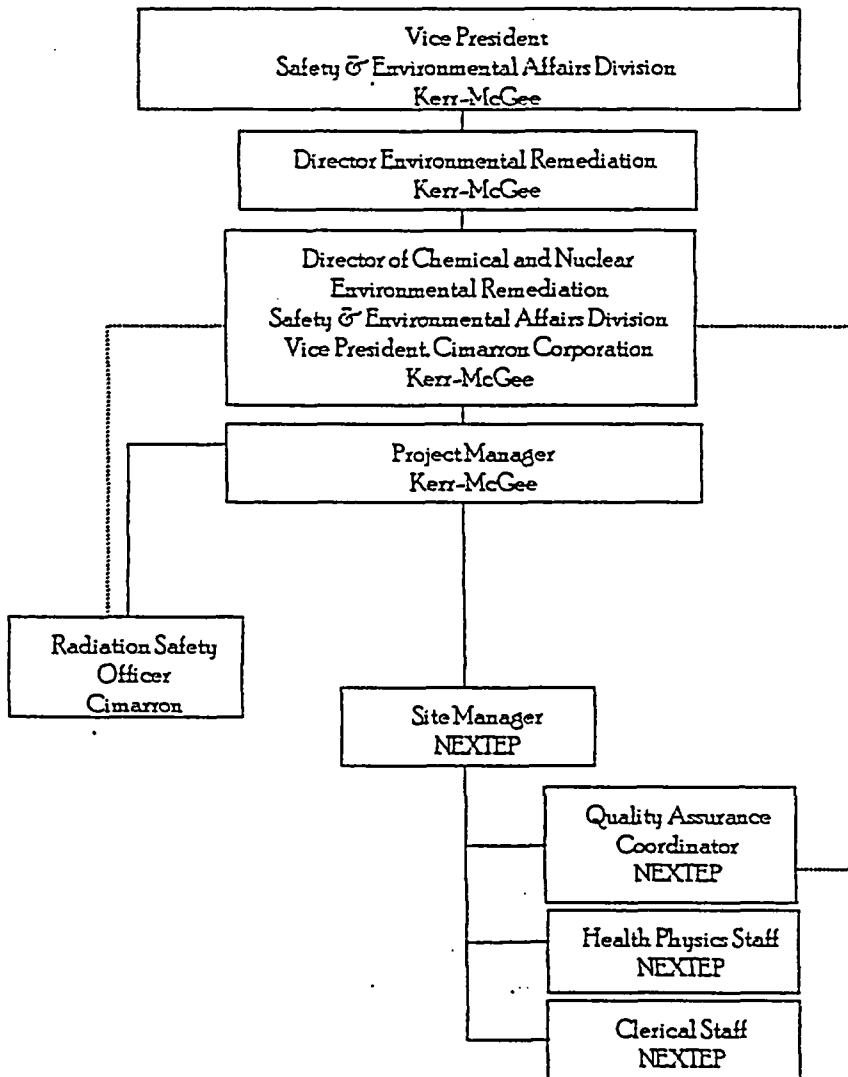
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Attachment 1-1  
Kerr McGee Corporation  
Safety and Environmental Affairs Division  
(Cimarron)



**Divider Page**

CIMARRON RADIATION  
PROTECTION PROCEDURES  
RADIOLOGICAL OCCURRENCE  
REPORTS

KM-CI-RP-5  
REVISION 2  
PAGE 2 OF 4  
DATE: 01/07/02

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1.0 PURPOSE

This procedure provides instructions to uniformly identify, document and investigate radiological deficiencies and incidents for determination of root causes and corrective actions. A Radiological Occurrence Report (ROR) documents radiological incidences or deficiencies which have or could result in a violation of the Cimarron Radiation Protection Program requirements. ROR's provide a mechanism for identifying and tracking corrective actions

2.0 RESPONSIBILITY

2.1 ALARA Committee

2.1.1 Responsible for evaluating corrective actions for ROR's.

2.2 Radiation Safety Officer/ Health Physics Supervisor (RSO/HPS) / Designee

2.2.1 Responsible for notifying ~~the Project Manager and~~ Site Manager of any event- that requires a ROR.

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2.2.2 Responsible for ensuring that notification of reportable events occurs within the required time frame.

2.2.3 Responsible for reviewing, evaluating and distributing ROR's.

2.2.4 Responsible for initiating root cause evaluations.

2.2.5 Responsible for ensuring corrective actions are implemented.

2.2.6 Responsible for forwarding reportable ROR's to the ALARA Committee with recommendations made for corrective actions.

2.3 Quality Assurance Coordinator / Designee

2.3.1 Responsible for review of ROR to determine if a Corrective Action Request is required.

2.3.2 Responsible for maintaining ROR records & documents in accordance with applicable regulatory requirements.

2.4 All Employees

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CIMARRON RADIATION PROTECTION PROCEDURES	KM-CI-RP-6 REVISION 5
PROCEDURE GENERATION, REVIEW AND APPROVAL	PAGE: 2 OF 6 DATE: 01.11.01

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## 1.0 PURPOSE

This procedure provides guidance for the generation, review and approval of Cimarron Radiation Protection Procedures to ensure that such procedures meet all regulatory requirements, are consistent in format, and are easy to understand.

## 2.0 RESPONSIBILITY

### 2.1 Radiation Safety Officer/Health Physics Supervisor (RSO/HPS) / Designee

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2.1.1 Responsible for approving all Cimarron Radiation Protection Procedures.

2.1.2 Responsible for overall generation, consistency, technical verification, impacts upon site operations, overall work flow, and implementation of Cimarron Radiation Protection Procedures.

2.1.3 Responsible for reviewing procedures for overall radiological health and safety.

2.1.4 Responsible for designating personnel to review procedures to ensure that procedures are compatible with all referenced documents.

2.1.5 Responsible for final resolution of any differences of opinion between the author and/or commenter regarding comment resolution.

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### 2.2 Quality Assurance Coordinator / Designee

2.2.1 Responsible for reviewing Cimarron Radiation Protection Procedures for compliance with the Cimarron Quality Assurance Plan and Procedures.

### 2.3 Authors and Reviewers

2.3.1 Responsible for ensuring that Cimarron Radiation Protection Procedures are technically correct, consistent in format and detail, easy to understand and perform correctly, and prepared in accordance with this procedure.

2.3.2 Responsible for coordinating procedure development and review with other departments.



**Divider Page**

**CIMARRON RADIATION  
PROTECTION PROCEDURES**

**CONTROL OF HEALTH PHYSICS  
PROCEDURES, RECORDS AND  
DOCUMENTS**

**KM-CI-RP-7  
REVISION: 5**

**PAGE: 2 OF 4  
DATE: 01.07.02**

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**1.0 PURPOSE**

This procedure provides guidance for the management and control of Cimarron Radiation Protection Procedures, records, forms and logs. This procedure applies to all documents and records generated in the performance of Cimarron Radiation Protection activities.

**2.0 RESPONSIBILITY**

**2.1 Site Manager / Designee**

2.1.1 Responsible for ensuring that equipment and staffing at the Cimarron Facility are adequate to manage and maintain radiation protection logs, records, and documents in accordance with this procedure.

2.1.2 Responsible for ensuring that Cimarron Radiation Protection personnel receive training for the correct generation, completion and storage of records/documents.

**2.2 Quality Assurance Coordinator / Designee**

2.2.1 Responsible for maintenance and control of radiation protection logs, records, and documents in accordance with this procedure and Quality Assurance Program requirements.

**2.3 Activity Supervisor / Designee**

2.3.1 Responsible for ensuring documentation for their respective projects is forwarded to Health Physics and/or Quality Assurance.

**2.4 Radiation Safety Officer / Health Physics Supervisor (RSO/HPS) / Designee**

2.4.1 Responsible for ensuring that health physics records/documents are maintained in accordance with the Cimarron Radiation Protection Program procedures.

2.4.2 Responsible for ensuring those hard-copies of health physics records/documents generated under the Cimarron Radiation Protection Program are properly reviewed and submitted to QA/QC Coordinator.

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**Divider Page**

CIMARRON RADI PROTECTION PROCEDURES	KM-CI-RP-10 REVISION 7
ALARA PROGRAM	Page 2 of 7 DATE: 01/07/02

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## 1.0 PURPOSE

This procedure establishes the requirements and provides guidance and administrative controls for implementing the Cimarron Corporation ALARA program in accordance with License SNM-928. Title 10, part 20 of the Code of Federal Regulations (10 CFR 20) requires the licensee to use procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as is reasonably achievable (ALARA). This procedure applies to all personnel involved in supervising, planning and/or performing work within the Cimarron Facility Radiologically Controlled Areas (RCA's).

## 2.0 RESPONSIBILITY

### 2.1 Project Manager / Designee

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- 2.1.1 Responsible for ensuring that the ALARA Policy is communicated to all employees.
- 2.1.2 Responsible for ensuring that the Radiation Safety Officer (RSO) or designee develops annual ALARA goals for the Cimarron Staff and are submitted to the ALARA Committee.
- 2.1.3 Responsible for approving the company ALARA goals.
- 2.1.4 Responsible for direct support of RSO to achieve ALARA Program goals and shall serve as Vice-Chairman of the ALARA Committee.

### 2.2 Radiation Safety Officer (RSO) / Health Physics Supervisor (HPS) / Designee

- 2.2.1 Responsible for developing annual ALARA goals.
- 2.2.2 Responsible for encouraging and enforcing Cimarron personnel compliance and participation with radiation protection policies and ALARA principles.
- 2.2.3 Responsible for the oversight of the ALARA Program
- 2.2.4 Responsible for scheduling and conducting ALARA Committee meetings.
- 2.2.5 Responsible for providing guidance, recommendations, and solutions for exposure reduction.
- 2.2.6 Responsible for participating in modification/design reviews for facilities and

**Divider Page**

**CIMARRON RADIATION PROTECTION  
PROCEDURES**

**ALARA COMMITTEE**

**KM-CI-RP-11  
REVISION 8  
PAGE: 2 OF 6  
DATE: 01/07/04**

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**1.0 PURPOSE**

The purpose of the Cimarron ALARA Committee is to provide timely and continuing review and evaluation of operations, projects, procedures, commitments and goals of the Cimarron Radiation Protection Program. The ALARA Committee is tasked with ensuring that the Cimarron Radiation Protection program policies incorporate ALARA and are consistent with regulatory and license requirements.

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**2.0 RESPONSIBILITY**

**2.1 ALARA Committee Members**

- 2.1.1 Responsible for attending ALARA Committee meetings.
- 2.1.2 Responsible for reviewing and approving radiation safety policies.
- 2.1.3 Responsible for advising Cimarron management on radiation safety matters.

**2.2 Radiation Safety Officer**

- 2.2.1 Responsible for acting as Chairman of the ALARA Committee.
- 2.2.2 Responsible for scheduling ALARA Committee meetings.
- 2.2.3 Responsible for recording meeting minutes and routing to the ALARA Committee members.
- 2.2.4 Responsible for tracking of ALARA goals and presentation of goals to the Committee.

**2.3 Project Manager**

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- 2.3.1 Responsible for acting as Vice-Chairman of the ALARA Committee.
- 2.3.2 Responsible for ensuring that Radiation Protection program implementation issues are brought to the attention of the ALARA Committee as necessary.

**CIMARRON RADIATION PROTECTION  
PROCEDURES**

**ALARA COMMITTEE**

**KM-CI-RP-11  
REVISION 3  
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Attachment 11-1

(EXAMPLE ONLY)

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

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

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.
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	Formatted Table
3.1 Does the proposed change, test, or experiment conflict with the ALARA principle or the decommissioning process?			
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?			
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?			
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?			

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	
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5.0 Comments:

6.0 Performed By (Signature/Date):

Corporate Management:		Date:	
Project Manager:		Date:	Deleted: Site
RSO:		Date:	

7.0 Implemented By and Date:

Site Manager:		Date:	Deleted: Health Physicist
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**CIMARRON RADIATION  
PROTECTION PROCEDURES**

**KM-CI-RP-13  
REVISION 1**

**ACCESS CONTROL**

**PAGE: 2 OF 11  
DATE: 02/19/11**

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**1.0 PURPOSE**

This procedure provides the access control requirements for entry/egress to and from the Cimarron facility. It is designed to ensure that all individuals have received appropriate training, qualification and authorization for entry. This procedure is applicable to all Cimarron personnel, visitors and contractors who frequent Restricted Areas/Radiologically Controlled Areas (RCA's). This procedure also provides posting requirements for Radiologically Controlled Areas.

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**2.0 RESPONSIBILITY**

**2.1 Site Manager / Designee**

2.1.1 Responsible for approving persons for access to facility properties.

2.1.2 Responsible for overall development, implementation and oversight of the Cimarron Access Control Program.

**2.2 Radiation Safety Officer/Health Physics Supervisor / Designee**

2.2.1 Responsible for approving training programs related to work within the RCA's.

Deleted: Restricted Areas or  
Radiological Control Area

2.2.2 Responsible for placing administrative holds on individuals when access needs to be restricted.

2.2.3 Responsible for ensuring that radiation workers, non-radiation workers, visitors and contractors have training appropriate to the level of access needed at the various areas of the Cimarron Facility.

2.2.4 Responsible for ensuring that appropriate physical/administrative controls and the associated postings are in place based upon regulatory requirements and survey results.

2.2.5 Responsible for administering restricted area entry visitor training as defined in 10 CFR 19.12.

2.2.6 Responsible for providing female visitors with training on Regulatory Guide 8.13 and Declared Pregnant Woman status for protection of the embryo/fetus.

CIMARRON RADIATION  
PROTECTION PROCEDURES

KM-CI-RP-13  
REVISION 2

ACCESS CONTROL

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2.3 Health Physics Technician / Designee

2.3.1 Responsible for periodic monitoring of individuals within the RCA's to ensure access control requirements are met.

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2.3.2 Responsible for ensuring that personnel are aware of the radiological and non-radiological conditions in areas.

2.3.3 Responsible for identification and posting of Radiologically Controlled Areas.

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2.4 Qualified Escorts

2.4.1 Responsible for maintaining positive control over the escorted individual such that he/she does not enter an unauthorized area.

2.4.2 Responsible for ensuring that the escorted individual has the required training and authorization to enter work areas.

2.4.3 Responsible for ensuring that the escorted individual has been issued the proper safety items and dosimetry.

2.4.4 Responsible for logging visitor background information.

2.4.5 Responsible for collecting dosimetry from visitors leaving the facility.

2.5 Cimarron Personnel

Deleted: employees

2.5.1 Responsible for attending assigned training classes.

2.5.2 Responsible for informing Health Physics of factors which may limit their entry into RCA's (i.e. medication, injuries, etc.)

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2.5.3 Responsible for complying with radiological postings and SWP requirements.

2.5.4 Responsible for notifying Health Physics personnel of unusual conditions.

2.5.5 Responsible for returning personal dosimetry at end of shift for (to) storage upon exit from RCA's.

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2.5.6 Responsible for complying with entry requirements for RCA's.

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CIMARRON RADIATION PROTECTION PROCEDURES	KM-CI-RP-13 REVISION 1
ACCESS CONTROL	PAGE: 4 OF 11 DATE: 02/09/01

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2.5.7 Responsible for monitoring and documenting materials entering and leaving the restricted areas to ensure that contamination/radiation is within prescribed limits.

2.6 Quality Assurance Coordinator / Designee

2.6.1 Responsible for document control and record retention in accordance with the Quality Assurance Program.

### 3.0 PRECAUTIONS

3.1 Appropriate personal protective equipment shall be worn when entering RCA's.

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3.2 Contaminated equipment and/or radioactive materials shall not be allowed into areas of the facility that have been released from the license or which have undergone final release surveys.

### 4.0 EQUIPMENT AND MATERIALS

4.1 Magenta (or black) and yellow tape.

4.2 Magenta (or black) and yellow rope or ribbon.

4.3 Signs.

4.4 Radioactive materials labels.

### 5.0 PROCEDURE

5.1 General Requirements

5.1.1 Cimarron personnel who normally work within restricted areas will be issued dosimetry.

5.1.2 Visitors that are issued a dosimetry badge shall surrender it to the qualified escort prior to leaving the facility.

5.1.3 Cimarron personnel shall store badges in proper storage locations prior to leaving the facility.

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CIMARRON RADIATION  
PROTECTION PROCEDURES

KM-CI-RP-13  
REVISION 2

ACCESS CONTROL

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5.1.4 Only properly trained or escorted personnel shall be permitted inside the RCA's.

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5.1.5 Unescorted individuals working in the Radiologically Controlled Area shall be required to receive radiation worker training.

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5.2 Requirements for Access to RCA's.

Deleted: Restricted Areas

5.2.1 Individuals granted unescorted access to the RCA's shall be provided with dosimetry which shall be stored at the main access control point when not in use.

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5.2.2 Unescorted individuals entering the RCA's shall meet the following requirements:

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- 10 CFR 19.12 Training
- Radiation Worker Training
- OSHA Right-to Know Training (29 CFR 1910.120)
- Reg. Guide 8.13 Training (females only)
- Physical Examination and Respirator Qualification (when respiratory protective equipment required)
- Obtain Dosimetry
- Baseline bioassay ~~(may be waived by RSO)~~ <sup>or written waiver by RSO</sup> \*

5.2.2.1 Individuals completing the requirements of 5.2.2 may function as qualified escorts.

5.2.3 Visitors, Cimarron personnel, and contractors who have not completed all of the requirements of 5.2.2 may be granted access to the RCA's provided they comply with the following:

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- Obtain approval from the RSO/HPS or designee
- Have a qualified escort
- Complete 10 CFR 19.12 Training
- Complete Reg. Guide 8.13 Training (females only)
- Obtain Dosimetry
- Log-in/out at the main entrance

5.2.4 The RSO/HPS or designee shall have authority to waive bioassay requirements for individuals. Waivers shall be documented. \*

CIMARRON RADIATION  
PROTECTION PROCEDURES

KM-CI-RP-13  
REVISION 7

ACCESS CONTROL

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5.2.5 Personnel who have been granted unescorted access to the RCA's should keep Health Physics informed of any conditions which may affect their being allowed to enter such areas.

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5.2.6 The RSO/HPS should be notified of the following prior to entering RCA's:

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5.2.6.1 Medical administration of radiopharmaceutical.

5.2.6.2 Presence of open wounds.

5.2.6.3 Upon returning to the Cimarron Facility after or while being monitored for radiation exposure at another facility.

5.2.6.4 Pregnancy, if lower dose levels to the embryo/fetus is desired.

5.3 Additional Requirements for Access to Radiologically Controlled Areas

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

5.3.2 Boundaries shall be established in such a manner that a person cannot inadvertently enter an RCA.

5.3.3 Postings shall be magenta (or black) and yellow in color, contain the conventional three-bladed radiation symbol, contain the word "Caution" or "Danger", and identify the specific type of Radiologically Controlled Area.

5.3.4 Unescorted individuals entering RCA's shall comply with all written instructions from the applicable SWP.

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5.3.5 Posting of RCA's shall be performed in accordance with regulatory requirements (See Attachment 13-1).

5.3.6 Protective clothing and personnel contamination monitoring shall be required when working in Contamination Areas as directed by RSO (or designee) and/or the applicable SWP for that area.

5.3.7 Airborne Radioactivity Areas shall be roped off and posted with radiological control tape, ropes and caution signs.

CIMARRON RAD. MON PROTECTION PROCEDURES	KM-CI-RP-13 REVISION 2
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# ATTACHMENT 13-1 POSTING REQUIREMENTS

## POSTING WORDING

## REQUIREMENT

"CAUTION, RADIATION AREA"

ACCESSIBLE AREA IN WHICH RADIATION LEVELS COULD RESULT IN AN INDIVIDUAL RECEIVING 5 mrem IN ONE HOUR AT 30 cm. FROM THE RADIATION SOURCE OR SURFACE THAT THE RADIATION PENETRATES.

"CAUTION, AIRBORNE RADIOACTIVITY AREA" or  
"DANGER, AIRBORNE RADIOACTIVITY AREA"

LICENSED AIRBORNE RADIOACTIVE MATERIALS IN A ROOM, ENCLOSURE, OR AREA EXISTS IN CONCENTRATIONS EXCEEDING ONE DAC, OR SUCH THAT AN INDIVIDUAL COULD RECEIVE AN INTAKE OF 0.6% OF THE ALI (12 DAC-HRS) IN ONE WEEK.

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"CAUTION, RADIOACTIVE MATERIAL(S)" or "DANGER, RADIOACTIVE MATERIAL(S)"

AREAS OR ROOMS IN WHICH THERE IS USED OR STORED AN AMOUNT OF LICENSED MATERIAL EXCEEDING 10 TIMES THE QUANTITY OF SUCH MATERIAL IN APPENDIX C TO 10 CFR 20

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NOTE: EXEMPTIONS TO POSTING REQUIREMENTS ARE FOUND IN 10 CFR 20.1903.

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CIMARRON RADIATION PROCEDURES	TECTION	KM-CI-RP-16 REVISION: 5
ADMINISTRATIVE AND REGULATORY DOSE LIMITS		PAGE: 2 OF 9 DATE: 02/09/01

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## 1.0 PURPOSE

This procedure sets forth regulatory and administrative radiation dose limits for the restricted and controlled areas at the Cimarron Facility. Administrative limits are used to ensure that the regulatory limits of 10 CFR 20 are not exceeded and to trigger investigative actions for individuals approaching regulatory dose limits.

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2.1.2. Responsible for providing appropriate support, resources at the site level in support of the radiation protection program and ALARA measures.

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## 2.0 RESPONSIBILITY

### 2.1 Project Manager

2.1.1 Responsible for providing corporate resources to ensure doses are maintained ALARA.

### 2.2 Site Manager / Designee

2.2.1 Responsible for providing appropriate support and resources at the site level in support of the radiation protection program and ALARA measures.

### 2.3 Radiation Safety Officer / Health Physics Supervisor (RSO/HPS) / Designee

2.3.1 Responsible for development and implementation of Administrative Dose Limits.

2.3.2 Responsible for oversight of the Radiation Protection Program with respect to dose limits.

2.3.3 Responsible for directing the usage of special dosimetry such as extremity monitoring.

2.3.4 Responsible for providing the methodology for performing dose calculations.

2.3.5 Responsible for review and approval of exposure data.

2.3.6 Responsible for investigating regulatory limits which are exceeded, including documentation of such results.

2.3.7 Responsible for approving extensions to administrative dose limits.

2.3.8 Responsible for notifications and reports to regulatory agencies.

2.3.9 Responsible for notifications to upper management when administrative and-



**CIMARRON RADIATION PROTECTION PROCEDURES**

KM-CI-RP-16  
REVISION: 5

**ADMINISTRATIVE AND REGULATORY DOSE LIMITS**

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regulatory dose limits are exceeded.

2.4 All Facility Personnel

2.4.1 Responsible for notifying the RSO/HPS when their physician has prescribed radionuclides for treatment or diagnostic purposes.

2.4.2 Responsible for wearing assigned dosimetry in proper locations as required.

2.4.3 Responsible for storing assigned monitoring devices in designated storage areas when not in use.

2.4.4 Responsible for reporting off-scale, lost, damaged dosimetry, or unusual dosimetry readings to the RSO/HPS.

2.5 Pregnant Women

2.5.1 Responsible for notifying the RSO/HPS, in writing, if they wish to declare their pregnancy.

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**3.0 PRECAUTIONS**

3.1 Minors shall not be employed to work in the restricted areas at the Cimarron facility. However, they may enter as visitors when approved by the Site Manager.

3.2 To assure adequate protection of minors and the unborn, the performance of emergency services shall be limited to non-pregnant (pregnancy undeclared) adults.

**4.0 EQUIPMENT AND MATERIALS**

N/A

**5.0 PROCEDURE**

**5.1 Occupational Dose Limits for Adults**

5.1.1 Whole Body - The more limiting of either of the following:

5.1.1.1 Total effective dose equivalent (TEDE) equal to 5 rem per year or.

5.1.1.2 Total organ dose equivalent (TODE) equal to 50 rem per year.

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CEMARRON RADIAT. PROTECTION PROCEDURES	KM-CI-RP-17 REVISION 3 <i>4</i>
EXTERNAL EXPOSURE MONITORING	PAGE: 2 OF 15 DATE: 02/09/04 <i>5/2/07</i>

## 1.0 PURPOSE

This procedure provides instructions for the routine issue and use of radiation dosimetry devices, establishing dose records, routine primary dosimetry exchange, and final termination of dosimetry.

## 2.0 RESPONSIBILITY

2.1 The Radiation Safety Officer / HP Supervisor (RSO/HPS) / Designee is responsible for directing activities associated with this procedure including:

- 2.1.1 Maintaining dosimetry records.
- 2.1.2 Routine issue and changeout of badges.
- 2.1.3 Maintaining an appropriate inventory of dosimetry devices from the vendor.
- 2.1.4 Issuing all required reports accurately and on schedule.
- 2.1.5 Administering visitor training.
- 2.1.6 Issuing visitor dosimeters in accordance with this procedure.

2.2 Qualified Escorts are responsible for:

- 2.2.1 Maintaining positive control over the escorted person such that he/she does not enter an unauthorized area and complies with all radiation control posting and procedures.
- 2.2.2 Obtaining approval from the RSO/HPS for the escorted individual to enter the area.

2.3 *Personnel*  
All ~~Employees~~ are responsible for:

- 2.3.1 Wearing assigned dosimetry when required.
- 2.3.2 Storing assigned monitoring devices in designated storage areas when not in use.
- 2.3.3 Reporting lost or, damaged dosimetry to Health Physics.

CIMARRON RADIAT. PROTECTION PROCEDURES	KM-CI-RP-17 REVISION 3
EXTERNAL EXPOSURE MONITORING	PAGE: 4 OF 15 DATE: 02/09/04

#### 4.0 EQUIPMENT AND MATERIALS

- 4.1 Dosimeters (Film Badge or TLD's)

#### 5.0 PROCEDURE

##### 5.1 General Requirements

- 5.1.1 All individuals who enter the ~~Restricted Area~~ <sup>AN RCA</sup> shall be considered occupationally exposed and be monitored by issuance of a personnel monitoring equipment. *(inclusion...)*

##### 5.1.2 Primary Dosimetry shall be:

5.1.2.1 Capable of measuring the deep dose equivalent (DDE) at a tissue depth of one centimeter, when monitoring is required.

5.1.2.2 Capable of measuring the eye dose equivalent (LDE) at a tissue depth of 0.3 centimeter, when monitoring is required.

5.1.2.3 Capable of measuring the skin dose equivalent (SDE) at a tissue depth of 0.007 centimeter, when monitoring is required.

- 5.1.3 External Exposure monitoring is not required outside the RCA, except for personnel performing duties that may directly result in occupational exposure (e.g. surveying a vehicle carrying radwaste).

~~Deleted: Restricted Area~~

- 5.1.4 ~~An employee~~ <sup>Fac. Person</sup> may be considered occupationally exposed while inside the RCA, and a member of the public while not in the RCA when job duties outside the RCA do not involve exposure to radiation.

NOTE: If a prospective assessment determines that external monitoring is not required and subsequent evaluation indicates that personnel monitoring is required, the unmonitored dose shall be estimated and recorded in the individual's dosimetry record and individual monitoring shall be initiated.

~~Deleted: individuals~~

- 5.1.5 The purpose of the personnel dosimeter is to determine the accumulated dose of the individual over a period of time for official dose records. All personnel dosimeters (film badge or TLD) shall normally be read at least quarterly. Dosimeters may be read more often, but unnecessary reading should be avoided.

##### 5.1.6 Personnel monitoring equipment shall be placed as follows:

5.1.6.1 At the location on the body expected to receive the highest whole body

CIMARRON RADIATION PROTECTION PROCEDURES	KM-CI-RP-17 REVISION 3	4
EXTERNAL EXPOSURE MONITORING	PAGE: 5 OF 15 DATE: 02/09/04	5/1/02

exposure.

5.1.6.2 When exposure conditions will lead to relatively uniform whole body dose (deep dose equivalent), the dosimeter shall be worn on the front of the body between the neck and waist.

5.1.6.3 When exposure conditions will lead to non-uniform dose to the whole body, the dosimeter shall be moved to the whole body location of highest dose.

5.1.7 Extremity monitoring shall be monitored whenever an individual is likely to receive an extremity dose which exceeds 10 percent of the annual administrative limit (40 rem).

5.1.8 Eye Dose Monitoring shall be monitored whenever an individual is likely to receive an eye (lens) dose which exceeds 10 percent of the annual administrative limit (12 rem).

5.1.9 Skin Monitoring shall be monitored whenever an individual is likely to receive a skin dose which exceeds 10 percent of the annual administrative limit (40 rem).

5.1.9.1 The dosimeter shall not be worn inside anti-contamination clothing or placed in pockets when any bare skin is exposed to beta radiation.

5.1.9.2 The film badge or TLD may be placed in a thin plastic bag to protect it from contamination, but the beta window shall be kept facing away from the body at all times.

## 5.2 ~~Routine~~ Dosimetry Badge Issue

5.2.1 ~~Assign a permanent employee number to the individual (if an employee).~~

5.2.2 Select a ~~temporary~~ badge that is valid for issue during the current monitoring period, that has all filters and windows in place, and that shows no apparent signs of external damage.

5.2.3 Label the badge with the individual's name and ~~(other identifying number (e.g. employee number, badge number, etc.))~~.

5.2.4 Instruct the individual where to pick up/drop off the badge when entering/exiting.

5.2.5 Instruct the individual on the proper methods for wearing the badge.

*Assign a temporary badge to personnel working in RCA's of working with radioactive materials*

*bag in issue log*

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*Jim Rco*

CIMARRON RADIAT. PROTECTION PROCEDURES	KM-CI-RP-17 REVISION 3
EXTERNAL EXPOSURE MONITORING	PAGE: 6 OF 15 DATE: 02/09/04

5.2.6 Advise the individual of his/her current available dose.

5.2.7 Fill out a dosimetry request for the individual and forward to the dosimetry vendor.

5.2.8 Exchange the temporary badge for a regular badge at the next regular badge changeout.

### 5.3 Dosimetry Changeout

#### 5.3.1 Preparation for Changeout

5.3.1.1 Obtain a badge ~~assignment~~ <sup>name</sup> list from the vendor to ensure the correct assignment of badges.

5.3.1.2 Visually check each badge against the ~~report~~ <sup>Issue Log</sup> for name and badge number.

5.3.1.3 Correct any badges which are mislabeled and resolve any errors where the badge label does not match the information on the ~~report~~ <sup>Log</sup>.

5.3.1.4 Assign an alternate badge to each individual who does not have one and who is expected to be in areas requiring monitoring during the next monitoring period.

#### 5.3.2 Badge Changeout

5.3.2.1 Ensure each badge to be used during the next exposure period shows no sign of external damage, such as missing filters or windows.

5.3.2.2 If a badge is damaged, ~~assign another badge~~ and remove the damaged badge from service.

5.3.2.3 Exchange each current badge in the badge rack with the corresponding replacement badge. The monitoring period always ends and starts at midnight. The physical badge exchange may be performed any time during the 24-hour window either before or after midnight.

5.3.2.4 If dosimetry is not in the badge racks, indicating that the old dosimeter may be in use, do not place new dosimetry in the badge rack. New dosimetry should be returned to the dosimetry office until the old

CIMARRON RADIATION PROTECTION PROCEDURES	KM-CI-RP-17 REVISION 3
EXTERNAL EXPOSURE MONITORING	PAGE: 7 OF 15 DATE: 02/09/04

dosimetry is accounted for.

5.3.2.5 ~~Ensure the names and badge numbers match for each badge exchanged.~~

5.3.2.6 Exchange control badges and badges assigned for purposes other than personnel monitoring as applicable (e.g. emergency and area monitoring badges).

5.3.2.7 Assemble all <sup>used</sup> ~~old~~ badges and inventory them against the report of current badge assignments and prepare a list of missing badges.

5.3.2.8 Attempt to recover the missing badges, ~~by performing the following:~~

- Review the exposure investigation reports to account for any ~~badges that might have been lost during the past issue period.~~
- Contact individuals who did not have their dosimetry exchanged during the normal changeout and attempt to retrieve their dosimetry.

5.3.2.9 Prepare a final list of badges that are missing. All badges shall be accounted for by either being inventoried or having an investigation initiated (~~See Attachment 17-1.~~)

### 5.3.3 Shipping Dosimetry to the Vendor

5.3.3.1 After the routine badge exchange is complete, collect all badges issued to personnel during the prior monitoring period, all ~~unissued~~ badges, all badges removed from service, and all badges issued other than to personnel.

5.3.3.2 Badges shall be surveyed by health physics for contamination prior to being packaged for shipment to the vendor and documented accordingly. Contaminated badges shall be reported to the RSO/HPS and an attempt made to remove the radioactive contamination.

5.3.3.3 Badges should be shipped to the vendor in the most expeditious manner available as badges are normally processed on a first come - first serve basis.

5.3.3.4 The vendor packaging and shipping instructions should always be

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5.5.5 Instruct the visitor on how to wear the dosimeter.

5.5.6 Instruct the visitor and escort to return the dosimetry to Health Physics upon completion of the visit.

5.6 Visitor Dosimetry Return

5.6.1 Upon completion of the visit, collect dosimetry from the visitor.

5.6.2 Record date and time the dosimeter was returned the Visitor's Log.

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5.7 Declaration of Pregnancy

5.7.1 Any woman who wishes to declare pregnancy for purposes of protection of the embryo/fetus shall complete Section I of the Declaration of Pregnancy (Attachment 17-1) and deliver it to the RSO/HPS.

5.7.2 A woman who has already declared pregnancy with a prior employer before coming to Cimarron must still complete Section I of Attachment 17-1. In such cases, the date of declaration shall be the date the pregnancy is declared to Cimarron.

5.7.3 The RSO/HPS shall:

5.7.3.1 Acknowledge the declaration by completing Section II of Attachment 17-1.

5.7.3.2 Ensure the DPW is not assigned jobs or tasks involving exposure to radiation until her dose margin for the remainder of the pregnancy has been determined.

5.7.4 The RSO/HPS, upon receipt of the Declaration of Pregnancy, will determine the dose from conception to the declaration date and assign a dose to be allowed for the remainder of the pregnancy.

5.7.5 If it is determined the DPW has exceeded 450 mrem between the date of conception and declaring pregnancy she will be allowed no more than 50 mrem for the remainder of the pregnancy.

5.8 Determination of Dose Between Conception and Declaration Dates



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- 5.8.1 End any open exposure period and read all assigned dosimeters on the declaration date.
- 5.8.2 Perform bioassay monitoring (in-vivo and/or in-vitro) on the DPW, if she is a Radiation Worker and was involved in activities that could result in internal exposure, as soon as can be arranged after the declaration date.
- 5.8.3 If the conception date falls in the middle of an exposure period, use estimation methods to determine the dose from conception until primary dosimetry results are available. In the absence of information to the contrary, assume uniform dose rate throughout the exposure period during which the conception date falls and prorate the embryo/fetus dose based on the deep dose equivalent for the DPW.
- 5.8.4 If the DPW has ever had occupational internal exposure at Cimarron, calculate the estimated dose from any residual radionuclide body burden.
- 5.8.5 Determine the amount of occupational exposure, if any, received at other facilities between the dates of conception and declaration based on NRC Form 4 (or equivalent) for the DPW. If the conception date falls in the middle of an exposure period and it cannot be determined how much dose was received before conception, assume that the dose was received at a uniform rate and prorate the dose to the embryo/fetus.
- 5.8.6 Determine the remaining dose permitted during the term of pregnancy by subtracting the total effective dose equivalent to date from 500 mrem.
- 5.8.7 If the dose to the embryo/fetus exceeds or is within 50 mrem of the dose limit at the time the pregnancy is declared, the embryo/fetus may receive up to an additional 50 mrem during the remainder of the pregnancy.

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#### 5.9 Limiting Dose to the Embryo/Fetus

- 5.9.1 Any DPW shall be issued a film badge or TLD. *if working in an RCA or handling radioactive materials*
- 5.9.2 The supervisor or manager shall limit the dose to the DPW to ensure the remaining dose is not exceeded and that uniform monthly exposures are received.
- 5.9.3 Efforts shall be made to avoid substantial variation above a uniform monthly exposure rate to the embryo/fetus of a DPW (e.g. exposures above about 55 mrem in any month should be avoided).

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5.9.4 If appropriate to ensure the dose limits are not exceeded the DPW may be reassigned to another position with no loss of pay.

#### 5.10 Termination of DPW Status

5.10.1 Upon returning to work after the birth or if the worker no longer wants DPW status for protection of the embryo/fetus, the worker shall notify the RSO/HPS in writing that she wishes to be removed from DPW status using Attachment 17-2. Notification to be Removed from the Declared Pregnant Woman Status).

5.10.2 The RSO/HPS will ensure Section IV of the Declaration of Pregnancy (Attachment 17-1) is completed and retained in the individual dosimetry file.

### 6.0 RECORDS

6.1 Attachment 17-1, "External Dose Evaluation Report" shall be placed in individual dosimetry files, as applicable.

6.2 Attachment 17-1 "Declaration of Pregnancy" (and revocation if applicable) shall be placed in the individual's exposure history file.

6.3 The dose to the embryo/fetus shall be retained with the exposure history records of the declared pregnant woman.

6.4 Logs and records associated with this procedure (e.g., dosimeter issue, visitor, etc.) shall be maintained in accordance with KM-CI-RP-19, "Dosimetry Records."

### 7.0 REFERENCES

7.1 10 CFR Part 20, "Standards for Protection Against Radiation"

7.2 Kerr McGee Radioactive Materials License SNM-928

7.3 U.S. NRC Regulatory Guide 8.13, "Instruction Concerning Prenatal Radiation Exposure"

7.4 KM-CI-RP-19, "Dosimetry Records"

7.5 KM-CI-RP-46, "Calibration and Use of Radiation Detection Instrumentation"  
Attachment 17.1

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8.0 ATTACHMENTS

- 8.1 Attachment 17-1. ~~External Dose Evaluation Report~~
- 8.2 Attachment 17-1. Declaration of Pregnancy
- 8.3 Attachment 17-2. Notification to be Removed from Declared Pregnant Woman Status

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Attachment 17-1

EXTERNAL DOSE EVALUATION REPORT

NAME \_\_\_\_\_ SOCIAL SECURITY NO. \_\_\_\_\_

DATE OF BIRTH \_\_\_\_\_ BADGE NO. \_\_\_\_\_

REASON: \_\_\_\_\_

Lost \_\_\_\_\_

Damaged \_\_\_\_\_

Other \_\_\_\_\_

SUMMARY OF AVAILABLE RECORDS OF EXPOSURE

VISITORS (TEMP) BADGE \_\_\_\_\_ ROOM BADGE \_\_\_\_\_ AREA BADGE \_\_\_\_\_

CO-WORKERS \_\_\_\_\_

ESTIMATED EXPOSURE \_\_\_\_\_ MREM

METHOD OF ESTIMATION: \_\_\_\_\_

REMARKS: \_\_\_\_\_

H.P. TECHNICIAN \_\_\_\_\_ DATE \_\_\_\_\_

RSO/HPS \_\_\_\_\_ DATE \_\_\_\_\_

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Attachment 17-2  
Declaration of Pregnancy

SECTION I	
Name: _____	Department: _____
Estimated Date of Conception: _____	
Estimated Date of Birth: _____	
Declaring Individual's Signature: _____	Date: _____

SECTION II
I acknowledge that the above named individual has formally declared her pregnancy. As a result, more stringent occupational dose limits will apply. No further entry into airborne radioactivity areas or high radiation areas will be allowed until after the gestation period has ended. I understand work assignments shall not require access to any RCA's until her dose margin for the remainder of the pregnancy has been determined.
RSO/HPS Signature _____ Date: _____

SECTION III (Health Physics Use - Prenatal)
DDE for Mother from Between Date of Conception and Declaration: _____
Dose to Embryo/Fetus From Radionuclides Deposited in Itself: _____
Between the Date of Conception and Declaration: _____
Dose to Embryo/Fetus From Radionuclides Deposited in the Mother: _____
Between the Date of Conception and Declaration: _____
Embryo/Fetal TEDE Between Date of Conception and Declaration: _____
Remaining TEDE Margin for the Gestation Period: _____
Monthly Administrative Dose Limit: _____
Reviewed by RSO/HPS: _____ Date: _____

SECTION IV (Health Physics Use - Postpartum)
DDE for Mother During the Gestation Period: _____
Dose to Embryo/Fetus From Radionuclides Deposited in the Mother: _____
During the Gestation Period: _____
Embryo/Fetal TEDE for the Gestation Period: _____
Reviewed by RSO/HPS: _____ Date: _____

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Attachment 17.3

Notification to be Removed from Declared Pregnant Woman Status

<b>SECTION I</b>	
Name: _____	
SSN: _____	
I am hereby notifying Health Physics that I wish to be removed from DPW status. I understand that my occupational administrative TEDE limit at Cimarron will be reestablished at 4 rem.	
Employee's Signature: _____	Date: ____/____/____
RSO/HPS Signature: _____	Date: ____/____/____
<b>SECTION II</b>	
The above named worker has been removed from DPW status and applicable dose limits have been reestablished.	
RSO/HPS or Designee: _____	Date: ____/____/____
<b>SECTION III</b>	
SECTION IV of the Declaration of Pregnancy has been completed.	
RSO/HPS or Designee: _____	Date: ____/____/____
Form Routing: 1) Originator 2) Exposure History Record	

**Change #5**

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

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

Revision to Radiation Procedure KM-CI-RP-63 Operation of Tennelec Alpha Beta Counting System

## 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 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.


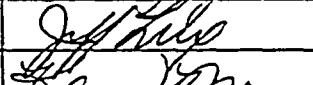
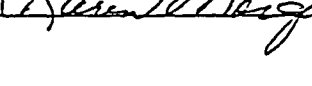
## 4.0 Results:

Revision, Test, or Experiment Approved:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
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## 5.0 Comments:

Revisions to procedure reflect the upgrades in the software and the methods used to prep and count water samples.

## 6.0 Performed By (Signature/Date):

Corporate Management:		Date: 4/19/04
Project Manager:		Date: 04/19/04
RSO:		Date: 4/19/04

## 7.0 Implemented By and Date:

Site Manager:		Date: 4/21/04
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Change Evaluation  
ALARA Committee Approval of Revision to  
(Radiation Protection Procedure KM-CI-RP-63 Tennelec Operations)  
March 30, 2004

**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 Procedures:
  - Instructions for operating the upgraded eclipse software.
  - Instructions for prepping and running the analytical methods of water samples.

**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 – *satisfied.*
  - 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 – *satisfied.*
  - 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) and Radiation Protection Procedures without regulatory approval.

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CALIBRATION AND OPERATION OF THE TENNELEC LB-5100/W ALPHA AND BETA COUNTING SYSTEM	PAGE: 1 of 17 DATE:03/22/04

REVIEWED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
QUALITY ASSURANCE COORDINATOR

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
RADIATION SAFETY OFFICER

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## **1.0 PURPOSE**

- 1.1 This procedure provides information and instructions for performing the calibration, daily reliability checks, sample analysis and routine operation of the Tennelec LB-5100-W Eclipse low background alpha and beta proportional counting system.

## **2.0 RESPONSIBILITY**

- 2.1 Radiation Safety Officer (RSO) / Health Physics Supervisor / Designee
- 2.1.1 Responsible for oversight and development of instrumentation procedures.
  - 2.1.2 Responsible for implementation of the requirements of this procedure.
  - 2.1.3 Responsible for using and calibrating instruments and generating records in accordance with this procedure.
- 2.2 Quality Assurance Coordinator / Designee
- 2.2.1 Responsible for records/document maintenance and control in accordance with KM-CI-RP-7 and the Quality Assurance Plan and Procedures.

## **3.0 PRECAUTIONS**

- 3.1 The P-10 gas regulator outlet pressure should be between 5 and 10 pounds per square inch (psi) of gas. The gas flow to the detector is 0.1-0.2 standard cubic feet per hour (SCFH), with optimum at 0.15 SCFH.
- 3.2 When loading and unloading samples, avoid getting clothing and fingers caught in the Tennelec re-stack system.
- 3.3 Voltage Plateaus, Chi Square tests, and Efficiency determinations will be performed after any maintenance that could affect unit calibrations.
- 3.4 Background and efficiency source checks will be performed after change out of the P-10 gas bottle.

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#### **4.0 EQUIPMENT AND MATERIALS**

- 4.1 Tennelec LB-5100-W Eclipse counting system
- 4.2 Sample carriers & Group plates
- 4.3 Syringes and filters
- 4.4 Regulated P-10 counting gas
- 4.5 Planchets (Regular 1/8" and Deep Dish 1/4")
- 4.6 Certified Alpha and Beta Check sources
  - 4.6.1 Pu-239 (Alpha) 5,870 DPM (or equivalent)
  - 4.6.2 Tc-99 (Beta) 10,200 DPM (or equivalent)
- 4.7 Computer and printer
- 4.8 Calibration sticker

#### **5.0 PROCEDURE**

- 5.1 Overview
  - 5.1.1 The Tennelec Eclipse program is a low background alpha and beta counting system designed to count and document radioactivity and activity concentration in low level samples (air, smear, dried water).
  - 5.1.2 The Tennelec Group Plate Alignment is illustrated on Attachment 63-1.
  - 5.1.3 Verify P-10 gas regulator outlet pressure is between 5 and 10 PSI and that gas flow to the detector is between 0.1 and 0.2 SCFH prior to daily operation (1.5 SCFH is optimum). Adjust as necessary.
- 5.2 Performing Voltage Plateaus

A high voltage plateau will be performed on the Tennelec LB-5100 counting system on a yearly basis. A plateau concurs when the count rate remains constant even though the

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voltage is increased. A plateau will appear as a straight line on the graph parallel to the base.

- 5.2.1 Load the alpha source in the sample changer behind a Group plate and then load the beta source in the sample changer behind a different Group plate then place the End plate.
- 5.2.2 From the Main screen (Desktop), double click on the ECLIPSE PROGRAM icon.
- 5.2.3 Select and click on GO sign located on the toolbar.
- 5.2.4 When the menu containing the different types of count procedures appear, select the Alpha Plateau procedure.
- 5.2.5 Select the Group being used for that plateau.
- 5.2.6 Click on the OK button.
- 5.2.7 Repeat steps 5.2.2 through 5.2.6 for the Beta Plateau.
- 5.2.8 The Eclipse software will select an operating voltage. If the voltage is acceptable (700 to 900 alpha, 1350 to 1600 beta or alpha-beta simultaneous mode), click on the OK button.

**Note: The Beta Voltage will be used for the Alpha-Beta simultaneous mode.**

- 5.2.9 If the voltage setting needs to be manually set:
  - 5.2.9.1 Select the Plateau Batch number from the open file menu.
  - 5.2.9.2 Click on the Plateau tab.
  - 5.2.9.3 Click mouse pointer on Plateau graph to desired voltage wanted.
  - 5.2.9.4 Click on the Use Chart Selection button.

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5.2.9.5 Click the update button to save changes.

5.2.9.6 Click on the Print Icon to print the plateau.

5.2.9.7 Close out of window.

**NOTE: VOLTAGE SHOULD NEVER BE SET TO RUN OVER 1650 VOLTS**

### 5.3 Monthly Efficiency Determination and Chi Square Tests

5.3.1 Monthly 95% Confidence Level Chi Squares (Attachment 63-2 or equivalent) will be performed using alpha and beta sources in a standard (1/8" depth) and when needed in the deep-dish (1/4" depth) planchet. Control Charts (Attachment 63-3 or equivalent) will be used to monitor and record daily source checks.

5.3.2 Place the alpha source face up in the desired planchet in the carrier then the beta source in the desired planchet carrier on the right-hand sample stacker.

5.3.3 Place a GROUP plate in front of the planchet containing the alpha source.

5.3.4 Place a different GROUP plate in front of the planchet containing the beta source.

5.3.5 Place an END plate behind the planchet containing the beta source.

5.3.6 Click on the green GO sign located on the tool bar.

5.3.7 When the menu containing the different types of count procedure appears, select the procedure used for counting the alpha source.

5.3.8 Click on the OK button to start the efficiency run.

5.3.9 Click on the green GO sign located on the tool bar.

5.3.10 When the menu containing the different types of count procedure appears, select the procedure used for counting the beta source.

5.3.11 Click on the OK button. The beta source will start counting after the alpha



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source count's end.

- 5.3.12 After the results are printed out enter the results onto the appropriate Chi Test spreadsheet.(Attachment 63-2 or equivalent)
- 5.3.13 Repeat steps 5.3.2 to 5.3.12 if another Chi Test is needed for the 1/4" plachets.
- 5.3.14 Review the reported efficiency results. The acceptance range for the Alpha efficiency (1/8-inch) is 36 to 41 %. The acceptance range for the Beta efficiency (1/8-inch) is 39 to 43 %. The acceptance range for the Alpha efficiency (1/4-inch) is 28 to 32%. The acceptance range for the Beta efficiency (1/4-inch) is 31 to 35%.
- 5.3.15 If both efficiencies are within their respective acceptance ranges, file the results and proceed to step 5.4.
- 5.3.16 If either of the reported efficiencies does not fall within the specified acceptance ranges, re-run the efficiency routine per steps 5.3.2 through 5.3.12.
- 5.3.17 If the results of the second efficiency run are within the acceptance range, proceed to step 5.4. If either of the efficiencies from the second run are outside of the acceptance range, notify the RSO/Designee and perform corrective action as directed.
- 5.3.18 Document actions taken on Tennelec count sheet and instrument logbook.
- 5.4 Daily Background Count Rate Determination and Reliability Checks.
  - 5.4.1 Load the background planchet into a numbered sample carrier.
  - 5.4.2 Load the standard Alpha and Beta sources into standard sized (1/8 inch) planchets for routine analysis or 1/4 inch planchets for special analysis and place into numbered carriers.
  - 5.4.3 Load the right side sample stacker (from bottom to top) in the following manner: (EXAMPLE ONLY)
    - 5.4.3.1 GROUP A plate

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- 5.4.3.2 Background planchet carriers
- 5.4.3.3 GROUP B plate
- 5.4.3.4 Standard alpha source carrier
- 5.4.3.5 GROUP C plate
- 5.4.3.6 Standard beta source carrier
- 5.4.3.7 END plate (or follow with the subsequent sample groups and carriers followed by an END plate after the last sample to be counted)
- 5.4.4 Click on the green GO sign located on the tool bar.
- 5.4.5 When the menu containing the different types of count procedures appears, select the count procedure created for taking daily background counts.
- 5.4.6 Select group tray letter.
- 5.4.7 Click on the OK button to start the count.
- 5.4.8 Repeat steps 5.4.4 to 5.4.7 for alpha and beta checks.
- 5.4.9 Review background results and if the count rate (cpm) is  $>0.8$  for Alpha or  $>3.0$  for Beta, clean the planchet with a damp kimwipe, let dry and run another background count. If results are  $<0.8$  cpm Alpha and  $<3.0$  cpm Beta log on the Monthly Control Chart for that day and planchet type. File data sheet in control folder. If second count of planchets after cleaning shows the results  $>0.8$  cpm Alpha and or  $>3.0$  cpm Beta notify RSO/Designee.
- 5.4.10 If either of the recorded source count rates is not within the  $\pm 2\sigma$  range repeat the applicable source check one additional time. If the second source check is not within the  $\pm 2\sigma$  range, notify the RSO/Designee for corrective actions.
- 5.4.11 Document actions taken on the Tennelec count sheet when response check results are not within the normal  $\pm 2\sigma$  operational range. If repairs are made in order to correct the problem document those actions in the instrument log book.
- 5.4.12 If the source count rates are within the  $\pm 2\sigma$  range record the source check

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results on the Monthly Control Chart.

- 5.4.13 The monthly 95% confidence level chi square test shall be within the annual calibration 95% confidence level.
- 5.4.14 The RSO or designee shall review all daily response checks, monthly chi test and yearly calibrations.
- 5.4.15 A current calibration sticker shall be affixed to the instrument.
- 5.4.16 Click on the DB Utilities button and update with the new calibration date and removal date.

#### 5.5 Minimum Detectable Activity (MDA)

- 5.5.1 The minimum detectable activity level is automatically calculated in the report program by using the formula on Attachment 63-4.

**NOTE: The Tennelec Shall Be Within Current Calibration Criteria With Daily Background And Source Checks Run Prior To Running Sample Analysis.**

#### 5.6 Counting & Analyzing Smear Samples

- 5.6.1 Place the smear samples in planchets behind a GROUP tray and place an END plate after the last planchet.
- 5.6.2 Click on the green GO sign located on the tool bar and select the procedure created to count smear samples and click on the OK button.
- 5.6.3 After the samples have finished counting and the report has printed. document the results on to a field log sheet and label printed result sheet with information on type or area smears were taken.
- 5.6.4 Review results and field sheet for proper information and turn in to RSO/Designee for review and approval of data.

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## 5.7 Prepping and Analyzing Environmental Water Samples

**ALL WATER SAMPLES SHOULD BE NON-PRESERVED, PREPPED WITHIN 24 HOURS OF TIME SAMPLED AND FILTERED THROUGH A .45 MICRON FILTER.**

- 5.7.1 Select a new planchet then weigh and document the weight for future use.
- 5.7.2 Draw a sample from the collection bottle using a clean designated syringe.
- 5.7.3 Label and place the sample planchet under the heat lamp or on the hot plate drying area.
- 5.7.4 Attach a .45-micron filter to the syringe and slowly push approximately 5 – 7 ml of the filtered water into the planchet.
- 5.7.5 Turn on the drying device and **SLOWLY** heat up the planchet to cook off the water sample. Allow the moisture to cook down but not completely dry before adding more liquid. Continue this method until all of desired amount has been added and dried.
- 5.7.6 After the liquid has dried from the planchet and cooled down in temperature, reweigh the planchet and document the gross weight for future use.
- 5.7.7 Load the sample planchets into the Tennelec planchets under a selected group and place the end tray behind the last sample to count.
- 5.7.8 Click on the Sample Manager Bottle sign located on the tool bar.
- 5.7.9 Select the Show Pre-counted Batches Only Button; if a batch has not been established then select New.
- 5.7.10 Select the procedure created to count water samples from the drop down menu.
- 5.7.11 Name the batch (example Quarterly Wells).
- 5.7.12 Enter the sample ID (Well number or something specific for identity).

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- 5.7.13 Select the liquid button.
- 5.7.14 Enter the tare and gross planchet weight into the appropriate box then hit the calculate button.
- 5.7.15 Enter the amount of the sample taken.
- 5.7.16 Hit the update button when finished in order to enter the next sample.
- 5.7.17 When all samples to be counted have been entered hit the save button.
- 5.7.18 After reaching the main screen select the Go button and then select the batch name you want to run which will start the counting process.
- 5.7.19 After the counting process has ended the water activity data will be automatically calculated on the sample count sheet printed out by the Tennelec count program.
- 5.7.20 Review the report results, data, and sample ID's for proper information then forward the report to RSO/Designee for review and approval of data.
- 5.8 Counting & Analyzing Lapel and Area (Hi-Vol) Air Samples
  - 5.8.1 Load the samples on the Tennelec under a selected group.
  - 5.8.2 Click on the green GO sign located on the tool bar and select the procedure created to count the lapel or area air sample.
  - 5.8.3 After the samples have finished counting, record the counts per minute (cpm) results from the printout sheet on to the Lapel / Hi Vol Air Sample Data Sheet (Attachment 63-5).
  - 5.8.4 Apply the appropriate respirator factor to the sample results if the worker used any respirator protection.
  - 5.8.5 Record the date the samples were counted.
  - 5.8.6 Routinely, but not limited to, a quick count (usually same day as sampling event), 12 hour decay and a 7 day decay analysis is performed on the air

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samples.

5.8.7 If the activity exceeds  $2.0E-12$   $\mu\text{Ci/ml}$ , notify the RSO/Designee and the lapel sampler user and assign exposure to the sampler user.

5.8.8 Review results and data sheet for proper information then turn into RSO/Designee for review and approval of data.

#### 5.9 Creating or Editing a Procedure

5.9.1 Click on the Procedure Manager Button (PM).

5.9.2 Select type of procedure then click on the next button.

5.9.3 Select the procedure to edit or click the new button to create a new procedure.

5.9.4 The new button will give you a window to type in the name for the new procedure.

5.9.5 Make needed changes or enter new parameters and click on the save button.

5.9.6 All formula calculations placed into a spreadsheet should be reviewed by the RSO/Designee.

## 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 REFERENCES

7.1 Oxford (Canberra) LB-5100-W Manual

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

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

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7.4 Eclipse LB Version 3.0 S550 Operator Manual

7.5 KM - CI - RP - 7

7.6 Quality Assurance Plan and Procedures

7.7 Ludlum Measurements, Determining Minimum Detectable Activity (MDA)

## 8.0 ATTACHMENTS

8.1 Attachment 63-1 Tennelec Group Plate Alignment Illustration

8.2 Attachment 63-2 Monthly 95% Confidence Level Chi Square Sheet or Equivalent

8.3 Attachment 63-3 Monthly Control Chart or Equivalent

8.4 Attachment 63-4 Minimum Detectable Activity (MDA) Formula

8.5 Attachment 63-5 Lapel Air / Hi-Vol Air Sample Data Sheet or Equivalent

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### ATTACHMENT 63-1

#### TENNELEC GROUP PLATE ALIGNMENT ILLUSTRATION

THE TENNELEC LB 5100W SHOULD BE LOADED IN THE ILLUSTRATION SHOWN BELOW.  
GROUPS ARE LOADED FROM THE BOTTOM TO THE TOP AS NEEDED STARTING WITH GROUP A.  
GROUPS CAN BE LOADED UP TO THE LAST GROUP J.

END
2, 3, 4, etc...
1
GROUP B
2, 3, 4, etc...
1
GROUP A
BLANK
BLANK
END

AN (END PLATE MUST BE PLACED BEHIND THE LAST SAMPLE YOU WISH TO COUNT.  
THIS WILL STOP THE TENNELEC FROM COUNTING UNWANTED OR NON-EXISTING SAMPLES.



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### ATTACHMENT 63-2

## MONTHLY 95 % CONFIDENCE LEVEL CHI SQUARE (or Equivalent)

### 95% Confidence Level Control Chart Data Sheet

Instrument Model #	Tennelec LB5100	Date:	11/1/2002
Instrument Serial #	20438	Time:	11:03
Type of Chi Test:	Alpha	Source Nuclide:	Pu-239
Planchet Type:	1/8 Inch	Source Serial #	9756
Count Time:	1 Minute	Source dpm (4 $\pi$ ):	5850
		Efficiency (cpm/dpm):	39.48%

Count # (n)	Net Counts		95% C. I. test passes (yes/no)?
	Observed	Expected	
1	2316	2309.3	YES
2	2314	2309.3	YES
3	2317	2309.3	YES
4	2369	2309.3	YES
5	2250	2309.3	YES
6	2311	2309.3	YES
7	2297	2309.3	YES
8	2263	2309.3	YES
9	2273	2309.3	YES
10	2340	2309.3	YES
11	2356	2309.3	YES
12	2321	2309.3	YES
13	2242	2309.3	YES
14	2370	2309.3	YES
15	2257	2309.3	YES
16	2416	2309.3	NO
17	2301	2309.3	YES
18	2298	2309.3	YES
19	2309	2309.3	YES
20	2266	2309.3	YES

sample mean ( $\bar{x}$ ) =	2309.30
sample sigma (s) =	45.01
sample variance (s <sup>2</sup> ) =	2025.69
1.96 s =	88.22
3 s =	135.02
population sigma ( $\sigma$ ) =	43.87
(population sigma) <sup>2</sup> ( $\sigma^2$ ) =	1924.41
df = n-1 =	19
chitest = $p(x < \chi^2)$ =	6.124E-01
chisquare ( $\chi^2$ ) =	16.667

Acceptable $\chi^2$ min =	8.907
Acceptable $\chi^2$ max =	32.852
$\chi^2$ test passes (yes/no)?	YES

95% Conf. Interval Test min =	2221.08
95% Conf. Interval Test max =	2397.52
# of counts outside min/max:	1
Overall 95% C. I. Test passes (yes/no)?	YES

(up to 2 counts outside the 95% C. I. are allowable)

Test performed by: \_\_\_\_\_

Checked by: \_\_\_\_\_

Date: \_\_\_\_\_

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ATTACHMENT 63-3  
MONTHLY CONTROL CHARTS  
(or Equivalent)

Kerr-McGee Corporation  
Retention Time: T+10

Tennelec LB5100      CI# 01      S/N 20438

Cal Date: xx/xx/xx

Chi Date: xx/xx/xx

Cal Due Date: xx/xx/xx

Source

Month - Year

1/8" Reg Planchet

QAQC-009

cpm	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	cpm	
2444																																2444	99.70%
2428																																2413	
2413																																2397	
2397																																2397	95%
2388																																2388	
2379																																2379	
2371																																2371	
2362																																2362	
2353																																2353	
2344																																2344	
2335																																2335	
2327																																2327	
2318																																2318	
2309																																2309	Mean
2300																																2300	
2291																																2291	
2283																																2283	
2274																																2274	
2265																																2265	
2256																																2256	
2247																																2247	
2239																																2239	
2230																																2230	
2221																																2221	95%
2205																																2221	
2190																																2221	
2174																																2174	99.70%
Tech																																cpm	
Bkg																																2309	Mean
Avg CPM																																135	3s
																																88	2s

Reviewed by: \_\_\_\_\_ Date: \_\_\_\_\_ QA/QC by: \_\_\_\_\_ Date: \_\_\_\_\_

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ATTACHMENT 63-4  
MINIMUM DETECTABLE ACTIVITY

$$MDA = \frac{2.71 + 3.69 \sqrt{R_b t_s} [1 + t_s/t_b] * S_2}{t * E * S * Y * 2.22}$$

$R_b$  = background count rate in cpm

$t_s$  = sample counting time in minutes

$t_b$  = background counting time in minutes

$E$  = detector efficiency in counts per disintegration

$S$  = sample size

$Y$  = absorption factor

2.22 = conversion from dpm to pCi if not leave blank

$S_2$  = 1000 if converting to pCi/L – if not leave blank

MDA Calculations from Ludlum Measurements (Paul Steinmeyer Publication)

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**ATTACHMENT 63-5**  
**LAPEL / HI VOL AIR SAMPLE DATA SHEET**  
(or Equivalent)

PERSONAL MONITORING SHEET													
DATE: 11/12/02	NAME: L. Morgan	DOSIMETER:		EMPLOYEE NO.		DAC-HOURS 0.00							
WORK AREA: Tech Center - East Side				DESCRIBE TASK/HWP NO.: Bobcat Operator KMT-C-07									
ISOTOPE: U	CLASS: W	DAC: 300.0E-12		RESPIRATOR: N/A		PROTECTION FACTOR 1							
COMMENTS:										AIR SAMPLE DAC: 0.00			
LAPEL SAMPLER:				GOOSENECK / HI-VOL SAMPLER						NOTES			
S/N: KM-01		CAL DUE DATE:		S/N:		CAL DUE:		TECH:		Ea = SELF ABSORPTION			
ISSUED BY: CALLAHAN		TIME: 10:00		START TIME: 0:00		FLOW (CFM) 1				Ec = COUNTER EFF.			
FLOW LPM ISSUE: 3.26		RETURN: 3.26		STOP TIME: 0:00		FLOW (CFM) 1							
RUN TIME (MIN): 229		HRS: 3.82		RUN TIME: 0 (MIN)									
TOTAL VOLUME (SRT): 229		FT3: 26.36		TOTAL VOLUME (TV): 0 X AVG (CFM) 0 (FT3)									
VISIBLE CONTAMINATION: NONE				TIME IN AREA (TA) (MIN) > 60 = 0.00 (HRS)									
TECH: CALLAHAN		TIME: 17:00											
COUNTER TYPE: TENN		S/N: 20438		CAL DUE: 6/4/2003		CF: 1.6 x 10-11		BKGD: Daily					
DATE	TIME	COUNT	GROSS (CPM)	BKGD (CPM)	X4 (HI-VOL)	NET (CPM)	Ec (eff)	Ea (sa)	ACTIVITY (dpm)	IV (FT3)	X	CF	CONC. (uCi/ml)
2002													
12-Nov	20:34	10	2.5	0.6	1	1.9	0.39	0.60	8.12	26.36	1.60E-11		4.93E-12
14-Nov	14:01	10	0.6	0.6	1	0.1	0.39	0.60	0.43	26.36	1.60E-11		2.59E-13
DAC-HOURS = 1 CONC.: ##### > DAC: 300.0E-12 (uCi/ml) X [SRT or TA]: 3.82 (HRS) > PF 1 = 0.00													
PERFORMED BY: REVIEWED BY: DATE:													
INTAKE ESTIMATE WORKSHEET													
NATURAL URANIUM:													
U-Net INTAKE (uCi) = [CONC. (uCi/ml)] x EXP TIME (HRS): 2.59E-13 x 3.82 X 1,200,000 ml/Hr = PF 1 = 1.19E-06 uCi													
U-234 INTAKE = U-Net INTAKE (uCi): 1.19E-06 X 0.52 = 6.18E-07 uCi													
U-235 INTAKE = U-Net INTAKE (uCi): 1.19E-06 X .02 = 2.38E-08 uCi													
U-238 INTAKE = U-Net INTAKE (uCi): 1.19E-06 X .49 = 5.82E-07 uCi													
DEPLETED URANIUM:													
U-Deo INTAKE (uCi) = [CONC. (uCi/ml)] x EXP TIME (HRS): 0.00E+00 x 3.82 X 1,200,000 ml/Hr = PF 1 = 0.00E+00 uCi													
U-234 INTAKE = U-Deo INTAKE (uCi): 0.00E+00 X 0.09 = 0.00E+00 uCi													
U-235 INTAKE = U-Deo INTAKE (uCi): 0.00E+00 X .01 = 0.00E+00 uCi													
U-238 INTAKE = U-Deo INTAKE (uCi): 0.00E+00 X .91 = 0.00E+00 uCi													
THORIUM-230:													
Th-230 INTAKE (uCi) = [CONC. (uCi/ml)] x EXP TIME (HRS): 0.00E+00 x 3.82 X 1,200,000 ml/Hr = PF 1 = 0.00E+00 uCi													
COMMENTS:													
CALCULATIONS BY / DATE: REVIEWED BY / DATE:													

# **Change #6**

## 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 11 thru 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 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.

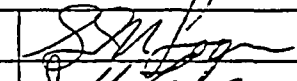
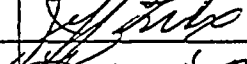

## 4.0 Results:

Revision, Test, or Experiment Approved:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
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## 5.0 Comments:

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## 6.0 Performed By (Signature/Date):

Corporate Management:		Date: 4/19/04
Project Manager:		Date: 04/19/04
RSO:		Date: 4/19/04

## 7.0 Implemented By and Date:

Site Manager:		Date: 4/22/04
---------------	--	---------------

**Change Evaluation**  
**ALARA Committee Approval of Revision to**  
**(Radiation Protection Plan)**  
**April 19, 2004**

**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 14:
  - Section 11 - verbiage
  - Section 12 - added Radiologically Controlled Area to coincide with restricted area
  - Section 13 - verbiage and added released or clean area as a holding area for released equipment etc.
  - Section 14 - Removed respiratory program and replaced with verbiage to reinstate if site activities deem necessary.

**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.

## 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, 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.

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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 and U.S. Department of Transportation 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.

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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<sup>2</sup> gross alpha. In addition, Cimarron shall establish Contaminated Area control, including posting, whenever smearable contamination in an area exceeds 1,000 dpm/100cm<sup>2</sup>. 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 Job Activity Supervisors, shall determine the need for a particular type of 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.

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

### 13.2 Survey Instrumentation Requirements

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.

### 13.3 Radiological Analysis/Characterization

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.

### 13.4 Unconditional Release Criteria

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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### 13.5 Unconditional Release of Materials

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 appropriately sensitive instrumentation to ensure the tools, equipment or material meets the unconditional release limits.

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### 13.6 Unconditional Release Surveys

Unconditional release surveys shall consist of direct (fixed) and removable (smearable) monitoring methods to assess the residual surface contamination of the material being monitored. If an item of material or equipment is determined to meet the unconditional release criteria, it shall be moved to a released (clean) area or segregated in a well defined area or container. Items not meeting the unconditional release criteria shall not be released until further decontamination has been performed and surveys indicated that the material meets the unconditional release criteria in Section 13.4.

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## 14.0 RESPIRATORY PROTECTION

### 14.1 Section Overview

Respiratory protection measures shall be employed when necessary to protect workers from a variety of 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.

~~Deleted: Respiratory protection measures shall be employed when necessary to protect workers from a variety of airborne hazards. The hazards may be of a radiological or non-radiological nature. The respiratory protection program shall meet 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.~~

~~The Respiratory Protection Program shall include the following elements as required by NUREG-0041, "Manual of Respiratory Protection Against Airborne Radioactive Material":~~

- ~~• Written standard operating procedures and policy statement;~~
- ~~• Proper selection of equipment, based on the hazard;~~
- ~~• Proper training and instruction of users;~~
- ~~• Proper fitting, use, cleaning, storage, inspection, quality assurance, and maintenance of equipment;~~
- ~~• Appropriate surveillance of work conditions, degree of employee exposure to stress;~~
- ~~• Regular inspection and evaluation to determine the continued program effectiveness;~~

~~... [1]~~

~~Deleted: An adequate medical surveillance program for respirator users;~~

~~Deleted: •~~

~~Deleted: Use of only Bureau of Mines/National Institute of Occupational Safety and Health (NIOSH) certified equipment; and~~

- ~~• Maintenance of a bioassay program.~~

~~The Respiratory Protection Program~~ ... [2]

~~Deleted: When respirators must be used, appropriate rest or relief periods shall be provided. An individual wearing a respirator may leave the work area at any time for relief in the event of equipment malfunction, physical or psychological distress, procedure~~ ... [3]

~~Deleted: 14.11 - Corrective Lenses~~

~~Personnel requiring corrective lenses when wearing a full-face respirator shall wear prescription eye glasses approved for use inside a full-face respirator or contact lenses.~~ ... [4]

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# **Change #7**

## 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 2 thru 4.

## 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	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
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## 5.0 Comments:

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## 6.0 Performed By (Signature/Date):

Corporate Management:	<i>[Signature]</i>	Date: 4/19/04
Project Manager:	<i>[Signature]</i>	Date: 04/19/04
RSO:	<i>[Signature]</i>	Date: 4/19/04

## 7.0 Implemented By and Date:

Site Manager:	<i>[Signature]</i>	Date: 4/22/04
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**Change Evaluation**  
**ALARA Committee Approval of Revision to**  
**(Radiation Protection Plan Sections 2 thru 4)**  
**April 19, 2004**

**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 2 thru 4:
  - Section 2 – verbiage, added RCA to coincide with restricted area, defined responsibility of training program
  - Section 3 – added Program Manager to section 3.1, revised verbiage in reference material and review process of procedures
  - Section 4 – revised verbiage in Section Overview

**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.

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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.

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The Site Manager is responsible for daily site activities and oversees the site staff.

Deleted: The Site Manager has authority to stop work in the event that the health and safety of workers or members of the public may be compromised or if a regulatory non-compliance may occur.

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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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.

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The Quality Assurance Coordinator is responsible for assessments of the performance of work in compliance with requirements of 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.

Deleted: The QA Coordinator has 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.

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

Deleted: Each Activity Supervisor has 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.

Each worker is responsible for following 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 first 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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Workers are

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## 2.4 Training Requirements and Policy

All persons who are permitted to enter the Cimarron Corporation restricted area/radiologically controlled area (RCA) shall receive information and training in radiation safety. The depth of the training will be commensurate with the potential radiation safety problems and will be in compliance with the requirements in 10 CFR 19 and 10 CFR 20. Cimarron may have several levels of training, such as visitor, escorted radiation worker, radiation worker, and health physics technician training. Each of the levels of training will ensure that individuals are:

- Aware that radioactive materials are present in the restricted areas;
- Informed regarding additional risks that may arise due to the anticipated exposure of the individual;

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- 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 include:

- Applicable provisions of the regulations and licenses for the protection of personnel from exposure to radiation or radioactive materials;
- 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 that may involve 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 may be administered by radiation workers.

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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. Relationships between documents used to achieve compliance with the regulations and Cimarron Corporation's radioactive materials licenses are presented.

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 also provided.

The Radiation Protection Program results in the generation of documents and records. In addition, notifications and reports are required by the regulations. Requirements for proper generation, storage, and turnover of documents and notifications are described to ensure 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 maintained in consistency with current and planned activities.

#### 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 Program Procedures shall be developed in accordance with the Quality Assurance Plan. In addition, procedures shall be prepared in accordance 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 assure 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.

~~Deleted: Review of procedures shall be performed by the Quality Assurance Coordinator, and the Radiation Safety Officer.~~

### 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.

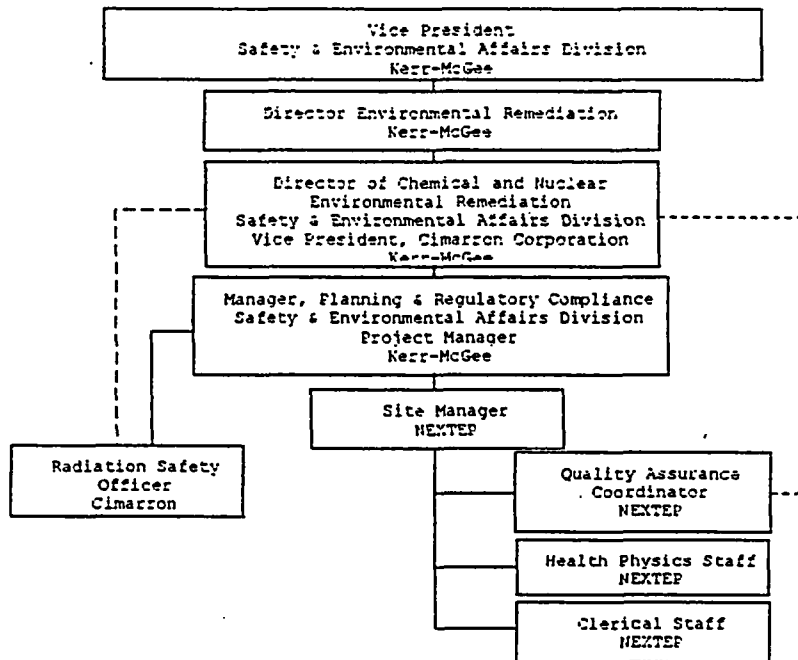
### 3.7 Notifications and Reports

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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## 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.

Deleted: Regulations in 10 CFR 20 require that Cimarron develop, document, and implement a radiation protection program commensurate with the scope and extent of licensed activities. In addition, the regulations require Cimarron to use, to the extent practicable, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as is reasonably achievable. In order to comply with the regulations and to ensure a safe and healthy environment for workers and members of the public, Cimarron operations shall be performed in a manner such that doses are maintained ALARA.]

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#### 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.
- 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).

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The ALARA committee shall be chaired by the RSO. The Vice-Chair shall be the Cimarron Project Manager. 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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# **Change #8**

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

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

Revisions to Section 6, 7, 8, and 10 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:

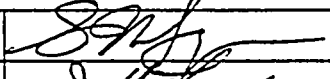
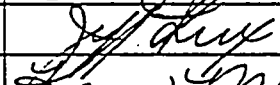
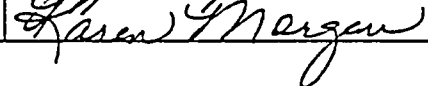
LICENSE REQUIREMENT	YES	NO	N/A
3.1 Does the proposed change, test, or experiment conflict with the ALARA principle or the decommissioning process?		X	
3.2 Does the proposed change, test, or experiment conflict with requirements specifically stated in the license, or impair Cimarron's ability to meet 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.

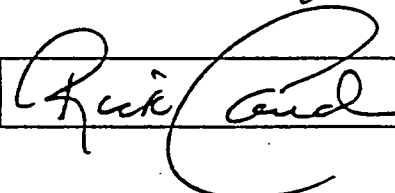
## 4.0 Comments:

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## 5.0 Approved By (Signature/Date):

Corporate Management:		Date: 9/1/04
Project Manager:		Date: 9/2/04
RSO:		Date: 9/2/04

## 6.0 Implemented By and Date:

Site Manager:		Date: 9/7/04
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Change Evaluation  
ALARA Committee Approval of Revision to  
(Radiation Protection Plan – Annex A – Sections 6, 7, 8, and 10)  
September 2, 2004

**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 Section 6 (Personnel Monitoring):
  - Section 6.2 – deleted – Administrative Dose Limits for Occupationally Exposed Individuals
  - Section 6.3 – added verbiage from 6.6 to address that members of the public are not subject to individual monitoring requirements
  - Section 6.6 – deleted – Visitors
  - Section 6.7 – deleted – Skin Monitoring
  - Section 6.10 – revised and renamed – Exposures Exceeding Annual Dose Goals to ALARA Dose Goals
- Revisions to Radiation Protection Plan Section 7 (Radiation Protection Instrumentation):
  - Section 7.1 – revised verbiage of sufficient inventory and variety to shall be maintained
- Revisions to Radiation Protection Plan Section 8 (Access Control):
  - Section 8.2 – deleted – General Requirements – Moved second bullet to section 8.3
- Revisions to Radiation Protection Plan Section 10 (Radiation Protection Surveys):
  - Section 10.1 – revised to address surveys when needed or required
  - Section 10.4 – revised to address frisking necessary when the potential of spreading contamination or per SWP requirements upon exiting RCA's.
  - Section 10.5 – revised to address surveys shall be performed by trained personnel.

**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 – *it does not..*
- 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 – *it does not.*
  - h) The action must not result in greater release of licensed material to air or liquid effluents than planned actions – *it does not.*
  - i) The action must not result in the spread of licensed material to uncontaminated areas more than planned actions – *it does not.*
  - 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 – *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.

## 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

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Administrative limits are used to control doses to insure that regulatory limits are not exceeded and that occupational exposures are maintained as low as is reasonably achievable (ALARA).

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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.

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Visitors¶

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Visitors are not subject to individual monitoring, record keeping, and reporting requirements of 10 CFR 20. However, they (or one person in their group) may be issued a dosimeter for verification purposes. A permanent record may be maintained of the individual's dosimeter readings to document that monitoring was not required. Written reports of any measured dose shall be issued to the individual upon request. All Visitors shall be escorted by a qualified escort or under the direct observation of a qualified escort at all times while in a Restricted Area.

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<#> Skin Monitoring¶

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Due to the difficulty of assessing skin exposure, skin dose rates should be minimized as much as practicable by shielding or decontamination. The non-penetrating radiation energies and dose rates should be determined and sufficient protective clothing should be used to prevent substantial skin doses. The shallow dose equivalent to the skin from external radiation sources should be monitored by a dosimeter. ¶

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## 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.

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## 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.

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## 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.

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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.

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## 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.

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### 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

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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."

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## 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.

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<#>General Requirements¶  
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• All personnel who normally work with radioactive material shall be issued dosimetry.¶  
• Only properly trained or escorted personnel shall be permitted inside the Radiologically Controlled Area.¶  
• All personnel and contractors shall store personal dosimetry badges in proper storage locations prior to leaving the facility.¶  
• Unescorted individuals working in a RCA shall be required to receive radiation worker training.¶  
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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."

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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.

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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, 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 a 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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Deleted: These surveys are qualitative in nature. Personnel are instructed to notify Health Physics when radioactivity levels exceeding background are found on the skin, clothing, or personal items. Health Physics personnel will then determine the need for decontamination. In accordance with the ALARA concept, radioactive materials on skin, clothing, or personal items will be minimized to the extent practicable before allowing an individual to leave the facility. Any individual who cannot be decontaminated to background levels will be instructed by the RSO or designee regarding the risks involved and follow-up actions that may be necessary. RSO and/or Site Manager approval is required prior to departure of any contaminated individual from a RCA, except when emergency conditions dictate other actions.

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# **Change #9**

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

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

Revisions to Section 15 (Environmental Monitoring) 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:

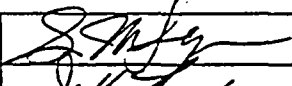
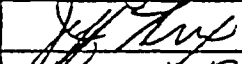
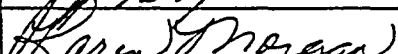
LICENSE REQUIREMENT	YES	NO	N/A
3.1 Does the proposed change, test, or experiment conflict with the ALARA principle or the decommissioning process?		X	
3.2 Does the proposed change, test, or experiment conflict with requirements specifically stated in the license, or impair Cimarron's ability to meet 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:

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## 5.0 Approved By (Signature/Date):

Corporate Management:		Date: 9/2/04
Project Manager:		Date: 9/2/04
RSO:		Date: 9/2/04

## 6.0 Implemented By and Date:

Site Manager:		Date: 9/7/04
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Change Evaluation  
ALARA Committee Approval of Revision to  
(Radiation Protection Plan – Annex A – Section 15, Environmental Monitoring)  
September 2, 2004

**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 Section 15:
  - o Sections 15.2 – corrected the reference to Section 15.8 to 15.4, and corrected the spelling of beta.
  - o Table 15-1 – updated the descriptions for well locations.

**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.

## 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<sub>3</sub> (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.

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### 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; .....

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- 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.

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## 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.

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**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 I)			
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)			

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

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

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Description  
Frequency - Analysis - Action Level

Deleted: 1201 - Cimarron River - Upstream - (Annually) - Gross Alpha - 15 pCi/LF - None  
1202 - Cimarron River - Downstream - NO<sub>3</sub> - Gross Beta - 20 pCi/L - None  
1204 - Pond - West of Plant - 1  
1205 - Kerr-McGee Lake - East - 1  
1206 - Slough - NW of Incinerator - 1  
1208 - Stream North of Uranium Pond #2 - 1  
1209 - Kerr-McGee Lake - West - 1

Deleted: 1311 - Monitor Well - South of Landfill - (Annually) - F - None  
1312 - Monitor Well - West of Landfill - NO<sub>3</sub> - None  
1313 - Monitor Well - North of Landfill - Gross Alpha - 15 pCi/L  
1314 - Monitor Well - South of Burial Pit - Gross Beta - 20 pCi/L  
1315R - Monitor Well - North of Burial Pit  
1316R - Monitor Well - Northwest of Burial Pit - 1  
TMW-13 - Monitor Well - North of Burial Pit  
1319B-1 - Monitor Well - U Plant Yard East of Building  
1319C-1 - Monitor Well - U Plant Yard East of Building - 1  
1320 - Monitor Well - North of Designated Area - 1  
1321 - Monitor Well - North of Designated Area (deep)  
1322 - Monitor Well - By Flammable Liquid Storage Pad  
1323 - Monitor Well - By Flammable Liquid Storage Pad (deep)  
1324 - Monitor Well - East of Designated Area  
1325 - Monitor Well - South of Designated Area  
1326 - Monitor Well - East of U-Plant Yard  
1327B - Monitor Well - West of U-Plant Yard

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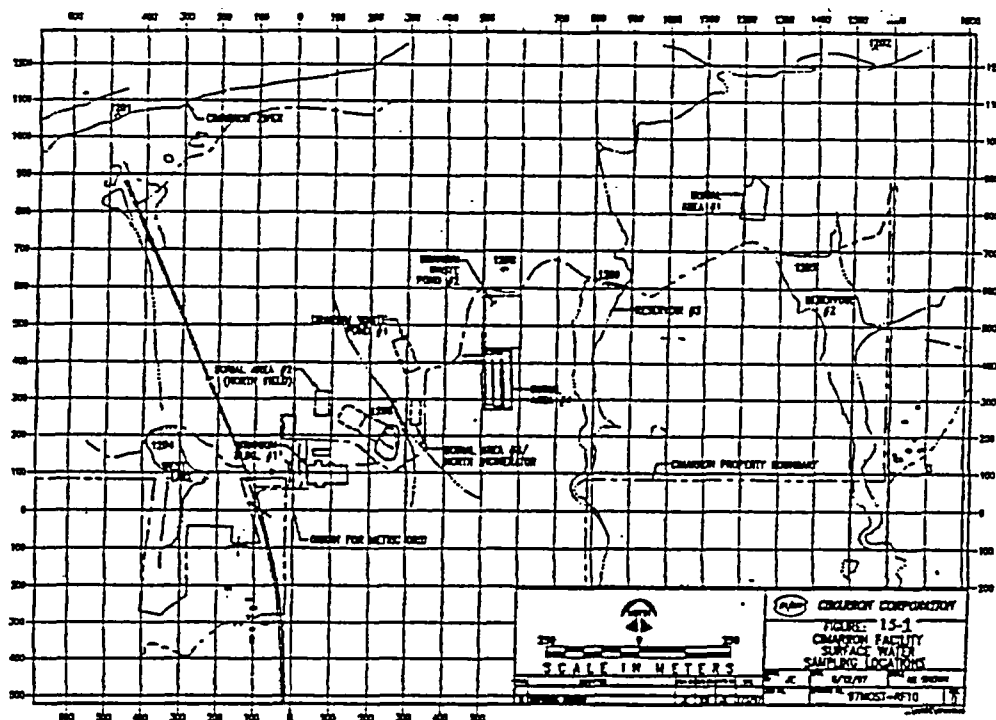
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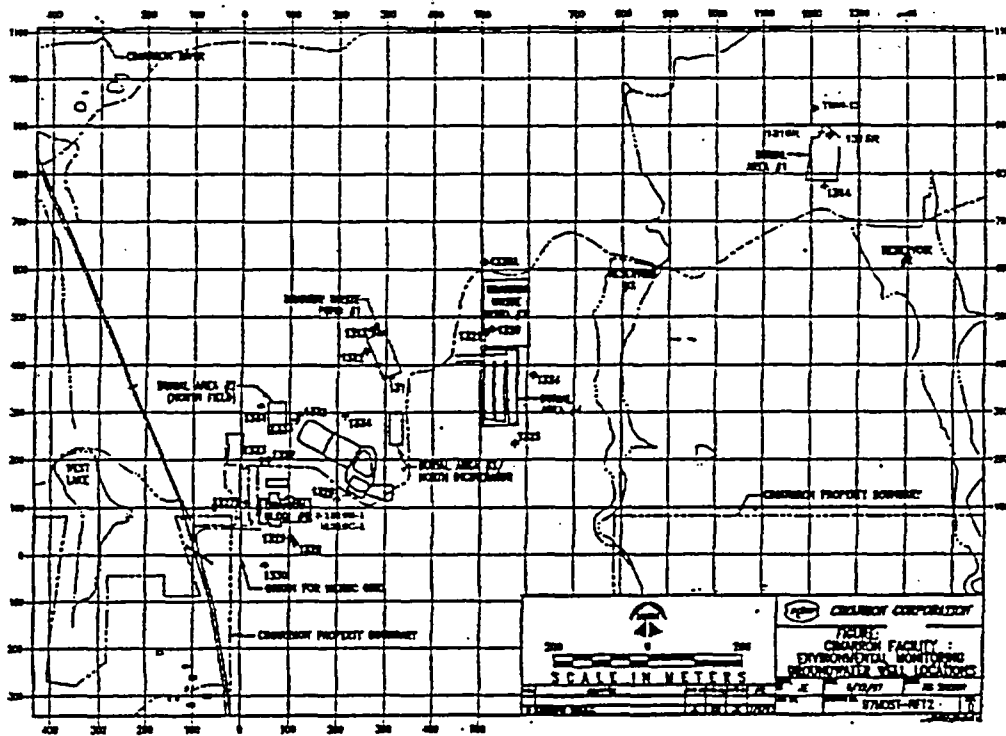
FIGURE 15-1  
Surface Water Sampling Locations



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FIGURE 15-2  
Groundwater Well Locations



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# **Change #10**

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

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

Removal of Instrumentation Procedures no Longer in Use; RP-50 Ludlum 2220/2221 Alpha Probe Calibration, RP-52 Ludlum 2224 Calibration and Use of 43-68 Probe, RP-57 Ludlum 2220/2221 Calibration and Use of 43-68 Probe, RP-61 Ludlum 177 Calibration and Use with 43-5 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:

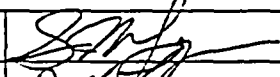
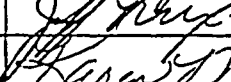

LICENSE REQUIREMENT	YES	NO	N/A
3.1 Does the proposed change, test, or experiment conflict with the ALARA principle or the decommissioning process?			X
3.2 Does the proposed change, test, or experiment conflict with requirements specifically stated in the license, or impair Cimarron's ability to meet 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.

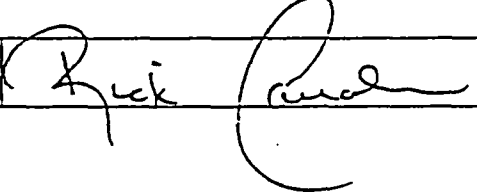
## 4.0 Comments:

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## 5.0 Approved By (Signature/Date):

Corporate Management:		Date: 9/2/04
Project Manager:		Date: 9/2/04
RSO:		Date: 9/2/04

## 6.0 Implemented By and Date:

Site Manager:		Date: 9/2/04
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Change Evaluation  
ALARA Committee Approval of Removal of  
(Radiation Protection Procedures, RP-50, RP-52, RP-57, and RP-61)  
September 2, 2004

**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.

- Removal of Radiation Protection Procedures:
  - KM-CI-RP-50, Calibration and Use of Ludlum 2220/2221 with Alpha Probe
  - KM-CI-RP-52, Calibration and Use of Ludlum 2224 with 43-89 Probe
  - KM-CI-RP-57, Calibration and Use of Ludlum 2220/2221 with 43-89 Probe
  - KM-CI-RP-61, Calibration and Use of Ludlum 177 with 43-5 Probe

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.

# **Change #11**

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

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

Revise KM-CI-RP-01, (ORGANIZATION AND RESPONSIBILITIES) section 2.5.1 to show reporting link for the QA Coordinator as Vice President, Cimarron Corporation.

Revise Attachment 1-1 to remove Clerical organizational box and combine with Health Physics showing both as one chart box, which in turns eliminates the box for each employee at Cimarron.

## 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:

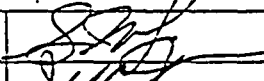
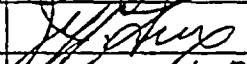
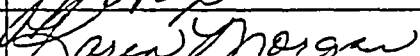
LICENSE REQUIREMENT	YES	NO	N/A
3.1 Does the proposed change, test, or experiment conflict with the ALARA principle or the decommissioning process?			X
3.2 Does the proposed change, test, or experiment conflict with requirements specifically stated in the license, or impair Cimarron's ability to meet 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.

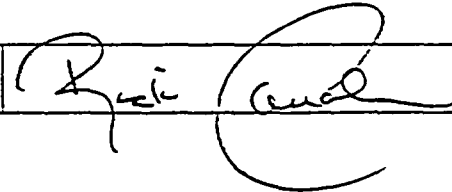
## 4.0 Comments:

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## 5.0 Approved By (Signature/Date):

Corporate Management:		Date: 9/2/04
Project Manager:		Date: 9/2/04
RSO:		Date: 9/2/04

## 6.0 Implemented By and Date:

Site Manager:		Date: 9/7/04
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Change Evaluation  
ALARA Committee Approval of Revision to  
(Radiation Procedure-1 Organization and Responsibilities)  
September 2, 2004

**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-1 Sections 2.5.1 and Attachment 1-1:
  - o Section 2.5.1 – removed the title Project Manager and replaced with Vice President, Cimarron Corporation
  - o Section Attachment 1-1 – deleted the Clerical Box and combined with the HP Staff Box to eliminate boxes for each position held at Cimarron.

**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-1  
REVISION 11**

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**ORGANIZATION AND  
RESPONSIBILITIES**

**PAGE 4 OF 6  
DATE: 07/12/04**

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**2.5 Quality Assurance Coordinator / Designee**

2.5.1 Reports directly to the Vice President of the Cimarron Corporation.

Deleted: Project Manager

2.5.2 Responsible for reviewing the Radiation Protection Procedures for approval.

2.5.3 Responsible for Administrative and Accounting functions for the Cimarron Facility.

2.5.4 Responsible for managing and directing the overall Cimarron Quality Assurance Program as delineated in the Cimarron QA Plan and Procedures.

**2.6 Activity Supervisor**

2.6.1 Responsible for training all designated personnel on the Special Work Permit, Work Plan, and Project Procedures.

**2.7 All Facility Personnel**

2.7.1 Responsible for following all regulatory and procedural guidance.

2.7.2 Responsible for working within the guidelines identified in each Special Work Permit, Work Plan, and Project Procedures.

**3.0 PRECAUTIONS**

N/A

**4.0 EQUIPMENT AND MATERIALS**

N/A

**5.0 PROCEDURE**

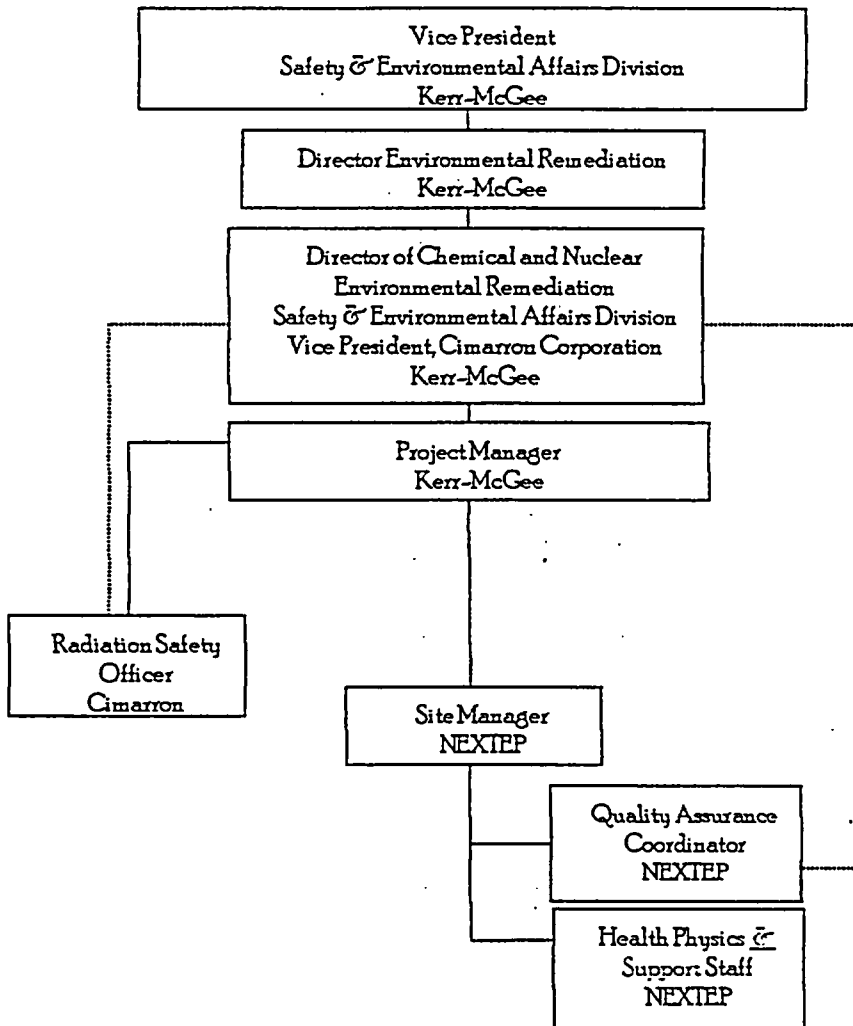
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**6.0 RECORDS**

N/A



Attachment 1-1  
Kerr McGee Corporation  
Safety and Environmental Affairs Division  
(Cimarron)



# **Change #12**

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

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

Revise KM-CI-RP-63, (Calibration and Operation of the Tennelec Alpha Beta Counting System) section 5.3.14 to show typical efficiency of sources used to check operation of the Tennelec system. Also removal of the method used to clean sample planchets.

## 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:

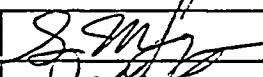
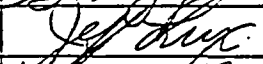
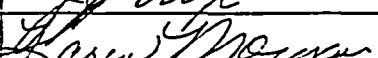
LICENSE REQUIREMENT	YES	NO	N/A
3.1 Does the proposed change, test, or experiment conflict with the ALARA principle or the decommissioning process?			X
3.2 Does the proposed change, test, or experiment conflict with requirements specifically stated in the license, or impair Cimarron's ability to meet 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.

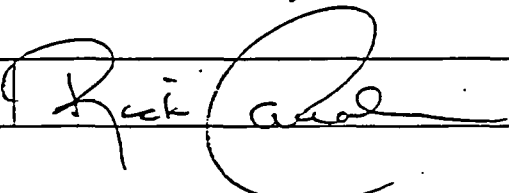
## 4.0 Comments:

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## 5.0 Approved By (Signature/Date):

Corporate Management:		Date: <u>9/6/04</u>
Project Manager:		Date: <u>9/2/04</u>
RSO:		Date: <u>9/2/04</u>

## 6.0 Implemented By and Date:

Site Manager:		Date: <u>9/7/04</u>
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Change Evaluation  
ALARA Committee Approval of Revision to  
(Radiation Procedure-63 Calibration and Operation of the Tenelec Alpha Beta System)  
September 2, 2004

**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-63 Sections 5.3.14 and 5.4.9:
  - o Section 5.3.14 – added the word typical to the efficiency ranges used in the Tenelec source and calibration checks
  - o Section 5.4.9 – deleted the use of kimwipe for the cleaning method used on sample planchets

**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-63 REVISION: 8
CALIBRATION AND OPERATION OF THE TENNELEC LB-5100/W ALPHA AND BETA COUNTING SYSTEM	PAGE: 6 of 17 DATE: 06/30/04

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- 5.3.12 After the results are printed out enter the results onto the appropriate Chi Test spreadsheet.(Attachment 63-2 or equivalent)
- 5.3.13 Repeat steps 5.3.2 to 5.3.12 if another Chi Test is needed for the 1/4" plachets.
- 5.3.14 Review the reported efficiency results. The typical acceptance ranges are,  
Alpha efficiency (1/8-inch) is 36 to 41 %  
Beta efficiency (1/8-inch) is 39 to 43 %  
Alpha efficiency (1/4-inch) is 28 to 32%  
Beta efficiency (1/4-inch) is 31 to 35%.
- 5.3.15 If both efficiencies are within their respective acceptance ranges, file the results and proceed to step 5.4.
- 5.3.16 If either of the reported efficiencies does not fall within the specified acceptance ranges, re-run the efficiency routine per steps 5.3.2 through 5.3.12.
- 5.3.17 If the results of the second efficiency run are within the acceptance range, proceed to step 5.4. If either of the efficiencies from the second run are outside of the acceptance range, notify the RSO/Designee and perform corrective action as directed.
- 5.3.18 Document actions taken on Tennelec count sheet and instrument logbook.
- 5.4 Daily Background Count Rate Determination and Reliability Checks.
- 5.4.1 Load the background planchet into a numbered sample carrier.
- 5.4.2 Load the standard Alpha and Beta sources into standard sized (1/8 inch) planchets for routine analysis or 1/4 inch planchets for special analysis and place into numbered carriers.
- 5.4.3 Load the right side sample stacker (from bottom to top) in the following manner: (EXAMPLE ONLY)
- 5.4.3.1 GROUP A plate
- 5.4.3.2 Background planchet carriers

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CIMARRON RADIATION PROTECTION PROCEDURES	KM-CI-RP-63 REVISION: 8
CALIBRATION AND OPERATION OF THE TENNELEC LB-5100/W ALPHA AND BETA COUNTING SYSTEM	PAGE: 7 of 17 DATE: 06/30/04

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- 5.4.3.3 GROUP B plate
- 5.4.3.4 Standard alpha source carrier
- 5.4.3.5 GROUP C plate
- 5.4.3.6 Standard beta source carrier
- 5.4.3.7 END plate (or follow with the subsequent sample groups and carriers followed by an END plate after the last sample to be counted)

- 5.4.4 Click on the green GO sign located on the tool bar.
- 5.4.5 When the menu containing the different types of count procedures appears, select the count procedure created for taking daily background counts.
- 5.4.6 Select group tray letter.
- 5.4.7 Click on the OK button to start the count.
- 5.4.8 Repeat steps 5.4.4 to 5.4.7 for alpha and beta checks.
- 5.4.9 Review background results and if the count rate (cpm) is  $>0.8$  for Alpha or  $>3.0$  for Beta, clean the planchet, Jet dry and run another background count. If results are  $<0.8$  cpm Alpha and  $<3.0$  cpm Beta log on the Monthly Control Chart for that day and planchet type. File data sheet in control folder. If second count of planchets after cleaning shows the results  $>0.8$  cpm Alpha and or  $>3.0$  cpm Beta notify RSO/Designee.
- 5.4.10 If either of the recorded source count rates is not within the  $\pm 2\sigma$  range repeat the applicable source check one additional time. If the second source check is not within the  $\pm 2\sigma$  range, notify the RSO/Designee for corrective actions.
- 5.4.11 Document actions taken on the Tennelec count sheet when response check results are not within the normal  $\pm 2\sigma$  operational range. If repairs are made in order to correct the problem document those actions in the instrument log book.
- 5.4.12 If the source count rates are within the  $\pm 2\sigma$  range record the source check results on the Monthly Control Chart.

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