Appendix D – Laboratory Facilities and Plans

This appendix, including the supporting exhibits, was prepared from information developed and provided by R and D Enterprises, Inc.

Introduction

The onsite laboratory facilities at the Energy Fuels Resources Corporation ("Energy Fuels") Piñon Ridge Mill Facility consist of an ore processing area, a metallurgical laboratory, and an analytical laboratory. The radiation safety laboratory is located in the same general area as these other laboratory facilities and is described in the Operational Monitoring Plan prepared for the Piñon Ridge Mill Facility. The laboratory procedural plans addressing quality assurance, quality control and chemical hygiene are included as exhibits to this appendix, following this narrative description of the laboratory facilities and analytical methods.

Sample Receiving and Preparation Area

Sampling of ores and pulps in the uranium mill process is an important step towards controlling and evaluating the mill performance. Sampler installations are designed to follow the requirements of good sampling practice, particularly in the sampling of slurry and solids streams where particle size and density segregation can cause material errors.

Three types of samples are taken. These include individual samples taken for purposes of direct control, shift and daily composited samples taken for later study and analyses, and special grab samples taken for some specific purpose. Important sampling points in the mill process, for purposes other than direct control, include the ore feed (either before or after grinding), tailings, and uranium and vanadium concentrates.

Located in the Change House and Laboratory Building (Area 900), the Sample Preparation Laboratory contains the necessary drying, bucking and grinding equipment required to prepare raw or slurried ores for analysis. One or more large ore drying ovens and a variety of ore sizing apparatus are located in the enclosed area. Ore sizing equipment may include primary and secondary crushers (jaw or roll), cone and ring grinders and plate pulverizers. Stationary riffle samplers and mechanical blenders are used to ensure representative sampling.

Dust is controlled in the sample preparation area by enclosing all crushing, grinding and splitting operations in hoods utilizing dust collection systems. Effluent from the dust collection system is directed to an appropriately sized baghouse with collected residue redirected to the mill process.

Illustration 1, Typical Flowsheet for Uranium Ore Sampling, illustrates the process for sampling uranium ore for moisture content and chemical analysis.

Metallurgical Laboratory

The metallurgical laboratory is located near the sample preparation area and has the primary function of providing ore amenability testing of ore feeds and optimizing mill circuit performance. Potential, specific areas of investigation are discussed below.

The complex characteristics of an ore, which combine to determine its reaction to processing, are usually termed "amenability." Amenability is evaluated by standard bench leaching tests, the results of which are compared against "normal" ore in terms of reagent requirements for uranium extraction. These data are then used to establish proper conditions for treating the ore in the mill or for determining blending ratios with other ores, and thus amenability tests may be considered as a method of pre-process control. Chemical analyses of feed ores for such

constituents as Calcium, Carbonate/bicarbonate, Vanadium, Molybdenum, sulfides, and others also aid in this planning, and requires coordination with the analytical laboratory.

Additionally, the metallurgical laboratory investigates alternatives and improvements in Ore Leaching, Liquid-Solid Separation, Solvent Extraction, Precipitation and Product Handling. Major equipment items could include drying ovens, grinding and ore blending equipment, muffle furnaces, and pilot scale equipment for specific circuit testing. Adequate ventilation is provided for any activity generating dust or chemical fumes.

Analytical Laboratory

The analytical laboratory is located in the Change House and Laboratory Building (Area 900) adjacent to the sample preparation and metallurgical laboratory. The primary function of the analytical laboratory is to support the mill processes, coordinate and cooperate with the efforts of the metallurgical laboratory, and provide accurate data on mill solutions and final product purity. The laboratory is comprised of three areas; the primary laboratory, the instrument laboratory containing the inductively coupled argon plasma ("ICP") spectrometer, and the X-ray fluorescence ("XRF") laboratory.

Analytical Methods

Analytical requirements in a uranium mill tend to be many and varied. This situation results from routine process requirements and from the periodic analyses of a variety of chemical constituents for which maximum limits may be stated in product purchase specifications.

Uranium analyses are obtained by volumetric (yellowcake product), colorimetric, ICP spectroscopy techniques, and X-ray fluorescence depending on the type of sample and the accuracy required.

X-ray fluorescence methods of uranium analyses are used in both control and routine laboratory procedures with available equipment being suitable to the direct analysis of either solutions or solids. X-ray fluorescence instruments are capable of quantitative analyses for elements from atomic number 23 (sodium) through 92 (uranium) without major modification, provided that suitable calibration curves are prepared or internal standards are used.

Elements other than uranium are determined by volumetric, gravimetric, and colorimetric methods and instrumentally by XRF and ICP spectroscopy. The latter is applicable to the determination of most elements of interest in mill products and concentrates, and is rapid and accurate in routine work. Other specialized information may require analyses of organic solutions and ion exchange media for loading and for fouling or poisoning, determinations of water hardness, etc.

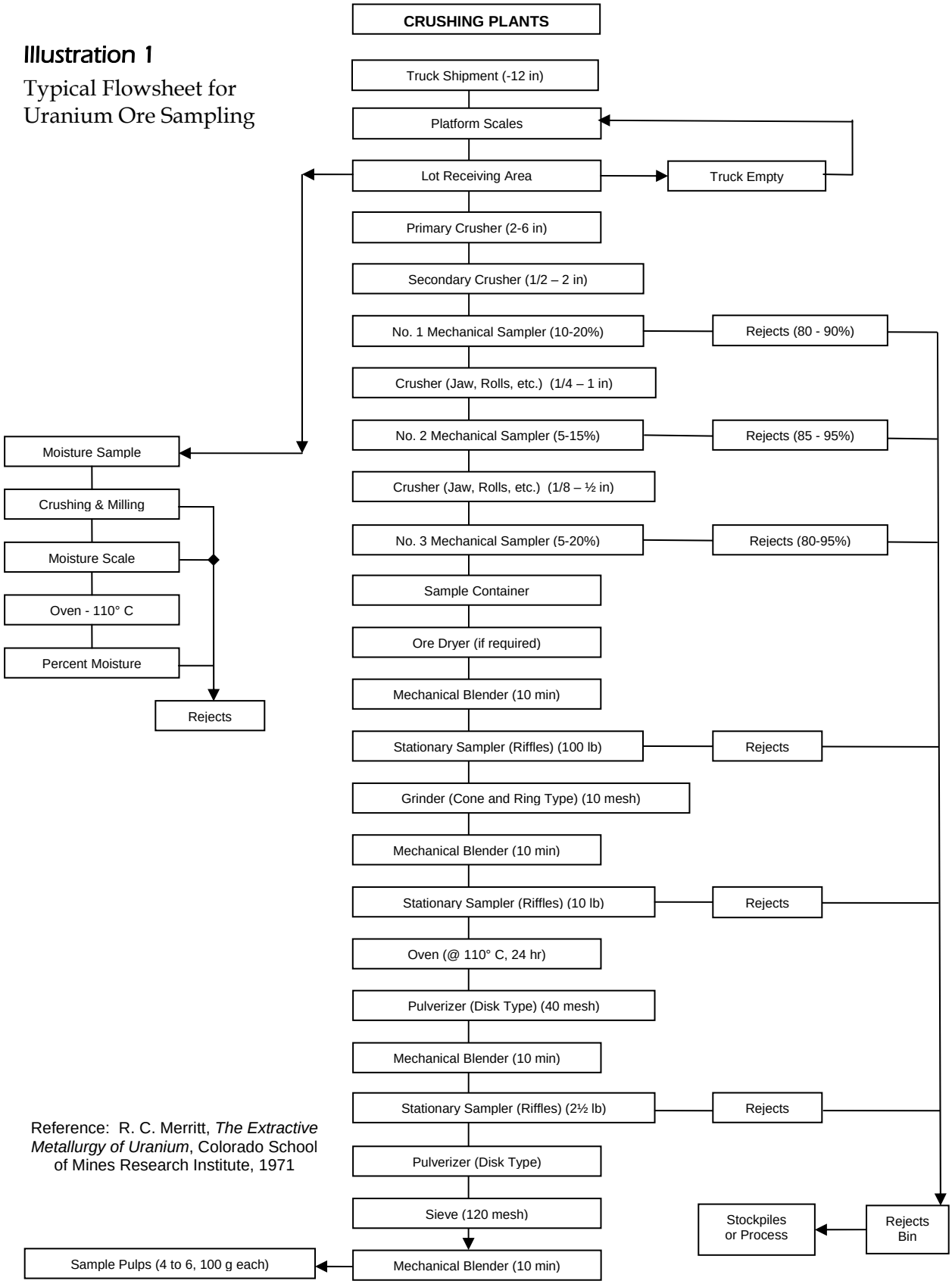
Major equipment items could include laboratory drying ovens, perchloric acid capable hoods with large hot plates, pH/mv meters, turbidimeters, ICP Optical Emission Spectrometer, X-ray Fluorescence Spectrometer, conductivity bridges, electronic analytical balances, auto titration equipment, organic carbon analyzers, and the glassware, disposables, chemicals and safety supplies to support the facility.

The primary function of the analytical laboratory is to support and account for mill activities and circuits and to assist the metallurgical laboratory in process development and improvement. The mill laboratory will have the capability to analyze environmental levels of

constituents in surface and groundwater, however compliance samples required under the operating license will be performed by a certified independent offsite analytical facility.

Illustration 1

Typical Flowsheet for Uranium Ore Sampling



Reference: R. C. Merritt, *The Extractive Metallurgy of Uranium*, Colorado School of Mines Research Institute, 1971

Laboratory Safety

The Chief Chemist is responsible for providing written Standard Operating Procedures ("SOPs") relevant to the health and safety for laboratory activities directed in the laboratory involving hazardous chemicals. Laboratory personnel are strongly encouraged to offer suggestions for improving the SOPS with respect to worker health and safety.

The minimum elements required in an SOP are:

- Document Heading;
- Process or Experiment Description;
- Risk Assessment;
- Safety Equipment Required;
- Designated Area;
- Step-by-Step Operating Procedure;
- Special Handling Procedures and Storage Requirements;
- Decontamination;
- Emergency Procedures;
- Waste Disposal;
- Training Requirements; and
- Approval Required.

Laboratory Safety Basics

1. KNOW THE HAZARDS OF THE CHEMICALS YOU ARE WORKING WITH! Consult the Material Safety Data Sheets ("MSDS") or other appropriate references prior to using a chemical with which you are unfamiliar.

2. Minimize exposure to all chemicals regardless of toxicity or their familiarity. Most laboratory chemicals have not been fully characterized with respect to toxicity; as such, it is prudent to implement procedures that will minimize the likelihood of exposure. Skin contact should always be avoided. Avoid inhalation of chemicals; never "sniff" to test chemicals.

3. Wear appropriate personal protective equipment ("PPE") at all times.

4. Minimize chemical exposure through consistent and proper use of laboratory fume hoods.

5. Communicate with others in the building when working alone in the laboratory and let others know when you arrive and leave. Avoid working alone in the laboratory when performing high-risk operations.

6. Use cautious judgment when leaving unattended operations:

   – Post signs to communicate appropriate warnings and precautions;

   – Anticipate potential equipment and facility failures; and

   – Provide containment for release of hazardous chemicals.

7. Assume that unknown materials are toxic, and that a mixture is more toxic than its most toxic component.
8. Know the location and proper use of emergency equipment, such as safety showers, fire extinguishers and fire alarms.
9. Do not use mouth suction for pipetting or siphoning.
10. Label all chemical containers with the identity of the contents (avoid abbreviations/ acronyms); hazard warning and chemical concentration information should also be included.
11. Use appropriate safety carriers (secondary containment) when transporting chemicals inside or outside of the building.
12. Keep work area clean and uncluttered; clean work area on completion of task or at the end of the day.
13. Consuming food and beverages, applying cosmetics, using smokeless tobacco or smoking in laboratories or chemical storage areas is not permitted since this practice increases the likelihood of chemical exposure by ingestion (smoking also increases the risk of fire).
14. Do not store food or beverages in laboratories (including refrigerators and cold rooms) or chemical storage areas.
15. Wash your hands frequently to minimize chemical exposure through ingestion and direct contact with the skin. Remove gloves when leaving the laboratory, so as not to contaminate doorknobs, etc.
16. Always wash your hands before eating, drinking or applying cosmetics.
17. Because most controlled temperature rooms (i.e. cold/warm rooms) lack mechanical exhaust (100 percent re-circulated air), storage and use of toxic substances, flammable solvents, corrosive acids, asphyxiates (such as nitrogen and carbon dioxide), and open flames (e.g. Bunsen Burners) are strictly forbidden.

Laboratory Specific Rules

These rules are to be observed along with the general safety rules. Additionally, you must know and observe the safe operating rules for each area in which you work.

1. Safety glasses with side shields must be worn at all times when working in any area of the laboratory or bucking room (contacts are not allowed).
2. Safety shoes must be worn at all times.
3. Laboratory coats and PPE will be worn as conditions warrant.
4. Glass jugs must be carried in safety containers.
5. Fume exhaust hoods will be checked for performance with results documented on a semi-annual basis or more frequently if a noticeable change in operating performance is observed. Additionally, a daily wash down record of the fume hoods will be kept.

6. Fume exhaust hoods must be turned on when any work is being done under them or when the hot plate is being utilized.
7. Dust exhaust hoods must be turned on at any time dry samples are being prepared. Dust respirators must be worn while dry samples are being prepared. The use of compressed air will be kept to a minimum.
8. Eating, drinking and chewing are permitted only in designated areas in the laboratory (i.e., break room).
9. Safety showers, eyewash stations, first aid kits and fire extinguishers are located throughout the laboratory. Become familiar with the locations.
10. MSDS on all chemicals used in the laboratory are available for review in the laboratory office.
11. If you have any questions on the use of chemicals or laboratory procedures, contact your supervisor.
12. Personal hygiene and good housekeeping must be observed in the laboratory at all times.
13. Oxidizing agents and reducing agents will not be stored in the same area in the stock room.
14. Perchloric acid in use in the laboratory will be stored in a manner to prevent spillage.
15. Strong acids will be stored separately.
16. Perchloric acid in excess of that which is in use in the laboratory will be stored in a secure enclosure approved by the Health and Safety Department.
17. Chemical spills will be cleaned up immediately and people in the area warned to stay clear.
18. All broken glass will be disposed of in a separate container from normal laboratory wastes.
19. Hydrofluoric acid is used only under an operating fume exhaust hood. Burn jelly is available in the first aid cabinet for emergency use. In cases of hydrofluoric acid burns, seek medical attention immediately.
20. Oxygen, acetylene and other specialty gases shall be kept chained in the safety racks at all times.
21. Portable steps are used whenever any climbing is done. At no time is it permissible to climb on a stool or a chair to reach a high shelf, valve, or other equipment.
22. Strong acids will be diluted by pouring the acid slowly into the volume of water required.
23. All dispensing burettes and reagent bottles shall be clearly and correctly labeled.
24. Compliance with all other general plant safety rules is required.

Exhibit 1 to Appendix D

Laboratory Quality Assurance Plan

LABORATORY QUALITY ASSURANCE PLAN

PIÑON RIDGE MILL FACILITY
MONTROSE COUNTY, COLORADO

ENERGY FUELS RESOURCES CORPORATION

44 Union Boulevard, Suite 600

Lakewood, Colorado 80228

October 2009

1.0 Introduction 1
2.0 Quality Control Program 2
3.0 Quality Assessment Program 5
4.0 Laboratory Facilities 7
5.0 Personnel Requirements and Laboratory Organization 7
6.0 Sampling Procedures 8
7.0 Sample Handling 9
8.0 Instrument Operation and Calibration 10
9.0 Records and Reporting 11
10.0 General Laboratory Practices 15
11.0 Quality Control Monitoring 17
12.0 Corrective Action 19
13.0 Preventative Maintenance 20
14.0 References 21
15.0 Glossary of Terms 22

1.0 Introduction

The onsite laboratory facilities at the Energy Fuels Resources Corporation (Energy Fuels) Piñon Ridge Mill Facility provide chemical, industrial hygiene, and environmental analytical services to support the conventional recovery of uranium and vanadium. Analytical services include analysis of aqueous solutions and ores for inorganic constituents and uranium product purity.

The Quality Control Program establishes acceptable performance criteria for all routine analytical procedures being performed by laboratory personnel. The Quality Control Assessment program provides a formal system for evaluating the quality of data being generated and reported. The Energy Fuels Safety and Chemical Hygiene Plan provides the direction to perform health and safety monitoring of all laboratory and facility personnel. These, in addition to the experience and expertise of the analysts, provide a comprehensive Quality Assurance Program.

The procedures discussed or referenced in this manual describe the day-to-day laboratory practices and adhere to Good Laboratory Practices (GLPs). Where possible, Energy Fuels uses EPA, AOAC, ASTM, APHA, NIOSH, OSHA, or published analytical methods and follows the procedures with strict adherence to described protocol and recommended QA/QC parameters. Vital parts of the Quality Assurance Program, quality control and quality assessment programs, are outlined in Sections 2.0 and 3.0 of this manual.

To generate data that will meet project specific requirements, it is necessary to define the type of decisions that will be made and identify the intended use of the data. Data Quality Objectives (DQOs) are an integrated set of specifications that define data quality requirements and the intended use of the data. Project-specific DQOs must be established for both field and lab operations. Through the DQO process, appropriate reporting limits, analyses methods, target analytes, method quality control samples, sample security requirements, quality control acceptance ranges, corrective action procedures, and reporting formats and reporting levels can be specified.

Certain types of requests may not be suitable to standardized analytical methods. These custom requests are handled individually with laboratory management and staff scientists. Attention to documentation of the analytical procedure and use of suitable QC parameters is maintained according to good scientific discipline and Good Laboratory Practice guidelines.

In the event that Energy Fuels is dependent on the service of an outside laboratory for analyses not available through the site facility, staff will be notified that the work will be subcontracted to a qualified outside laboratory (See Subcontracting Policy - Section 7.5).

2.0 Quality Control Program

2.1 Objective

It is the policy of the management of Energy Fuels to produce laboratory data that is scientifically valid, meets method specifications, satisfies regulatory requirements, and accomplishes the data quality objectives of Energy Fuels. The method, regulatory, and Energy Fuels requirements are incorporated into the Quality Assurance Program, which is outlined within this Quality Manual. Energy Fuels is proactive in the commitment to continuously improve the effectiveness of QA and Management Systems. Energy Fuels applies appropriate corporate resources to set objectives, provide training opportunities, and monitor the quality performance of the staff. Energy Fuels also provides facilities and equipment adequate and appropriate to those objectives.

The purpose of the Quality Assurance Program is to ensure that the analytical services provided by Energy Fuels are of the highest quality, and each analytical result produced meets or exceeds Energy Fuels requirements and expectations. The quality systems in the program consist of the policies and procedures, and all referenced documents, described in this Quality Assurance Manual. All Energy Fuels personnel are expected to implement and follow the policies contained within the Quality Assurance Program Manual.

The Quality Control program insures that results of analyses are within established accuracy and precision limits required by the referenced method or Standard Operating Procedure (SOP). The Quality Control Program requires that the following points be met for each applicable analytical method:

Performance of any analytical method requires that the proper equipment and instrumentation are available. The procedure for operation of an analytical instrument is described in the equipment manufacturers operating manual, and may also be supplemented with a specific Standard Operating Procedure (SOP) for the instrument and/or the method.

Each SOP covers operation of the instrument including the sequence of operations involved in instrument start-up, calibrating, analyzing, and shutting down. SOPs include recommended preventative maintenance, and/or a list of parameters used to identify other types of maintenance. The SOP also outlines any special safety precautions for operation of the instrument.

SOPs of well-detailed EPA, ASTM, NIOSH, APHA, OSHA, or published procedures include, as appropriate, a list of any method specific items or variances, a list of QC parameters and their recommended performance ranges, recommended or example analytical sequences, specific or unique safety information, method performance requirements, method references, and a signed signature page. Detailed SOPs are prepared for those procedures that do not have published methods.

The initial test method evaluation for chemical analyses involves Method Detection Limit (MDL) studies, confirmation of the Limit of Quantitation (LOQ)/Practical Quantitation Limit (PQL), an evaluation of method performance (using four or more replicates of reference quality control reference samples), evaluation of the selectivity of the method, and any additional method-specific requirements.

Energy Fuels demonstrates that laboratory staff is qualified and capable of performing the method. Analysts are assigned duties based on their skills and experience. Training records are maintained for all analysts.

It is the responsibility of the analyst to become thoroughly familiar with the methodology and instrument operation before performing the analysis. It is the responsibility of the person providing training to monitor all laboratory results generated for a reasonable time. The amount of time necessary may vary depending on the method and the experience of the analyst. At a minimum, the analyst's performance is monitored until the analyst demonstrates the ability to generate results of acceptable accuracy and precision, according to the method.

All analysts are required to demonstrate and maintain a record of proof of competency by routinely analyzing quality control samples appropriate to the analytical procedures they perform. Competency in analyzing these control samples is documented in analysts' training files. For those analyses where external performance evaluation samples are not routinely analyzed, competency is documented by including the results of routine analyses of method specific quality control samples (prepared by laboratory staff) and/or a verifying statement of procedural review by a supervisor.

Each analytical method is subjected to quality control monitoring. The purpose is to demonstrate that results generated meet acceptable accuracy and precision criteria for the method. Precision and bias are determined for standard and non-standard methods. Precision and bias are determined for standard methods through control charting of quality control data from quality control samples. Precision and bias using non-standard, modified standard or laboratory-developed methods are compared to the criteria established by Energy Fuels (when requested), the method, or the laboratory.

Quality control requirements are outlined in the methods and Energy Fuels, at a minimum, follows the guidelines specified in the methods used. Additional QC requirements are also added as appropriate. Statistical method performance is periodically evaluated against method requirements using control charts.

Quality control monitoring to measure accuracy for each method generally requires that a percentage of all samples analyzed be fortified (spiked) with a known concentration of target analytes tested by the method. Percent recovery is calculated. This provides a means for

monitoring method accuracy and evaluating sample matrix effects. Blank spike samples replace matrix spike samples for certain methods, or when there is insufficient sample for a matrix spike analyses. Historical, routine, batch QC sample performance can be used to estimate the precision and accuracy of the method.

Quality control monitoring to measure precision for each method requires replicate samples be prepared and analyzed when appropriate. Actual requirements are outlined in the specific SOP. When replicate samples or matrix spike duplicates are analyzed, relative percent difference is calculated and used to monitor precision of the method. In instances where there are no specific method requirements, it is the policy of the laboratory to analyze a percentage of all samples in duplicate. Duplicate test results must be within the control limits established for each analysis type. Acceptance limits generally follow specifications listed in the method. Matrix spike duplicates replace sample duplicates for most methods.

When not defined in the method, and as appropriate, method blanks and instrument blanks are analyzed. Method blanks are used to verify that contamination from laboratory reagents and glassware is not present in the analytical sample processing. Generally, the method blank must be less than the reporting limit, or 10 times less than the concentration amount in the sample, for the analytical parameter being tested.

Calibration standards are analyzed and calibration curves are developed for all applicable methods. For additional information on instrument calibration, see Section 8.0 of this QA manual.

The initial calibration is continuously monitored by analyzing a continuing calibration standard periodically during the analytical run and at the end of each new set of samples, depending on the method and instrumentation. Results must be within an established range as described by the method SOP. Initial calibrations are verified against a standard from a second source.

Performance evaluation samples and further quality control check samples may be required for various methods. Refer to Section 3.0 of this QA manual for further details.

2.2 Maintenance of Performance Records

All quality control monitoring is recorded and documented. Quality control data is recorded in laboratory notebooks, electronic summary files, and/or analyses sheets. QC data can also be maintained in quality control forms, graphs, or charts. It is the responsibility of the analyst to see that all results are recorded in a timely manner.

All quality control data is filed and available for inspection and assessment by analysts, supervisors, management, and quality control personnel.

3.0 Quality Assessment Program

3.1 Purpose

The function of the Quality Assessment Program is to provide formal evaluation of the quality of data being generated and reported by the laboratory. External and internal quality control measures are used in this assessment. These measures include performance evaluation samples, laboratory quality control check samples, and routine internal and external audits on methodology and documentation procedures.

3.2 Performance Evaluation (PE) Samples

PE samples are supplied by an outside entity and contain known amounts of constituents. The laboratory does not have access to the known values of the samples. Only the PE provider has knowledge of constituent levels prior to the formal publishing of the test results.

These samples are received on a routine basis, with results sent to the providing entity for evaluation. Acceptable results are those that fall within a defined range as determined by the supplier. These study results are available for review upon request.

Blind Quality Control Check Samples are samples submitted as regular lab samples and are processed through the system in the same manner as any other sample. The analysts do not know the true value when performing the analyses. Method performance reports are returned to the analysts and maintained in method performance files.

3.3 Quality Control Check Samples

Quality Control Check Samples are performance evaluation samples used for routine method performance monitoring. As appropriate, analytical procedures include the analysis of a quality control sample with every sample batch analyzed. The materials are obtained from a commercial source, when available, or they may be prepared in-house. Acceptable results are within a defined range based on certified ranges, or against statistically determined control limits, method-defined criteria, or Energy Fuels defined Data Quality Objectives. Routinely used methods not subjected to PE sample monitoring are evaluated with Quality Control Check Samples as appropriate.

QC samples are processed through the system in the same manner as any other sample; except the analyst is aware of the source, concentration, and acceptance ranges of target analytes and calculates analyte recoveries to evaluate method performance in real time.

3.4 Quality Control Audits

Quality Control Audits consist of internal and external laboratory analyses inspections designed to monitor adherence to Quality Systems and quality control requirements. These audits check

general laboratory operations, overall Quality Systems, adherence to QA program requirements, sample tracking procedures, sample holding times, storage requirements, adherence to procedures during analysis, calculations, completion of required quality control samples within the group surrounding the sample, and proper record-keeping.

Internal quality control audits are conducted or coordinated by the Quality Assurance Officer at least annually. Energy Fuels conducts internal inspections on a regular basis to monitor adherence to quality control requirements. Results of formal audits are given to management with possible recommendations for corrective action in the event any discrepancies are found. As necessary, a follow-up review is conducted to determine that identified problems have been addressed. Annually, the overall Quality Systems of the laboratory are reviewed and a summary report is prepared.

The Chief Chemist and Quality Assurance Officer will conduct an annual review of the Quality System, including policies, procedures and environmental testing activities. This is done to ensure the QA systems continuing suitability and effectiveness, as well as give the opportunity to introduce necessary changes or improvements. The review shall take into account at a minimum the following:

- The suitability of policies and procedures;
- Reports from managerial and supervisory personnel;
- The outcome of recent internal audits;
- Corrective and preventative actions;
- Assessments by external bodies;
- The results of inter-laboratory comparisons or proficiency tests;
- Changes in the volume and type of work;
- Staff feedback;
- Complaints; and
- Other relevant factors, such as quality control activities, resources and staff training.

The findings from annual reviews and the actions that arise from these findings shall be recorded. The Chief Chemist shall ensure that those actions are carried out within an appropriate, pre-determined timescale.

4.0 Laboratory Facilities

The laboratory space includes adequate bench top and floor space to accommodate periods of peak workloads. Working space includes sufficient bench top area for processing samples; storage space for reagents, chemicals, glassware, bench and portable equipment items; floor space for stationary equipment; and adequate associated area for cleaning glassware. The laboratory contains at least 15 linear feet of usable bench space per analyst and at least 150 to 200 square feet per person. Laboratory departments are organized and the facilities are designed for specific laboratory operations in order to protect the safety of analysts and to minimize potential sources of contamination between and within department areas.

The laboratory is appropriately ventilated and illuminated, relatively free of dust and drafts, and is not subject to excessive temperature changes. As required, laboratory areas are temperature and humidity controlled. A light intensity of 100-foot candles is present at all working surfaces. Ample cabinets, drawers and shelves are available for storage and protection of glassware. Exhaust and particulate filtering hoods are available as needed for use during preparation, extraction, and analysis of samples. Air quality monitoring is conducted routinely to ensure a safe working environment. The laboratory has provisions for the disposal of chemical and radioactive wastes.

5.0 Personnel Requirements and Laboratory Organization

5.1 Personnel Requirements

Energy Fuels maintains experienced staff and management. Below is a summary of the primary roles, responsibilities and qualifications for designated positions. Laboratory experience can be substituted for academic requirements. Specific titles of employees are at the discretion of the Laboratory Manager.

Chief Chemist

The Chief Chemist is required to have education equivalent to a Bachelor of Science degree (site-specific requirements) in Chemistry or a related science. Five years (site-specific requirements) of relevant laboratory experience is required.

The Chief Chemist is responsible for all operations, analysis scheduling, equipment acquisition, as well as compliance with all employment, safety, environmental, and appropriate regulations. The Chief Chemist may delegate daily activities of these work aspects to appropriate personnel. The Chief Chemist reports directly to the General Mill Foreman.

Laboratory Technicians

Laboratory Technicians are required to have a High School Diploma or equivalent.

Laboratory Technicians perform the following duties: collection and preservation of samples, preparation of samples and reagents, analysis and preliminary data input, as well as various other tests. Laboratory Technicians are responsible for ensuring compliance with all laboratory policies and ensure that the analyses conducted under their work scope are compliant with all appropriate standards.

6.0 Sampling Procedures

Members of the staff are acquainted with proper sample collection and handling procedures and will advise those who need help in this area.

When the laboratory has been assigned the responsibility of sample collection, there is strict adherence to correct sampling protocols, initiation of chain-of-custody, sampling documentation, complete sample identification, and prompt transfer of sample(s) to the laboratory.

The laboratory provides proper sample containers and preservatives as specified for the procedure. Instructions for sampling, sample labeling, sample preservation, and sample packaging/shipping are also provided upon request. Sample container type, sample volume, preservation requirements, and maximum holding times, are detailed for each analyte.

When any sample is shipped by common carrier or sent through the United States Mail, it must comply with the Department of Transportation Hazardous Materials Regulations (49 CFR Part 172). The person offering such material for transportation is responsible for ensuring such compliance. For the preservation requirements as described in the Office of Hazardous Materials, Material Transportation Bureau, and Department of Transportation has determined the Federal Hazardous Materials Regulations do not apply to the following:

- Hydrochloric Acid - (HCl) in water solutions of 0.04 % by weight or less (pH of 1.96 or greater).
- Nitric Acid - (HNO3) in water solutions of 0.15 % by weight or less (pH of 1.62 or greater).
- Sulfuric Acid - (H2SO4) in water solutions of 0.35% by weight or less (pH of 1.15 or greater).
- Sodium Hydroxide - (NaOH) in water solutions of 0.080% by weight or less (pH of 12.30 or less).

It is required that all samples be analyzed within the prescribed holding times. Holding times are the maximum times allowed between sampling and analysis for results to still be considered valid. Samples should be delivered to the laboratory as soon as possible following collection to assure

that holding times can be met. Samples are analyzed as soon as possible after sample receipt. When maximum holding times cannot be met, re-sampling may be required/requested. Samples may be held for longer periods only if the monitoring laboratory has data on file to show that the specific types of samples under study are stable for the longer time or if a variance is allowed.

7.0 Sample Handling

The laboratory utilizes a sample tracking policy. Upon receipt, the security of the samples is maintained by the implementation of the laboratory access and security policies.

7.1 Sample Receipt

All samples arriving at the laboratory are logged into the Laboratory Information Management System (LIMS). Each sample container is given a unique laboratory sample number. Samples requiring preservation are checked to determine if the staff performed preservation. If requested, staff will preserve or filter samples as appropriate. Samples that degrade quickly or cannot be opened (such as aqueous samples for gasses) are not preserved at the time of sample login. If samples are improperly preserved, or the maximum holding times are exceeded upon arrival at the laboratory, the collector is notified and re-sampling is requested.

Samples are stored in accordance with method specifications in designated laboratory areas.

During sample login, all sample information such as sample description, analyses requested, special requirements, etc. are entered into the computer database of the Laboratory Information Management System (LIMS). Requested analyses parameters and special requirements are communicated to the analysts via their LIMS work lists. Project-specific requirements are maintained in the LIMS for any samples received from a special project. This process ensures that individual requirements are maintained.

7.2 Chain-of-Custody (COC)

Routine COC policy is maintained at the laboratory level through the laboratory access and security policies.

7.3 Sample Tracking

Samples are tracked through the analytical process by the LIMS. Completed analyses, which have been approved by the appropriate supervisor as valid data, are noted on the sample status screen. When all analyses are completed, the data sheets are sent to reporting for generation. The completed report is sent through data validation and finally to the appropriate department.

7.4 Sample Disposal

Samples will be disposed of in accordance with site Policies and Procedures.

The disposal of all laboratory wastes will be performed in accordance with all local, state, and federal and mill permit regulations that apply to such activities. Each method SOP addresses waste minimization and management specific to the method procedure.

7.5 Subcontracting Policy

The laboratory utilizes third party laboratory facilities to provide comprehensive analytical services. This occurs when the site laboratory cannot perform the analytical request outside of the laboratory's capabilities. Upon completion of the analyses, the third party laboratory(s) report the sample results, and their quality assurance package, to the Chief Chemist.

Third party laboratories will be required to maintain and provide current certifications.

The outside laboratory reports the results to Energy Fuels and these results become part of the final report. Any external or internal subcontracted analyses that require NELAC or other accreditation will be performed by a laboratory accredited for those parameters. All final reports indicate where the analyses were performed.

8.0 Instrument Operation and Calibration

Laboratory instruments and equipment are operated and calibrated according to the manufacturer's instructions and according to the requirements of the method being used. Exact calibration procedures are outlined in the appropriate SOP. For most instruments, a calibration curve composed of three to five standards covering the concentration range of the samples is prepared. The acceptance criteria for the calibration curves are listed in the individual methods. Unless otherwise specified in the method, at least one of the standards is at or below the practical quantitation limit (PQL) of the method. Calibration standards are routinely compared against second source calibration standards to verify accuracy. These second source standard results must fall within an established range, as described by the SOP, to be accepted. Whenever possible, the laboratory uses calibration standards prepared from certified stock standards. Initial instrument calibration curves are verified and routinely monitored by running a continuing calibration standard every 10 to 20 samples, and at the end of every analytical sequence, depending on the analysis method and instrumentation. High-level samples, which produce an analytical response outside the calibrated range of the instrument, are diluted or reduced in mass and re-analyzed until a response within the calibrated range is obtained.

System cleanliness is verified through the analysis of reagent/instrument blanks prior to analysis, between highly contaminated samples, and at regular intervals during the analysis. Samples are only quantitated within the limits of the response of the standards.

Use of measuring equipment and reagents (glassware, water, chemical reagents, and industrial gases) conform to Good Laboratory Practice guidelines. Good Laboratory Practices (GLPs) are laboratory guidelines, which were established by the Food and Drug Administration and published in the Federal Register (21 CFR, part 58) in the mid 1980's The GLP guidelines were adopted by the Environmental Protection Agency. SOPs are developed in accordance with GLP and NELAC guidelines. Laboratory volumetric glassware conforms to National Institute of Standards and Technology (NIST) Class A or B standards. All mechanical pipettors are calibrated monthly. Laboratory balances are annually serviced and calibrated by certified technicians. Routine calibration checks of all balances are performed. Laboratory drying ovens, incubators, freezers, refrigerators, and water bath temperatures are recorded at frequencies as described in the specific SOP. Laboratory pure water is generated by commercial water purification systems and is monitored and documented in accordance with ASTM grade II water specifications. The routine analyses of laboratory blanks are used to verify laboratory water quality and the suitability of sampling containers. Laboratory stock and working standards are derived from commercially available primary standards whenever possible. Standards preparation notebooks document the source, purity, content, concentration, preparation date, and technician. All calibrations standards are documented in the analytical sequence such that they are uniquely identifiable and traceable to stock standards and their source.

Standard Operating Procedures (SOPs) detail the sequence of operations involved in instrument startup, calibration, analyzing, shutting down, and routine maintenance. Suggestions for corrective action are included with the SOPs and parameters are identified which dictate certain types of maintenance. Instrument and method detection limits are performed at the method required frequency or whenever there is a significant change in instrumentation. Acceptable instrument response/performance criteria are based upon the manufacturers or the analytical method specifications. SOPs exist for all major pieces of analytical equipment/methods. Instrument maintenance logbooks are used to document instrument maintenance and repairs.

All instrumental run sequences are documented. Laboratory analysts record and document all instrumental runs in Laboratory Instrument Logbooks or computer files. Instrument Logbooks and/or dated computer files record instrument performance data, analytical sequences, instrument maintenance, calibration standards data, and any other additional information pertinent to operation of the instrument.

9.0 Records and Reporting

9.1 Document Management

Energy Fuels manages three types of documents: 1) controlled, 2) approved, and 3) obsolete.

A CONTROLLED document is one that is uniquely identified, issued, tracked, and kept current as part of the Quality System. Controlled documents may be internal documents or external documents. All controlled documents are written and reviewed by personnel technically competent to perform that procedure and approved for use by the Chief Chemist as well as the Quality Assurance Officer.

APPROVED documents have been reviewed, signed and dated by the Chief Chemist.

OBSOLETE documents are documents that have been superseded by more recent versions. Obsolete documents are retained for legal use or historical knowledge preservation. Old or archived SOPs are available for review using the laboratories electronic document system. OBSOLETE document records are maintained for at least ten years.

Documents are reviewed on an annual basis to ensure their contents are suitable and in compliance with the current quality systems requirements, and accurately describe current operations. The Quality Assurance Officer and the Chief Chemist maintain a master list of controlled documents (which include title, author, date of issue, revision identification and signatures of the issuing authority).

9.2 Laboratory Notebooks

Several different types of Laboratory Notebooks are maintained at the Energy Fuels Laboratory. These include, but are not limited to, the following:

- Method/Parameter Notebooks;
- Project Notebooks;
- Instrument/Equipment Use and Maintenance Notebooks;
- Standard Preparation Notebooks;
- Safety Notebook;
- Balance Calibration Notebooks;
- Pipette Calibration Notebooks; and
- General Notebooks.

The general purpose of maintaining each of these Laboratory Notebooks is to record the details that may be important in repeating a procedure, interpreting data, or documenting certain operations. Entries in the notebook may include data such as standard and sample weights, pH measurements, instrument operating parameters, preparation of calibration curves, analytical run sequences, calculations, recording of instrument operating parameters, sample condition, etc. The lab technician's notebook is particularly important in documenting analyses that deviate in

any way from routine or standard practices. It can also be an important training record. All pertinent data is to be recorded directly in the notebook. Some notebooks or data records are maintained in electronic files. Electronic data records are duplicated using hardcopy and/or alternate electronic backup techniques such as magnetic tape.

It is the responsibility of each lab technician to maintain a laboratory notebook according to Good Laboratory Practices (GLP) Guidelines. All laboratory notebooks are assigned unique logbook control number. Laboratory notebooks will remain the responsibility of the Energy Fuels staff member to whom they are assigned until, or unless, they are formally transferred to another staff member, until they are completely filled and returned to the Chief Chemist for archiving, or until the staff member resigns and returns them as a part of the checkout process. Staff members other than the individual to whom the Laboratory notebook is issued to may make entries in the notebook as long as those entries are consistent with the intended use of the notebook, and such entries are initialed. Laboratory notebooks are the responsibility of each staff member using the notebook. Supervisors review and approve all Laboratory notebook formats.

9.3 Records

The laboratory keeps records of chemical analyses, including all quality control records, for a minimum of 10 years.

9.4 Data Reduction

Data reduction refers to the process of converting raw data to reportable units.

Wherever possible, the instrument is calibrated to read out directly in the units reported. In this case, the value is recorded directly into a laboratory notebook, logbook, bench sheet, or electronic file and presented for review by supervision.

In cases such as titration, gravimetric measurements, or other techniques that require calculation prior to reporting, raw data is recorded in the appropriate laboratory notebook or electronic file, or on the appropriate laboratory form. The calculations specified in the method are used to determine the reported value. That value is also entered into the laboratory notebook or bench sheet, and on the draft of the report. Most of the calculations are computerized to reduce the chance of arithmetic or transcription errors.

Wherever possible, electronic data results are transmitted throughout the laboratory via the LIMS computer network. This process is intended to minimize manual data transcriptions within the laboratory. Additional advantages include the opportunity for rapid comprehensive data validation by supervisors, and more rapid data reporting.

9.5 Validation

Data validation includes the procedures used to ensure that the reported values are consistent with the raw data, calculated values, sample type, sample history, and other analyses parameters requested.

The data recorded on the draft report is validated with several steps. The lab technician who submits the report checks all the values reported for omissions and accuracy. Elements of this review also evaluate all instrument and method QC results. Automated data management programs are designed with an interactive step allowing data review by the analyst. Results to be reported are approved by the lab technician.

The reported result and associated QC data is reviewed by the Chief Chemist. The Chief Chemist reviews the suitability of the data according to project and method performance specifications. Analyses results for each requested parameter are evaluated against other requested parameters, project specifications, other samples within the set, historical files associated with the project/, and any other information provided with the sample. The Chief Chemist initials all validated sample results.

Internal and external laboratory audits review selected sets of data to ensure that the analysis results are correct and accurate, analytical methods are appropriate, documentation and record keeping procedures complete, and that overall objectives of the Quality Assurance Program are adhered to. At least annually, an in-depth monitoring of data integrity is performed per analytical method.

All automated programs used to process and report data are verified using hand-calculated results. Whenever a modification is performed to a program, re-verification of overall software function is performed.

One step of the Quality Control process involves data outlier detection; data that falls outside of established limits. This is performed at four different stages of the data reduction process. After sample analysis is complete, the data is placed in a draft report. If an outlier is observed, the lab technician must take action to investigate and/or correct the cause. Actions to correct these causes may include, but are not limited to, inspection of the instrumentation, checking calibrations, checking sample numbers or dilutions, rerunning samples or calibrations. After the lab technician reviews the data, the Chief Chemist reviews the draft reports. Once the Chief Chemist approves the data, he or she generates a report in LIMS. At this stage of the process, LIMS flags any QC data that is outside of the established limits for a given parameter. When reviewing the data, the Chief Chemist can see this flagged data and take appropriate actions to validate any data outliers. The Chief Chemist, or his designate, then performs the final review of the data and checks for data outliers. If a data outlier is discovered in the final review, corrective

actions are taken to correct the cause of the outlier, which may include some or all of the actions described in the first review step.

9.6 Reporting

Various levels of data reporting are available. All analyses results, regardless of the level of reporting used, have record keeping procedures which allow a complete "data validation package" to be produced. Note that a comprehensive "data validation package" is most easily generated at the time of sample analyses.

The final copy of a completed report is scanned and maintained as a graphics file. The electronic file of the report meets reporting requirements. An electronic copy of this file is available.

10.0 General Laboratory Practices

10.1 Chemicals and Reagents

When available and appropriate, chemicals used in the laboratory are analytical reagent grade (AR) chemicals purchased from reliable suppliers. Reagents are prepared, standardized, and made fresh as mandated by the method, their stability, and according to Good Laboratory Practices.

Normalized standards are checked regularly against independently prepared reference materials.

All standards and reagents are dated when received, opened, or prepared, and each are labeled with expiration dates when applicable.

Reagents are checked for discoloration or signs of degradation and are discarded if these are observed.

Certified primary standards are obtained from commercial sources when available. Standards used for calibration are verified against second source standards. Secondary and working standards are accurately prepared in volumetric flasks, or other calibrated glassware, from primary standards and stored in appropriate containers.

Titrants, standards, and other solutions used for analytical purposes frequently must be standardized upon preparation with certified or traceable standards. Method SOPs specify if standardization is necessary. The date and analyst's initials must be recorded on the container whenever re- standardized and records are maintained in a laboratory notebook.

Individual SOPs may also provide additional details for reagent requirements.

10.2 Reagent Interference

To determine the extent of reagent interference, method blanks are analyzed prior to sample analysis whenever appropriate.

If any interference cannot be eliminated, the magnitude of the interference is considered when calculating the concentration of the specific constituent in the sample, but only when permitted within the method being used.

If reagents, materials, or solvents contain substances that interfere with a particular determination, they are replaced.

Individual method SOPs may also provide additional requirements for handling reagent interferences.

10.3 Glassware Preparation

All glassware used for inorganic analyses is washed in warm detergent solution and thoroughly rinsed in tap water. Glassware is then rinsed well three times with ASTM Type II water. This cleaning procedure is sufficient for many analytical needs, but individual SOPs detail additional procedures when necessary.

Disposable, sterilized glassware/plastic ware is preferred for many procedures in the laboratory. The cleanliness and suitability of disposable glassware/plastic ware is continuously evaluated for each test with the routine analyses of method blanks.

All volumetric glassware used in precise measurements of volume is class A or laboratory calibrated.

10.4 Laboratory Pure Water

ASTM Type II water is used in the laboratory for dilution, preparation of reagent solutions and final rinsing of glassware.

Water quality is monitored for acceptability in the procedure in which it is used. Specific details are listed in the appropriate SOPs.

10.5 Employee Training

New lab employees and contract personnel are given an initial general orientation and tour of the laboratory facilities. Personnel are shown the locations of safety equipment such as safety showers, eyewash fountains, fire extinguishers, and first aid supplies. Personal protective equipment such as lab coats, disposable gloves, and safety glasses (if applicable) are issued at this time.

Safety considerations are a vital part of the training process. All hazards associated with the performance of a procedure or with the operation of an instrument are to be understood by the trainee before training can be considered complete. General laboratory safety procedures are a part of the new and current employee training. Specific safety procedures are outlined in SOPs and in instrument Operator's Manuals. Training in use of protective clothing, eye protection,

ventilation, and general safety are provided to each employee. Each employee is required to read the laboratory Safety and Chemical Hygiene Plan.

All new and existing lab employees must demonstrate capability prior to performing an analytical procedure independently (See Section 2.0). Method performance on Quality Control Samples is used to document employee training and work quality. Employees are required to read this Quality Assurance Plan and all appropriate SOPs. Employees also are required to sign, for all applicable SOPs, a Record of Acknowledgement Form that states they have read and understood the SOP. All Record of Acknowledgement forms for all SOPs are kept with the current SOP as an attachment.

10.6 Data Integrity

In order to ensure data integrity, the laboratory performs in-depth periodic monitoring of data integrity through internal and external audits.

10.7 Standard Operating Procedures

All routine laboratory operations and procedures are documented in Standard Operating Procedures (SOPs). SOPs are written to provide a reference that specifically defines requirements for routine procedures so that consistent, safe, and efficient laboratory operations are possible. For analytical methods, SOPs provide information on the details of the analyses that are not specified in a published analytical method. For routine procedures other than analytical methods, SOPs define the steps required in accomplishing a given task. All SOPs are reviewed periodically to assure that they reflect any changes in laboratory operations.

10.8 Confidentiality

Each employee has the responsibility to maintain confidentiality in all matters pertaining to samples submitted, and Information obtained during employment with this laboratory regarding the specific business of this laboratory shall at no time be revealed to any outside sources without permission from Energy Fuels of the data.

11.0 Quality Control Monitoring

11.1 Routine Monitoring

Temperatures of incubators, water baths, refrigerators, and ovens are checked and recorded according to a prescribed schedule.

All pH meters are calibrated against reference standards. Calibrations are noted in laboratory notebooks.

Conductivity of the ASTM Type II water is monitored.

Reagents are dated and initialed at the time of receipt; reagents are not used after recommended shelf life is exceeded.

Balances are checked against NIST traceable ASTM Type I weights and are calibrated and serviced by certified technicians annually.

SOPs are reviewed periodically for accuracy.

Laboratory Notebooks are reviewed for correctness and accuracy by the Chief Chemist

Performance Evaluation Samples are analyzed as required (See Section 3.0 of this QA Manual). Quality Control Check Samples are analyzed with each analytical batch.

Internal and External audits are performed as specified or requested (See Section 3.0 of this QA Manual for additional discussion).

Additional monitoring requirements may also be specified in individual SOPs.

11.2 Instruments/Methods

Calibration is performed as required by the analytical method or SOP (See Section 8.0 of this QA Manual).

Depending on method requirements, the standard curve is verified with a known second source reference sample. The reference sample results must fall within the appropriate target range for the calibration to be accepted.

In most cases, the calibration is checked by running a continuing calibration standard. The verification standard results must fall within an established range as described by the SOP.

All laboratory instruments are subjected to preventive maintenance schedules. Preventive maintenance schedules are specified in instrument maintenance logbooks.

As appropriate, instrument and/or method detection limits are determined annually, or more frequently if changes in instrument performance are noted or per method requirements.

Precision and accuracy requirements for each method are specified in the SOPs. General guidelines are given below.

Each sample analyses batch will contain QC samples to measure the accuracy of the method. Each QC sample result is monitored to be within QC specifications of the method. Results of blank spiked sample analysis must be within the established control limits. Quality Control Limits are specified in the SOPs and meet recommended QC limits as described in the referenced method.

Each sample analyses batch will contain QC samples to measure the precision of the method. (See Section 2.0 for discussion on duplicate sample analyses.) Criteria for duplicate sample acceptance are found in the SOP and are generally taken from the referenced method.

Each sample analyses batch will contain QC samples to measure the performance of the method on the sample matrix. These are typically identified as a matrix spike analyses and are often done in duplicate to assess method precision. Typically, the sample is fortified with a known amount of target analyte and spike recoveries are calculated. Results outside of method QC guidance are flagged. Quality control limits and appropriate corrective actions steps are specified in the method SOP.

As appropriate, the performances of QC samples' results are evaluated with Quality Control Charts. Suitability of existing QC limits is evaluated and possibly adjusted, but not to exceed method specification.

12.0 Corrective Action

When the quality control checks indicate that an analysis is not within the established control limits, corrective action is needed. This section gives general guidelines for corrective action. Corrective actions for each method or instrument are detailed in individual SOPs. Records are maintained of non- conformances requiring corrective action to show that the root cause(s) was investigated, and includes the results of the investigation.

Method QC samples that fail to fall within QC control limits may be analyzed again to verify if a problem exists. Matrix spike or matrix spike duplicate QC samples may not be re-analyzed if the performance can be attributed to matrix effects; data results are then reported and flagged. If the repeat analysis is not within control limits, the particular instrument or procedure is checked according to the specific protocols outlined in the method or according to the instrument manufacturer's guidelines. Once results are within control limits, analysis of all samples that were analyzed while the procedure was out of control are repeated, i.e., all analyses are repeated back to the previous acceptable control sample. If the analyst is unable to achieve acceptable results after following the corrective action guidelines detailed in the SOP, supervision is consulted. If necessary, the appropriate service personnel are contacted if the problem is determined to be due to instrument error, and cannot be resolved. It is also possible that the result is due to statistical variation of the results based on the tolerable error rate that has been determined for the analysis (usually 0.05). In certain cases, where control limits are exceeded, it is possible that problems cannot be corrected to satisfy QC criteria. This could be due to problems such as matrix interference, instrument problems, lack of sufficient sample, missed holding times, high blank contamination, etc. If all possible solutions available to correct the problem are examined and the

sample results are still considered valid, qualifying comments are attached to the sample report describing the non-compliance to QC and probable cause.

In the event that a QC audit or other informational review shows an analysis report to be incorrect, incomplete, or adversely compromised, a written corrected report and explanation is submitted. The report will clearly be identified as a revised report. As appropriate, an explanation submitted to the should give a detailed review of the problem and document any unapproved deviations from the regulations, standard operating procedures, or project specific scope of work that may have caused it. The explanation shall include, but not be limited to, the following components:

- What actions have been taken regarding the affected data set(s), Identification of the cause; and
- Corrective action(s) taken to prevent future occurrence.

In the event that a QC check fails, the lab technician will follow the procedures outlined in the QA/QC summary of the SOP. The analyst will document the steps taken to resolve the QC problem in the logbook for the instrument or method were the QC check failed.

Quality Control Checks for each method or instrument may vary. The Laboratory follows the QC checks set by each governing method. Due to the wide variations between methods, specifics are listed within each SOP for the given method. Please reference the SOP for specific QC checks for the given method. The QC checks may include; ICV, MB, CCV, CCB, LCS, LCDS, MS, MSD or others specific to that method.

12.1 Penalty for Improper, Unethical or Illegal Actions

Employees are expected to work in an ethical, proper, and legal manner. They are expected to perform laboratory analyses according to the cited method(s) and in conjunction with the SOP and the Quality Assurance Plan.

The penalty for improper, unethical, or illegal actions performed by an employee will be determined on a case-by-case basis. It will be set, in part, by the severity of the offense. A first time, minor offense may simply require instruction about the expectations of the company. A subsequent, willful, or more serious incident may require anything from supervisor reprimand to termination of employment. The supervisory staff and the Chief Chemist will determine the penalty. Consideration of such elements as employee experience, training, attitude, and the seriousness of the problem will be used to set the penalty.

13.0 Preventative Maintenance

Preventive maintenance is performed on laboratory equipment according to the manufacturer's guidelines and our experience in its operation.

14.0 References

ASTM Annual Book of Standards, Part 31 (water), American Society for Testing and Materials.

Handbook for Analytical Quality Control in Water and Wastewater Laboratories, Environmental Protection Agency.

Manual for the Certification of Laboratories Analyzing Drinking Water, 5th Ed., EPA 815-R-05-004, 2005.

Methods for Chemical Analysis of Water and Wastes Environmental Protection Agency, 600/4-79-020.

Methods for the Determination of Metals in Environmental Samples – Supplement I, EPA/600/R-94- 111, May 1994.

Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93-100, August 1993.

National Environmental Laboratory Accreditation Conference, Quality Systems, July 1, 1999.

NELAC Chapter 5: Quality System Standard, 2003 or most current version approved by Florida DOH NELAC Accreditation program.

Standard Methods for the Examination of Water and Wastewater; 20th Edition, APHA, 1998.

Environmental Protection Agency, Final Update III and IIIB, 1997 and 2005.

15.0 Glossary of Terms

Accuracy - The degree of agreement between an observed value and an accepted reference value.

Analyst - The designated individual who performs the "hands-on" analytical methods and associated techniques and who is the one responsible for applying required laboratory practices and other pertinent quality controls to meet the required level of quality.

Analytical Sample - Any solution or media introduced into an instrument on which an analysis is performed, excluding instrument calibration, initial calibration verification, initial calibration blank, continuing calibration verification, and continuing calibration blank.

Audit or Assessment - A systematic evaluation to determine the conformance to quantitative specifications of some operational function or activity.

Batch - Environmental samples that are prepared and/or analyzed together with the same process and personnel, using the same lot(s) of reagents. A preparation batch is composed of one to twenty environmental samples of the same matrix, meeting the criteria above. An analytical batch is composed of prepared environmental samples, extracts, digestates, or concentrates, which are analyzed together as a group and in a similar time frame.

Blank (BLK) - A sample of clean water that accompanies the samples through different aspects of sample and/or sample preparation. It is used to monitor contamination during sampling, transport, storage or analysis. The blank is subjected to the usual analytical and measurement process to establish a zero baseline or background value. There are various types of blanks: equipment blank, field blank, instrument blank, method blank, and reagent blank.

Blank Spike - See Laboratory Fortified Blank.

Blind QC Check Samples - Samples whose analyte concentrations are not known to the analyst. That the sample is a QC check sample may or may not be known to the analyst.

Calibration - The set of operations that establish, under specified conditions, the relationship between values indicated by the measuring instrument and the corresponding known value of the property being measured.

Calibration Blank - A volume of reagent water fortified with the same matrix as the calibration standards, but without the analytes, internal standards, or surrogate analytes.

Calibration Check Standard - See Check Standard.

Calibration Curve - The graphical relationship between the known values and the instrument responses for a series of calibration standards.

Calibration Standard - A solution of known concentration used in the calibration of an analytical instrument.

Chain of Custody Form - A record that documents the possession of the samples from the time of collection to receipt in the laboratory. This record generally includes; the number and types of containers; the mode of collection; collector; time of collection; preservation; and required analyses.

Check Standard - A material of known composition that is analyzed concurrently with test samples to evaluate a measurement process.

Clean Water Act - Public Law PL 92-500. Found at 40 CFR 100-140 and 400-470. The act regulates the discharge of pollutants into surface waters.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) - The enabling legislation (42 USC 9601 - 9675 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), 42 USC 9601 et seq.), to eliminate the health and environmental threats posed by hazardous waste sites.

Continuing Calibration Blank (CCB) – See Check Standard.

Continuing Calibration Standard - See Check Standard.

Continuing Calibration Verification (CCV) - See Check Standard.

Control Limits - A range within which specified measurement results must fall to be compliant. Control Standard - See Check Standard.

Corrective Action - An action taken to eliminate the causes of an existing nonconformity, defect, or other undesirable situation in order to prevent recurrence.

Data Quality Objectives (DQO) - An integrated set of specifications that define data quality requirements and the intended use of the data.

Demonstration of Capability (DOC) - A procedure to establish the ability of the analyst to generate acceptable and accurate data.

Detectability – For radiochemical analyses, detectability as a Lower Limit Detection (LLD) or Minimum Detection Concentration (MDC), is assessed based on the requirements of 40 CFR 141.27 and is a sample-specific determination. The equation is specific for each method and noted in the method SOP.

Detection Limit - See Practical Quantitation Limit and Method Detection Limit. Reporting of detection in radiochemistry is based on specific formulas identified in individual procedures.

Single activity point standards are used for efficiency calibration. When required, multiple energy emitters are used for energy calibration.

Document Control - The act of ensuring that documents and revisions are proposed, reviewed for accuracy, approved for release by authorized personnel, distributed properly and controlled to ensure use of the correct document version at the location where the prescribed activity is performed.

Duplicate (DUP) - A second aliquot of a sample that is treated the same as the original sample to determine the precision of the method.

Duplicate Sample - See Duplicate.

Fortified Sample - See Sample Matrix Spike.

Holding Times (Maximum Allowable Holding Times) - The maximum time that samples may be held prior to analysis and still be considered valid or not comprised.

Initial Calibration Verification (ICV) - A sample of known concentration, from a source other than that of the calibration standards, analyzed following calibration to demonstrate validity of the calibration.

Instrument Blank - See Calibration Blank.

Internal Standard – A known amount of standard added to a test portion of a sample as a reference for evaluating and controlling the precision and bias of the applied analytical method.

Laboratory Control Sample (LCS) – A sample with a known concentration prepared and/or analyzed as a measure of accuracy for the method.

Laboratory Fortified Blank (LFB) – An aliquot of reagent water to which known quantities of specific compounds are added and which is analyzed as a measure of method recovery.

Limit of Detection (LOD) - For chemical analyses, the LOD is an estimate of the minimum amount of a substance that an analytical process can reliably detect. An LOD is analyte and matrix specific and may be laboratory-dependent.

Limit of Quantitation (LOQ) – For chemical analyses, the LOQ is an estimate of the minimum amount of a substance that can be reported with a specified degree of confidence. An LOQ is an evaluation of precision and bias.

LIMS - Laboratory Information Management System.

Laboratory Inter-comparison Sample - A performance evaluation sample analyzed by numerous laboratories. Acceptance criteria are often based statistically on the analysis results.

Matrix – The substrate of a test sample.

Matrix Spike (MS) – An aliquot of a sample to which known quantities of specific compounds are added, and which is carried through the entire analytical process to determine the effect of the matrix on the method's recovery efficiency.

Matrix Spike Duplicate (MSD) – A second aliquot of a sample to which known quantities of specific compounds are added, and which is carried through the entire analytical process to determine the effect of the matrix on the method's recovery efficiency.

Method Blank (MBLK) - A clean sample processed simultaneously with, and under the same conditions as, samples containing an analyte of interest through all steps of the analytical procedure.

Method Validation - The confirmation by examination and the provision of objective evidence that the particular requirements for a specific intended use are fulfilled (NELAC 2003) (MARLAP 2004 for radiochemical methods).

Maximum Contaminant Level (MCL) – Regulatory action levels for a contaminant of concern.

Method Detection Limit (MDL) - A measure of the precision of an analytical method determined according to the procedure given in 40 CFR Part 136 Appendix B.

NELAC - National Environmental Laboratory Accreditation Conference. NELAP - National Environmental Laboratory Accreditation Program.

NPDES - National Pollutant Discharge Elimination System - A discharge permit system authorized under the Clean Water Act.

Performance Evaluation (PE) Sample - A sample with a composition unknown to the analyst that is provided to test whether the analyst/laboratory can produce analytical results with specified limits.

Practical Quantitation Limit (PQL) – The lowest concentration or amount of the target analyte that can be identified, measured and reported with confidence that the analyte concentration is not a false positive value.

Precision - The degree to which a set of observations or measurements of the same property conform to themselves.

Preservation - Refrigeration and/or reagents added at the time of sample collection to maintain the chemical and/or biological integrity of the sample.

Proficiency Testing (PT) Sample - A sample with a composition unknown to the analyst that is provided to test whether the analyst/laboratory can produce analytical results with specified limits.

Quality Assurance – An integrated system of activities planning, quality control, quality assessment, reporting and quality improvement to ensure that a product or service meets defined standards of quality with a stated level of confidence.

Quality Assurance Project Plan (QAPP) - A formal document describing the detailed quality control procedures pertaining to a specific project. For environmental clean-up projects, this is typically produced by an engineering firm with references to include a laboratory's Quality Assurance Program Manual.

Quality Control – The overall system of technical activities whose purpose is to measure and control the quality of a product or service so that it meets the needs of users.

Quality Control Sample – A sample used to assess the performance of all, or a portion, of the measurement system.

Replicate – An additional aliquot of a sample that is treated the same as the original sample to determine the precision of the method.

Reporting Limit (RL) – Also known as the Practical Quantitation Limit (PQL). The lowest level of reportable concentration for the method and the analyte.

Resource Conservation and Recovery Act (RCRA) - The enabling legislation under 42 USC 321 et seq. (1976) that gives EPA the authority to control hazardous waste.

Safe Drinking Water Act (SDWA) - The enabling legislation, 42 USC 300f et seq. (1974), which requires the USEPA to protect the quality of drinking water in the U.S. by setting maximum allowable contaminant levels, monitoring, and enforcing violations.

Sample (SAMP) - A portion of material to be analyzed. Spiked Sample - See Matrix Spike.

Standardization - See Calibration.

Standard Operating Procedure - A written document, which details the method of an operation, analysis or action whose techniques and procedures are thoroughly prescribed and which is accepted as the method for performing certain routine or repetitive tasks.

Traceability – The property of a result of a measurement whereby it can be related to appropriate standards.

Trip Blank - One type of Field Blank. An aliquot of analyte-free water or solvent transported to the field in a sealed container and returned to the laboratory with the sample containers.

Exhibit 2 to Appendix D

Laboratory Quality Assurance / Quality Control Plan

LABORATORY QUALITY ASSURANCE / QUALITY CONTROL PLAN

PIÑON RIDGE MILL FACILITY
MONTROSE COUNTY, COLORADO

ENERGY FUELS RESOURCES CORPORATION

44 Union Boulevard, Suite 600

Lakewood, Colorado 80228

October 2009

1.0 Objective 1
2.0 Personnel Requirements 1
3.0 Quality Assurance Program 2
4.0 Quality Assessment Program 4

1.0 Objective

To produce laboratory data that is scientifically valid, meets method specifications, satisfies regulatory requirements, and accomplishes the data quality objectives of the project. Those method, regulatory, and project requirements are incorporated into this Quality Assurance/Quality Control (QA/QC) Plan. Appropriate corporate resources will be applied to set objectives, provide training opportunities, and monitor the quality performance of the staff. Adequate and appropriate facilities and equipment will be available to achieve those objectives.

Laboratory staff will be qualified and capable of performing the methods assigned to them. Analysts are assigned duties based on their skills and experience. Training records and curricula vitae of supervisory and senior analysts will be maintained as well as training records for all analysts and technicians.

2.0 Personnel Requirements

2.1 Chief Chemist

The Laboratory Director is required to have education equivalent to a Bachelor of Science degree in Chemistry or a related science. Five years of relevant laboratory experience is required.

2.2 Quality Assurance Officer

The Quality Assurance Officer is required to have a bachelor degree in a science or engineering field. Five years of relevant laboratory experience is required.

2.3 Analysts/Laboratory Technician II

Analysts are required to have education equivalent to a Bachelor of Science degree in Chemistry or related science, or a High School diploma and three years experience as an analyst in training. A minimum of six months of on-the-job training, under direct supervision of qualified analyst in the measurements being considered for certification is also required. After six months, and on a continuing basis thereafter, the analyst must demonstrate acceptable skills through the successful participation in the analysis of applicable performance evaluation and quality control samples.

2.4 Laboratory Technician

Laboratory Technicians is are required to have a High School Diploma or equivalent. Laboratory Technicians work under the supervision of the primary analyst performing general laboratory test.

Laboratory Technicians prepare samples, make up reagents, load sequences, and perform various other tests under the supervision of the primary analyst.

3.0 Quality Assurance Program

3.1 Purpose

The purpose of the Quality Assurance Program is to ensure that the analytical services provided are of the highest quality, and each analytical result produced meets or exceeds the project requirements and expectations. The quality systems in the program consist of the policies and procedures, and all referenced documents, described in this QA/QC Plan. The QA/QC Plan also functions to maintain the laboratory's compliance with USEPA and State Agency regulations. All employees are expected to implement and follow the policies contained within the QA/QC Plan.

The QA/QC Plan ensures that results of analyses are within established accuracy and precision limits required by the referenced method or Standard Operating Procedure (SOP). The QA/QC Program requires that the points listed below be met for each applicable analytical method.

3.2 Demonstration of Laboratory Capability

Performance of any analytical method requires that the proper equipment and instrumentation are available. The procedure for operation of an analytical instrument is described in the equipment manufacturers operating manual, and may also be supplemented with a specific Standard Operating Procedure (SOP) for the instrument and/or the method.

Each SOP covers operation of the instrument including the sequence of operations involved in instrument start-up, calibrating, analyzing, and shutting down. SOPs include recommended preventative maintenance and/or a list of parameters used to identify other types of maintenance. The SOP also outlines any special safety precautions for operation of the instrument.

SOPs of well detailed EPA, ASTM, NIOSH, APHA, OSHA, or published procedures include, as appropriate, a list of any method specific items or variances, a list of QA/QC parameters and their recommended performance ranges, recommended or example analytical sequences, specific or unique safety information, method references, and a signed signature page. Detailed SOPs are prepared for those procedures that do not have published methods.

3.3 Demonstration of Analyst's Ability to Generate Data of Acceptable Accuracy and Precision

Analysts are assigned duties based on their skills and experience. Training records are maintained for all analysts. Curricula vitae of supervisory and senior analysts are described in the QA/QC Plan.

It is the responsibility of the analyst to become thoroughly familiar with the methodology and instrument operation before performing the analysis. It is the responsibility of the person providing training to monitor all laboratory results generated for a reasonable time. The amount of time necessary may vary depending on the method and the experience of the analyst. As a minimum, the analyst's performance is to be monitored until the analyst demonstrates the ability to generate results of acceptable accuracy and precision according to the method.

All analysts are required to demonstrate and maintain a record of proof of competency by routinely analyzing quality control samples appropriate to the analytical procedures they perform. Competency in analyzing these control samples is documented in analysts' training files. For those analyses where external performance evaluation samples are not routinely analyzed, competency is documented by including the results of routine analyses of internal method quality control samples and/or a verifying statement of procedural review by a supervisor.

3.4 Analysis of Quality Control Samples

Each analytical method is subjected to quality control monitoring. The purpose is to demonstrate that results generated meet acceptable accuracy and precision criteria for the method. Quality control requirements are outlined in the methods. Additional QC requirements are also added as appropriate. Statistical method performance is periodically evaluated against method requirements using control charts.

Quality control monitoring to measure accuracy for each method generally requires that five to ten percent of all samples analyzed be fortified (spiked) with a known concentration of target analytes tested by the method. Percent recovery is calculated. This provides a means for monitoring method accuracy and evaluating sample matrix effects. Where appropriate, surrogates are included in the method to monitor method performance on each individual sample. Blank spike samples replace matrix spike samples for certain methods, or when there is insufficient sample for a matrix spike analyses. Historical routine batch QC sample performance can be used to estimate the precision and accuracy of the method.

Quality control monitoring to measure precision for each method requires replicate samples be prepared and analyzed when possible. Actual requirements are outlined in the specific SOP.

When replicate samples or matrix spike duplicates are analyzed, relative percent difference is calculated and used to monitor precision of the method. In instances where there are no specific method requirements, it is the policy of this laboratory to analyze five to ten percent of all samples in duplicate. Duplicate test results must be within the control limits established for each analysis type. Acceptance limits generally follow specifications listed in the method. Matrix spike duplicates replace sample duplicates for most methods.

When not defined in the method, and as appropriate, method blanks and instrument blanks are analyzed. Method blanks are used to verify that contamination from laboratory reagents and glassware is not present. Generally, the method blank must be one half or less than the reporting limit for the analytical parameter being tested. When not defined in the method, and as appropriate, method spikes (blank spikes) are analyzed.

Calibration standards are analyzed and calibration curves developed for all applicable methods. The initial calibration is continuously monitored by analyzing a continuing calibration standard within a specified time frequency, and at the end of each new set of samples, depending on the method and instrumentation. Results must be within an established range as described by the method SOP. As appropriate, initial calibrations are verified against a standard from a second source.

Performance evaluation samples and further quality control check samples may be required for various methods.

3.5 Maintenance of Performance Records

All quality control monitoring is recorded and documented. Quality control data is recorded in laboratory notebooks, electronic summary files, and/or analyses sheets. QC data can also be maintained in quality control forms, graphs, or charts. It is the responsibility of the analyst to see that all results are recorded in a timely manner. All quality control data is filed and available for inspection and assessment by analysts, supervisors, management, and quality control personnel.

4.0 Quality Assessment Program

4.1 Purpose

The function of the Quality Assessment Program is to provide formal evaluation of the quality of data being generated and reported by the laboratory. External and internal quality control measures are used in this assessment. These measures include performance evaluation samples, laboratory quality control check samples, and routine internal and external audits on methodology and documentation procedures.

4.2 Performance Evaluation (PE) Samples

PE samples are supplied by an outside entity and contain known amounts of constituents. The laboratory does not have access to known values of the samples. Only the PE provider has knowledge of constituent levels prior to the formal publishing of the test results.

These samples are received on a routine basis, with results sent to the providing entity for evaluation. Acceptable results are those that fall within a defined range as determined by the supplier. These study results are available for review upon request. External PE samples are received on a semiannual basis, with results sent to the reference supplier for evaluation. Acceptable results are those that fall within a defined range as determined by the vendor/EPA/NELAP based on multi-laboratory study results. Results are sent by the provider to USEPA and other certifying agencies as requested.

Performance evaluation samples for Radon Proficiency testing certification are from the National Environmental Health Association (NEHA), an EPA approved commercial Radon testing certification association. Radon sampling canisters are submitted to NEHA for known levels of radon exposure. Acceptable results are those that fall within a defined ranged based on multi-laboratory study results.

Blind Quality Control Check Samples are samples submitted as regular lab samples and are processed through the system in the same manner as any other sample. The analysts do not know the true value when performing the analyses. Method performance reports are returned to the analysts and maintained in method performance files.

Laboratory Inter-comparison Samples are samples containing known/unknown quantities of analytes that are split and analyzed by more than one laboratory. These samples are routinely analyzed and results are kept on file.

4.3 Quality Control Check Samples

Quality Control Check Samples are performance evaluation samples used for routine method performance monitoring. As appropriate, analytical procedures include the analysis of a quality control sample with every sample batch analyzed. The materials are obtained from a commercial source when available, or they may be prepared in-house. Acceptable results are within a defined range based on certified ranges, or, against statistically determined control limits. Routinely used methods not subjected to PE sample monitoring are evaluated with Quality Control Check Samples as appropriate.

Exhibit 3 to Appendix D

Laboratory Chemical Hygiene Plan

LABORATORY CHEMICAL HYGIENE PLAN

PIÑON RIDGE MILL FACILITY

MONTROSE COUNTY, COLORADO

ENERGY FUELS RESOURCES CORPORATION

44 Union Boulevard, Suite 600

Lakewood, Colorado 80228

October 2009

1.0 Introduction 1
2.0 General Principles 1
3.0 Definitions 1
4.0 Exposure Reporting 2
5.0 Responsibilities 3
6.0 Laboratory Hazards 4
7.0 Chemical Storage 5
8.0 Safe Laboratory Practices 5
9.0 Transportation of Hazardous Substances 5
10.0 Personal Protection 6
11.0 Avoidance of Routine Exposure 6
12.0 Vigilance 7
13.0 Chemical Procurement 7
14.0 Stockroom and Storerooms 7
15.0 Environmental Monitoring 8
16.0 Housekeeping, Maintenance, and Inspection 8
17.0 Medical Program 8
18.0 Protective Equipment 8
19.0 Record Keeping 9
20.0 Signs and Labels 9
21.0 Performance of Safety Devices 9
22.0 Training 10
23.0 Safety Inspections 11

1.0 Introduction

This Laboratory Chemical Hygiene Plan (CHP) is a generic CHP to be used in conjunction with the Energy Fuels Resources Corporation (Energy Fuels) Piñon Ridge Mill Facility general safety and radiation protection programs. In general, the CHP is a key mechanism to ensure the protection and safety of the environment, laboratory personnel and all other Energy Fuels employees. This CHP complies with the safety requirements mandated by OSHA under 29 CFR 1910.1450 (Laboratory Standard).

2.0 General Principles

- The goal of this CHP is to maintain the Permissible Exposure Limits (PEL) or the Threshold Limit Values (TLV) of all chemicals in the designated laboratory areas.
- All lab personnel must not underestimate the exposure risk associated with all chemicals involved in this project regardless of the quantity.
- All chemical operations must utilize existing properly functioning and adequate engineering controls devices (fume hoods, glove boxes).
- Lab personnel will be required to wear adequate personal protective equipment.
- A process Standard Operating Procedure (SOP) covering all procedures and all phases of the laboratory operation will be reviewed by the Chief Chemist and the Safety Officer.

3.0 Definitions

Material Safety Data Sheets (MSDS)
Compilation of information required under the OSHA Communication Standard on the identity of hazardous chemicals, health, and physical hazards, exposure limits, and precautions. These are supplied by the chemical manufacturers. It must be requested for each ordered chemical. It must be kept in or near the laboratory.

Odor Threshold
Concentration at which a chemical can be detected by smell. Warning Properties (e.g., odor). Note: some chemicals, such as vinyl chloride, have poor warning properties.

Threshold Limit Value (TLV)
This is the concentration to which an employee can be exposed during an 8-hour workday without adverse effect as determined by the American Conference of Governmental Industrial Hygienists (ACGIH).

Permissible Exposure Limit (PEL)
This is a concentration to which a employee can be exposed during a time weighed average (TWA) of eight hours or an action level (AL) or short term exposure limit (STEL) not exceeding 15 minutes as established by OSHA.

Employee
Anyone on the payroll of Energy Fuels.

Workplace Exposure to Chemicals
Personal exposure must be avoided through the use of engineering controls and personal protective clothing.

Regulated Areas
Laboratory area where chemicals will be stored and reacted, handled, or used and in which concentrations could exceed 1 ppm.

Hazardous Operation
Procedure or operation capable of releasing liquid or gaseous compounds with concentrations above the exposure limit. Employees performing these functions must wear respiratory and dermal protective equipment.

Medical Consultation
Consultation between a licensed physician and the employee for a medical evaluation related to a significant hazardous exposure to chemical compounds and other chemicals at the discretion of the safety officer.

4.0 Exposure Reporting

Every employee must report all evidence of possible chemical exposure to the Energy Fuels safety officer and Chief Chemist. This is not limited to:

- Direct skin and eye contact.
- Noticeable odors.
- Manifestation of health hazard symptoms such as headache, nausea, coughing, eye or skin irritation, dizziness, loss of motor dexterity.

Effects of Acute (Short-Term) Exposure to Chemicals:

- Inhalation.
- Skin contact.
- Eye contact.

Effects of Chronic (Long-Term) Exposure to Chemicals:

- Risk of cancer, and other diseases and medical conditions.

Initial and Periodic Monitoring

The safety officer shall recommend the initial monitoring of all lab employees directly involved in the process or project and, depending on the background of the employee and the nature of their project, including periodic monitoring also.

Physician Information

If any signs or symptoms of exposure are experienced, the information will be provided to a physician recommended by Energy Fuels. Upon examination, the physician will provide a written opinion including test results and recommendations for future medical follow-ups. The safety officer will authorize medical consultation in non-emergency cases. The Chief Chemist and safety officer will complement this section with specifications on procedures, equipment safeguarding, personal protective equipment, and research practices that are capable of protecting technicians and nearby personnel as part of the SOP.

5.0 Responsibilities

Laboratory safety and chemical hygiene are the responsibility of all employees. While the safety officer manages or implements the CHP, the Chief Chemist has the primary responsibility for laboratory safety. He/she must ensure that the technicians meet the requirements of the CHP and adhere to the SOP guidelines. Additional responsibilities include:

Mill General Foreman

The Mill General Foreman has ultimate responsibility for chemical hygiene and laboratory safety by providing the needed support for the plan and reports to the Mine Manager.

Safety Officer

The Safety Officer will work with other Energy Fuels staff members to develop and implement the CHP policies and practices, monitor the procurement, use, and disposal of laboratory chemicals, maintain proper audits, assist the department to know the current legal requirements regarding chemicals, and seek ways to improve the CHP.

Chief Chemist

The Chief Chemist has the overall responsibility of the CHP in the laboratory. He/she will ensure that employees involved in the laboratory operations know and follow the CHP rules. He/she will provide regular safety and housekeeping inspections, determine the level of required protective equipment, and ensure adequate general safety in the laboratory area.

Laboratory Technicians
Lab technicians are responsible for following guidelines and safety procedures included in the CHP and developing good personal chemical hygiene habits. They must fully know and understand the SOP and the MSDS information.

6.0 Laboratory Hazards

It is the responsibility of each person to become familiar with the hazards and safety precautions appropriate for this laboratory operation. Many of the techniques, instruments, or materials used in the labs are potentially hazardous and require specialized knowledge before safe work is possible.

The Energy Fuels laboratories have a large number of potential hazards, including:

- toxic, poisonous, flammable materials, reproductive toxins and selected carcinogens;
- high vacuum techniques and handling of glass;
- corrosive chemicals;
- high pressures;
- strong light;
- electrical instruments with high voltages;
- radioactive materials;
- X-ray equipment; and
- reactive metals and compounds.

Measures to avoid laboratory hazards include:

- no laboratory should contain more than the amount of flammable solvents approved by the appropriate authority;
- all equipments and tools should be used only with commonly adopted safety guards;
- any compressed gas cylinders must be properly secured and sufficient personal protection provided at all times;
- all general electrical equipment will be grounded and in proper working condition;
- know the safety operating procedure (SOP) for each activity and review it before performing the procedure; and

- chemical acquisition must be done through the Purchasing Department to ensure that proper Energy Fuels procedures are followed.

7.0 Chemical Storage

- All containers of chemicals must be labeled to show the chemical, owner, and the date of purchase. The shelf life of all chemicals must be respected. A limit of flammable liquids will be established for the laboratory. Larger volumes of chemicals should be kept in the chemical storage room of the mill.
- Shelves holding chemicals should have a raised edge to prevent bottles from falling, where applicable.
- Incompatible chemicals must be segregated from each other during storage.
- Flammable Chemicals must be stored in appropriately labeled cabinets.
- Refrigerators used to store chemicals must be “explosion proof”.
- When in doubt as to the proper procedure for disposal of any material, contact the Chief Chemist or safety officer.

8.0 Safe Laboratory Practices

Because very few laboratory chemicals are harmless, it is prudent to minimize all chemical exposures in the laboratory. Avoidance of skin contact and breathing is the primary rule. Even for substances with no known adverse effect, exposure risk must not be underestimated. A major factor in preventing exposure is through adequate ventilation and proper use of hoods. Hoods are to be used as a standard practice and not as the exception. Regulations require that everyone in the area be notified of all hazards.

The Chief Chemist has the primary responsibility for observing correct procedures. New lab employees should be trained and reminded of the hazards involved in their work area, and the degree of caution one needs to observe. This warning should be in written form, with a copy submitted to the safety officer.

9.0 Transportation of Hazardous Substances

Energy Fuels has available approved carriers and carts for transporting materials and gas cylinders. Safety glasses with side shields, or face shields, must be worn when handling, filling or transporting acids or other corrosive materials.

10.0 Personal Protection

- Goggles: Must have covered vents and should be worn whenever handling chemicals. Safety glasses alone may not be enough in some cases.
- Clothing: No shorts. No sandals. Legs and feet are to be fully covered.
- Contact Lenses: Should be approved by the safety officer and your personal physician.
- Safety Glasses: Must have side shields.
- Gloves: Wear appropriate gloves based on chemical and physical substance.
- Respiratory Protection: Coordinate with the safety officer.
- Lab Coat: Must be suitable and disposed (or properly and safely cleaned) when badly contaminated.
- Accidence and Spills: REPORT ALL ACCIDENTS AND INCIDENTS, AND DOCUMENT ALL OCCURRENCES.
- Eye Contact: Wash promptly with water for 15 minutes. Seek medical attention afterwards.
- Skin Contact: Wash thoroughly affected area and remove all contaminated clothing. Seek medical attention afterwards.
- Spills: Use proper protective clothing and disposal methods to clean all spills.

11.0 Avoidance of Routine Exposure

- Do not smell or taste chemicals.
- Inspect lab coats and gloves before using them.
- Open toxic or noxious chemicals ONLY in the hood.
- Do not store or consume beverages and food in areas, refrigerators, or utensils used for chemicals.
- Avoid eating, gum chewing, smoking, or applying cosmetics in the presence of chemicals.
- Do not use your mouth to open samples or start siphons.
- Wash your exposed skin area before leaving the laboratory.

- Practice good housekeeping and personal hygiene.
- Separate paper trash from broken glassware.

12.0 Vigilance

- Seek information about potential hazards through MSDS.
- Do not handle dangerous chemicals alone.
- Do not leave operations unattended.
- Seek permission before working late in the lab.
- Store a minimum amount of Flammables in the lab.
- Keep toxic or noxious chemicals in the hood.
- Store Flammables in fire cabinets.
- Use proper waste disposal methods.
- Properly label all containers.

13.0 Chemical Procurement

- Chemicals are ordered through the Energy Fuels Purchasing Department.
- No container should be received without a proper label.
- When ordering chemicals, request MSDS from the manufacturer.
- Be familiar with information on proper handing before using any substance.
- Maintain a desk copy of MSDS of in- lab chemicals.

14.0 Stockroom and Storerooms

- Stored Chemicals should be examined annually for replacement, container integrity, and probable deterioration.
- Do not use storerooms or stockrooms to package chemicals.
- Practice adequate chemical segregation during storage.
- Periodic inventories should be conducted to discard aged chemicals. Store small amounts only. Do not hoard chemicals.

- Place container inside a bucket during transport. Use a cart if possible.
- Drums containing Flammables must be grounded.
- Post a copy of the NFPA fire protection for laboratories in each lab.

15.0 Environmental Monitoring

Airborne concentrations of selected chemicals will be monitored in the laboratory at the discretion of the safety officer. Personal badges will be used when be used if necessary.

16.0 Housekeeping, Maintenance, and Inspection

- Floors should be cleaned regularly.
- Conduct chemical hygiene inspections periodically.
- Eyewash kits must be inspected weekly.
- Safety equipment should be in good working order.
- Do not block hallways, exits, and other passageways.
- Emergency equipment must have free access.

17.0 Medical Program

- Proper medical surveillance will be carried out as recommended by the safety officer.
- Each employee potentially exposed to a potentially hazardous chemical may be examined by a licensed physician.
- The initial examination will cover a general physical with a focus on kidneys, liver, spleen, skin, connective tissues, and pulmonary functions.
- The employee medical history in reference to alcohol intake, hepatitis, exposure to hepatotoxins, and past blood transfusions will be reviewed.
- The physician will issue a statement of each employee's ability to work with a particular chemical or suite of chemicals.

18.0 Protective Equipment

- All laboratories have fire extinguishers, safety showers, eyewash kits, fire blankets, and hoods.

- Safety goggles and gloves are issued to all laboratory workers.
- Respiratory protection equipment is stored in adjacent cabinets. This includes SCBA's, spill containment, and respirators. PROPER TRAINING is required prior to using any of these devices.

19.0 Record Keeping

- All incidents in laboratories must be reported to the safety officer. A permanent record of all incidents must be maintained.
- Monitoring and medical records will have the employee's name, social security, date of examination, test, and test results.
- A copy will be given to the employee.
- Records will be kept for at least 30 years of the course of the employee's employment plus 20 years whichever is longer.
- Employees must be notified within 10 days after testing of their sampling results and of the steps taken to reduce exposure.
- A permanent record of all laboratory safety training must be maintained.

20.0 Signs and Labels

- Emergency response and notification signs are posted in buildings and in some cases inside the laboratory.
- Information on MSDS location is also posted.
- All chemicals must and will carry labels.
- Location signs for eyewash and safety showers are in every laboratory.
- Signs for chemicals will be posted.

21.0 Performance of Safety Devices

- Laboratory fume hoods are inspected once a year. They must comply with the 100 fpm (feet per minute) face velocity and pass the required smoke test. The sash must be positioned at the required height and not be obstructed by equipment or other apparatus. Hoods will not be used as storage devices. Vigilance must be exercised with regard to

good housekeeping for effective operation of the hood, as well as for general safety purposes.

- Emergency eyewash equipment and safety showers shall be tested monthly for proper performance.
- Respirators will only be issued by the safety officer or RSO after successful completion of respiratory training.
- Selection, procurement and maintenance of glasses, goggles, face shields, lab coats, aprons, gloves, and suitable clothing will be the responsibility of the Safety Officer.

22.0 Training

Safety training must be provided by knowledgeable and experienced individuals to all appropriate employees upon hiring into the laboratory and routinely and periodically thereafter. This training must be documented. In addition, Energy Fuels can provide general safety training to cover the following topics:

- General laboratory and chemical fume hood safety.
- Emergency (including spill response) and evacuation procedures.
- Fire safety. Please note the following:
  - In case of fire or explosion, activate the nearest fire alarm pull station (KNOW THE NEAREST LOCATIONS).
  - ONLY PROPERLY TRAINED/competent and confident individuals may use fire extinguishers.
  - Do NOT use more than one extinguisher on a fire; if unsuccessful, evacuate the area to a safe location and wait to coordinate with emergency personnel.
- OSHA hazard communication standard:
  - Hazard recognition.
  - Medical surveillance.
  - Monitoring program.
- Acute and chronic health hazards.
- Respiratory protection.
- Radiation safety.
- Hazardous waste disposal.

23.0 Safety Inspections

The safety officer will conduct frequent safety inspections. Standard safety inspection forms will be utilized.