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**Program Management Assessment
of
Federal Facility Compliance Agreement
Regarding
CAA--40 C.F.R. Part 61, Subpart H
at the
Los Alamos National Laboratory**

**by
Northern Arizona University
College of Engineering and Technology
and Institute for Tribal Environmental Professionals**

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Executive Summary

An assessment of Los Alamos National Laboratory's management system related to facility compliance with an element of the Clean Air Act was performed under contract by a team from Northern Arizona University. More specifically, a Federal Facilities Compliance Agreement (FFCA) was established in 1996 to bring the Laboratory into compliance with emissions standards of radionuclides, commonly referred to as Rad/NESHAP. In the fall of 1996, the four-person team of experienced environmental managers evaluated the adequacy of relevant management systems to implement the FFCA provisions. The assessment process utilized multiple procedures including document review, personnel interviews and re-interviews, and facility observations. The management system assessment was completed with a meeting among team members, Laboratory officials and others on November 1, 1996 and preparation of an assessment report.

The Rad/NESHAP activity of Los Alamos National Laboratory (LANL) began in 1989 and has progressed to the technical and management programs now in place. Throughout this period, changes have occurred in LANL management structures and policies, and additional changes still continue. The ongoing movement to decentralized management places great responsibility on individual facility managers, including continuous compliance with the complex Rad/NESHAP. Laboratory-wide air quality coordination and quality assurance functions will become more important to assure the integrity of the FFCA.

The Los Alamos Neutron Science Center (LANSCE) is responsible for emission of more than 90 percent of radionuclides from the Laboratory. This source merits special attention and historically has experienced such scrutiny. The current, relatively new, procedures and protocols to manage LANSCE emissions are thorough and should be effective. An effective relationship between LANSCE and ESH-17 Air Quality Group is both apparent and important. It should serve as a useful model as decentralization occurs at other facilities.

Demonstration and documentation of continuous compliance with the Rad/NESHAP are fundamental to the FFCA. These needs and responsibilities range from detailed record-keeping through multiple levels of review and oversight. Procedures necessary for compliance demonstration continue to evolve to reflect needed changes and management restructuring. Although overlapping procedures are evident as systems change, no important gaps in compliance demonstration have resulted.

The Department of Energy, through its Los Alamos Area Office (LAAO), has direct responsibility for the FFCA and reporting Rad/NESHAP emissions compliance information to the Environmental Protection Agency (EPA). The continuous on-site presence of LAAO greatly facilitates effective communications with the University of California/LANL and the principal regulatory agency, EPA.

LANL has initiated an effective program to inform interested regional neighbors of its environmental management programs. Although environmental litigation is ongoing with one

party, relations with most interested observers are improving. This effective outreach is most notable with nearby Pueblo communities.

Personnel of LANL are well-qualified to assure Rad/NESHAP compliance within the evolving management system. Equally importantly, LANL professionals exhibit a strong commitment to implementing the complex provisions of the FFCA. As facility managers assume more responsibility, it is important to maintain that commitment through these managers. LANSCE facility personnel present a good example.

The assessment team recommends several actions and continuation of others. The changing management structure of LANL presents opportunities for inconsistent commitments to Rad/NESHAP compliance. To limit such concerns, roles and responsibilities of management organizations should be more explicit with respect to the program. A clearer mandate for Laboratory-wide air quality coordination and quality assurance should be assigned to the ESH Division. Formal procedures under development to clarify and strengthen compliance documentation, e.g., review of new construction, should be rapidly completed and promulgated.

1.0 Introduction

The United States Environmental Protection Agency (EPA) and United States Department of Energy (DOE) signed a "Federal Facilities Compliance Agreement" (FFCA) in June, 1996. Specifically, the agreement pertains to the Los Alamos National Laboratory (LANL), and that facility's compliance with a provision of the Clean Air Act limiting emissions to the atmosphere of radionuclides. One provision of the FFCA-Compliance Plan, Section 4.0, requires a program of continuous quality assurance. This report is an early element of that quality assurance program.

Implementation of the comprehensive agreement and associated compliance plan is dependent on effective management systems and competent technical professionals. The adequacy of LANL systems and personal resources are to be evaluated by independent auditors (Compliance Plan, Section 4.1). LANL contracted with Northern Arizona University (NAU) to assess the Laboratory's management systems' adequacy regarding the FFCA. NAU assembled a four-person assessment team. The team was comprised of environmental professionals experienced in air quality management, law, engineering, and program management. Resumes of team personnel are included as Appendix A.

The specific charge of the assessment team was to evaluate the adequacy of LANL management systems to carry out the FFCA Compliance Plan. The plan is intended to assure compliance with National Emission Standards for Emission of Radionuclides Other Than Radon from Department of Energy Facilities. This regulation was promulgated by the EPA pursuant to Title I of the Clean Air Act. This specific regulation is commonly abbreviated as Rad/NESHAP.

The management assessment was begun in October, 1996. Key elements of the assessment were document reviews, personnel interviews and a site visit by the full assessment team. The assessment concluded with a verbal presentation to LANL and guests on November 1, 1996. This report includes a summary of the team's findings, conclusions, and recommendations.

2.0 Assessment Procedures

The assessment of LANL management systems regarding compliance with RAD/NESHAP required the assessment team to look beyond the FFCA Compliance Plan. In addition to organizational elements directly responsible for emissions management, the team sought to determine if a facility-wide management system is in place and operating in a manner that will sustain the Compliance Plan beyond its current high-profile status. The assessment was performed sequentially, beginning with assembly of team personnel and concluding with this report. A brief description of each major assessment element follows:

2.1 Assessment Team

In September, 1996, NAU received copies of the FFCA and proposed scope of work for the management assessment. After document review and brief discussions with Dr. Ernest Gladney, LANL Air Quality Group, a project assessment team, methodology, budget, and schedule were proposed. Selection of the assessment team was critical to the assessment process. The assessment required diverse experiences and skills. Yet collectively and individually, the team members were precluded from having real or perceived conflicts with the FFCA participants. A four-person assessment team was identified, proposed, and accepted. The members were William Auberle, Project Manager, James Boyd, William Jeffery, and Virgil Masayesva. Jennifer Steffel provided team administrative support. Professional resumes of assessment team members are included as Appendix A to this report.

2.2 Document Review

The assessment process continued with securing primary documents related to the history, development, and execution of the FFCA. LANL provided initial materials and provided other materials at the request of the assessment team. The assessment team independently obtained federal statutory and regulatory documents.

The assessment team reviewed the voluminous FFCA-related materials. A meeting was held between the Project Manager and Dr. Gladney to further review LANL roles and responsibilities as they pertained to the FFCA. Dr. Gladney subsequently provided supplemental materials including selected Director's Policies and University of California contract elements. The meeting also was important to plan the visit to LANL by the assessment team.

Available documents were reviewed prior to the on-site visit conducted from October 30 through November 1. During on-site meetings and discussions, numerous additional materials were provided to the assessment team. These documents were reviewed during the on-site discussions or soon thereafter.

2.3 Assessment Elements

The assessment team began its activities with reviews and discussions of the full scope of the assessment project. In addition, each team member was assigned a major element of the assessment for individual focus. Major assessment elements were identified by the assessment team and confirmed with LANL. Individual responsibilities were assigned to utilize specific team members' expertise and experience. This distribution of efforts was important to an efficient assessment from document review through preparation of this report. The following major elements were given specific attention in this assessment:

- LANL Management Roles and Responsibilities Related to the FFCA and Compliance Plan;

- LANL Responsibilities for Communications and Reporting to DOE, EPA, etc.;
- Demonstration and Documentation of FFCA Compliance; and
- Communications with the General Public and Selected Interested Parties.

2.4 On-Site Meetings, Discussions, and Report

The assessment team visited the LANL facility on October 30, October 31, and November 1, 1996. The principal purpose of this visit was to interview previously identified LANL personnel and selected others. The on-site visit began with a meeting among all team members, invited LANL personnel, and DOE officials. Subsequently, more than 40 interviews were conducted. The site visit concluded with a verbal "exit report" by each assessment team member to a gathering of LANL and DOE personnel. The observations reported at that meeting on November 1 are included and refined in Section 7.0 of this report.

It was most efficient to conduct some interviews by telephone. Some LANL personnel were unavailable during the team's site visit. Other key personnel are located remote from the facility, e.g., EPA Region VI- Dallas, and University of California- Berkeley. Leaders of affected and interested Pueblos typically were interviewed at their offices.

3.0 Description of LANL Rad/NESHAP and FFCA Management Systems

3.1 Background

Formal LANL Rad/NESHAP program activity dates back to 1989, at which time Federal facilities were to comply with EPA requirements. Greater emphasis on the program resulted from the two notices of noncompliance issued by the EPA in 1991 and 1992. A Federal Facilities Compliance Agreement (FFCA) was negotiated and finalized in 1996, providing an enforceable mechanism to bring LANL back into compliance. Because this "issue" was generated by an external Federal agency, it received a high level of LANL management attention and a high priority for resolution. Nonetheless, it took a relatively long time to resolve outstanding issues and finalize the FFCA. Finally, it appears that the relatively high cost of compliance that was initially estimated assured a lasting high management priority and led to significant efforts to review future facility needs.

The LANL Rad/NESHAP program is atypical for all the reasons cited above. This fact has proven a benefit to the design and execution of the program effort. It remains a question, however, if this high priority and management attention can be sustained as the program moves into a maintenance effort.

An additional consideration is that LANL appears to have subjected itself and been subjected to an extraordinary number of organizational and management operation changes. This is likely due to the fact that LANL has a somewhat unusual reporting and supporting structure, including ownership by the DOE, operation by the University of California (UC), and the participation of multiple subcontractors. The large number of assessments, audits and reviews carried out by these disparate groups traditionally results in requests for change. Further, as a scientific method-oriented research agency, LANL lends itself to experimentation with the latest organization and management system methodologies.

LANL has been and is a unique organization. All organizations develop and sustain a "culture" that mixes the standard precepts of organizational and personal behavior with the unique attributes of the particular organization. These attributes are a product of both tangible and intangible factors, such as the organization's mission, the size and style of its management, the special qualifications of its staff, its geographical location, the adequacy of its resources, and the privacy of its operations.

While the veil of secrecy has been pulled back in recent years, the challenge of LANL's mission, the unique qualities of its staff, and its isolated location are a few of the factors that have led to an extremely positive sense of purpose and dedication to program on the part of LANL's staff. A strong sense of team and/or family, high morale, and the fervent desire to solve problems are also defining features of LANL. All of these attributes serve well the organization and its mission.

The organizational and management system changes demanded of LANL, coupled with the requirement for adherence to rules and regulations demanded of the civilian sector, has not appeared to impact the ability and willingness of LANL to move forward with its mission. While the usual concern, if not mild resentment, shown by most product-oriented organizations toward their support or control agency counterparts is evident, it is not excessive at LANL. There remains a need for more managers at various levels to recognize the need for complete buy-in to the new operational changes being implemented at LANL. Complete buy-in involves sharing responsibility not only for the direct products but for all the ancillary yet necessary activities that support accomplishment of goals and generation of product. The need to deal with the unique culture of LANL remains as a challenge to management.

3.2 Policy-Guidance Development and Documentation

LANL utilizes various systems to document and disseminate policy and procedural guidance to operating units throughout the organization. Director's Policies (DP's), Administrative Requirements (AR's), and Technical Bulletins (TB's) are examples of the components of the system initially utilized, and still in place within LANL. Three years ago, the transition to a new hierarchy of policy documents was initiated. It continues the DP's, and adds Program Requirement Documents (PRD's), Program Element Documents (PED's), Lab Standards (LS's), and Lab Procedures (LP's), all of which are replacing the AR's and TB's. There are additional levels and documents in this system as well.

Now, yet another system has been launched. The goal is to collapse the current 22 DP's into as few as three. Also, Performance Requirements (PR's), Lab Implementing Requirements (LIR's), and Lab Implementing Guidelines (LIG's) are being created to replace the PRD's, PED's, LS's, and LP's of the preceding system. Again, there are additional levels below the PR, LIR, and LIG levels.

Therefore, LANL is operating under parts of three separate systems. Efforts are underway to make transitions between systems. This includes efforts to pare down the "current" system and utilize interim guidance documents that are to be part of the newest system, e.g., LIR's and LIG's. A draft guidance document on LIR and LIG preparation has been issued. There have been various delays and personnel changes affecting progress to date.

There are documents in all three systems that affect the conduct of the LANL Rad/NESHAP operation, e.g., DP's, AR's, and LS's. Recognizing the difficulty of enforcing adherence to policy/procedural guidance in the unique culture of LANL, it is noteworthy that the basic program management tenet of "accountability" has been addressed in the policy guidance system. In May of this year, an administrative procedure, AM 112, was issued detailing the consequences involved for failure to follow established policy guidance. Again, thanks to the dedication and efforts of the staff involved in the Rad/NESHAP activity, the program is on-line and operational in spite of the opportunity for confusion caused by multiple systems operating concurrently.

3.3 Organization

LANL underwent a significant re-organization in 1993 following the 1991 "Tiger Team" review. The organization was "flattened," leaving a very large number of functions and thus managers reporting directly to the Laboratory Director. The resultant span-of-control issue was significant. LANL management recognized this and created the team/council/working group concept to aid in managing the multitude of issues that face an organization with a complex mission and diverse goals. However, this meant the traditional hierarchical organization was overlaid with a cross-cutting matrix that reflects the participatory nature of LANL program execution but can complicate policy and operational directions.

At the same time, LANL is implementing a program of decentralizing select support functions and moving responsibility and authority closer to the point of delivery of principal Laboratory products, or so-called core programs. This directly affects the Environmental Safety and Health Division (ESH), and therefore the subject Rad/NESHAP program as well. Perhaps the most significant example of the decentralization effort is the Facilities Management. The Facilities Management Model that was developed provides that this formerly centralized support activity be totally distributed to the various core program activities of the Laboratory. Facility Managers are totally responsible for those activities deemed necessary to support the programs at the facility. The Facility Manager reports to the Division Director or "facility owner," is part of the division cost center, and is dependent on the division for the budgetary resources necessary to

carry out his responsibilities. This in turn implies that the "facility owner" or Division Director shares ownership of the activities, issues and problems associated with the facility. Furthermore, in some instances Laboratory support functions, such as ESH, share responsibility for issue/problem resolution with line projects/facilities.

For example, because more than 90 percent of the potential LANL radionuclide emissions are associated with the Los Alamos Neutron Science Center (LANSCE TA-53) program activity, if the Facility Management Model is operative, the Facility Manager of LANSCE and the Accelerator Operations Technology (AOT) Division Director share the major responsibility in the Facility Management Model for ensuring that the facility meets all established requirements for compliance with the FFCA and the Rad/NESHAP program. In this instance, the support function, ESH, shares some program responsibility as well as having an approval and oversight role.

3.4 Responsibilities

Because more than 90 percent of the emissions of radionuclides at LANL are associated with the LANSCE facility, a major emphasis has been put on controlling this facility. While ESH has managed the Rad/NESHAP program, it has worked closely with facility personnel on control solutions and issue management. The addition of a delay line control technique, the implementation of an emissions allocation and trigger alert level, and an elaborate mechanism to track emissions appears to have the emission control problem well in hand.

In actual practice it appears that the activities of both LANSCE and ESH have in fact been in accord with the latest LANL policy goals regarding Facility Management Model implementation as well as support activity decentralization. In fact, they have moved faster than was anticipated by most. However, in interviews with LANL management, some were unaware of the extent to which ESH and LANSCE facility management had designed and implemented a Rad/NESHAP operations program, e.g., Facility Management Program Management. Furthermore, LANL management at the highest level was only of a feeling that the Rad/NESHAP program was "doing O.K." This reinforces the assessment team's concern that the dual-path organization management system that has been created (i.e., the extraordinarily flat traditional hierarchical organization which is overlaid with a Laboratory Leadership Council, Executive Team and Working Groups) may affect management information flow.

It is noteworthy that personal relationships and individual and organizational dedication and enthusiasm within LANL have provided for successful Rad/NESHAP program design and implementation. ESH and LANSCE facility management personnel have mutually developed and agreed on plans and protocols to fulfill the LANL commitments as contained in the FFCA. The Facility Manager for LANSCE has taken ownership and responsibility for implementing the mutually agreed upon plans and protocols. ESH is properly involved actively in approval and oversight responsibilities. The parties implemented new programs and procedures that keep faith with the latest LANL policies.

As in any system undergoing change, there is risk that, if not at the present, in the future there will be circumstances when conflict and confusion will arise and threaten the smooth operation of the Rad/NESHAP program. Hopefully, as the various management models are implemented and as the policy guidance communication system is finalized, the program will sustain itself regardless of personnel changes and organizational modifications. A review of all current (1996) oversight and internal assessment reports, draft and final, reveals striking similarities among them on certain operating and management practices and policies at LANL. Management responsibility and authority, senior management involvement and buy-in, work planning and control, conduct of operations, collection and evaluation of performance data, and self-assessment are among the many similar comments.

With regard to managing LANL radionuclide sources other than LANSCE, ESH has in place guidance and procedures to deal with them. The ESH-17 systems of annual budget/project planning and yearly formalized assessments through the quality assurance program coupled with their weekly project meetings and monthly budget meetings affords them the information generation and feedback that is necessary for complete project management. Finally, the implementation of the Federal Clean Air Act, Title V permitting program will govern future conduct and operation of both modified and new sources of radionuclides. ESH-17 is working to implement a Title V model with stakeholder involvement. This should work to continue the positive interrelationships generated with LANSCE facility management in other LANL operations.

4.0 Compliance Demonstration

4.1 Regulatory and FFCA Requirements

Emissions of radionuclides from the Los Alamos National Laboratory are subject to requirements in the National Emission Standards for Emissions of Radionuclides Other Than Radon from Department of Energy Facilities (Rad/NESHAP) found at 40 C.F.R. Part 61, Subpart H, and the Federal Facility Compliance Agreement (FFCA) effective June 13, 1996 between the United States Environmental Protection Agency (EPA), Region VI, and the United States Department of Energy (DOE), Los Alamos Area Office.

In 40 C.F.R. Section 61.92, Rad/NESHAP provides that emissions of radionuclides to the ambient air from Department of Energy facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 millirem per year (mrem/yr). In support of this standard, Rad/NESHAP includes specific definitions, emission monitoring and test procedures, compliance and reporting procedures, and record-keeping requirements. Rad/NESHAP also establishes requirements for review of new construction or facility modifications, including application to EPA for approval for new construction or for modifications within an existing facility when emissions from the new construction or modification are above a specified level.

The FFCA incorporates a specific Compliance Plan for the LANL facility that is intended to bring LANL into compliance with Rad/NESHAP. The Compliance Plan a) describes specific methods for source evaluation and emission measurement, modeling and dose determination, quality assurance, and Rad/NESHAP reporting, and b) establishes detailed milestones and schedules for compliance with the FFCA and Rad/NESHAP.

4.2 Documentation of Compliance

The assessment team did not perform a technical compliance audit, but the team did review and evaluate management systems intended to develop documentation which establishes that LANL is in compliance with Rad/NESHAP and the FFCA. The following discussion summarizes the assessment team's understanding of those management systems.

4.2.1 ESH-17 Compliance Role

The Air Quality Group (ESH-17) provides regulatory and environmental surveillance leadership and services to meet LANL's air quality obligations and public assurance needs. In that capacity, ESH-17 is responsible for developing and implementing programs to ensure institutional compliance with state and Federal laws related to air quality regulations, including Rad/NESHAP. ESH-17 also appears to have primary responsibility for documenting compliance with Rad/NESHAP and the FFCA, although as discussed elsewhere in this report, LANSCE also performs a key role in compliance with Rad/NESHAP and the FFCA.

ESH-17 is organized by project teams under the line management direction and responsibility of the group leader. Project tasks are managed by project leaders who have the ultimate responsibility to ensure the project is completed according to quality specifications and budget obligations. Specific project teams relevant to Rad/NESHAP and FFCA compliance include the Rad/NESHAP Project Team, DOE Emissions Report Project Team, New Source Review Project Team, and others.

4.2.2 Documented Plans and Procedures

ESH-17 utilizes a system of documented plans and procedures to document and define responsibilities and to describe how various projects and tasks, including compliance with Rad/NESHAP and the FFCA, are to be performed. The management system hierarchy consists of the following documents:

1. Group-level quality management plan
2. Quality assurance project plans
3. Implementing procedures

The group-level quality management plan requires that project plans be developed for "all projects." Implementing procedures are to be developed for every process "of sufficient complexity, that is done repeatedly." Some of the project plans and implementing procedures

apply to group-wide activities, such as personnel training and records management, while other project plans and implementing procedures apply to specific activities, such as stack sampling or environmental sampling. Taken together, the various project plans and implementing procedures are intended to describe the tasks to be performed in order to achieve and document compliance with Rad/NESHAP and the FFCA.

ESH-17 routinely works in partnership with facility managers, subcontractors, and other Laboratory groups and divisions to achieve its mission with regard to Rad/NESHAP and the FFCA. The compliance responsibilities and requirements for these other parties are intended to be specified in ESH-17 project plans or in other LANL documents such as Laboratory Implementation Requirements or Memoranda of Understanding.

As noted above, Rad/NESHAP specifies emission monitoring and test procedures for Department of Energy facilities. The FFCA contains additional specifications of how these source evaluation and emission measurements will be performed at LANL

4.2.3 Personnel Interviews and Document Review

The assessment team interviewed key LANL personnel and reviewed available documentation to assess LANL management systems involved in compliance with the requirements of Rad/NESHAP and the FFCA. This same methodology was utilized to assess ESH-17 management systems in place to demonstrate or document compliance with those requirements. Following is a brief summary of those systems:

a. Emissions Data from Monitored Stacks: Approximately 28 individual emission points are currently monitored for Rad/NESHAP compliance. With the exception of the LANSCE facility and the TA-55 facility, stack samples are collected by ESH-17 personnel pursuant to applicable ESH-17 Project Plans and Implementation Procedures and documentation of those activities is prepared as required by those Plans and Procedures. The personnel collecting the samples are not required by the written procedure to complete any formal checklists or other documentation to demonstrate that the technician has followed each required step in the applicable Plans and Procedures, but they do prepare various other records, primarily sample collection and chain of custody documentation. The Rad/NESHAP Report Project Leader reviews documentation prepared by the ESH-17 personnel in the field, performs periodic walk-throughs with the personnel, and periodically reviews training records to verify (a) that the personnel have received the training required by the group Personnel Training Procedure (ESH-17-024) and the applicable individual Plans and Procedures; and (b) that this training can be documented. Documentation is to be maintained by ESH-17 pursuant to its Records Management Procedure (ESH-17-025).

Data at the LANSCE facility are collected by LANSCE personnel pursuant to LANSCE plans and procedures. Sample collection documentation is to be prepared and maintained by LANSCE. Routine stack samples at the TA-55 facility are initially collected by TA-55 personnel and bubbler samples are deposited into a locked box for later collection by ESH-17 personnel. Although the assessment team did not review TA-55 compliance documentation, ESH-17 reports

that TA-55 has agreed to use the ESH written procedures for collection of stack samples (ESH-17-106 and ESH-17-109). Sample collection documentation is to be prepared by TA-55 and maintained by ESH-17.

Analysis of samples collected by ESH-17, LANSCE, and TA-55 and reports of results are prepared by several groups and organizations, including the LANL ESH-4 Health Physics Analysis Laboratory and outside laboratories such as Paragon, formerly Analytical Technologies, Inc. Samples are analyzed by a laboratory and results are returned to LANSCE and ESH-17.

ESH-17 calculates emissions for all facilities except LANSCE from sample results reported by the various laboratories and sends periodic reports to the facilities. Rad/NESHAP Project personnel contact facility personnel to determine the cause of any unanticipated changes in facility emissions. Documentation of sample results and emission calculations by ESH-17 are to be maintained by ESH-17 pursuant to its Records Management Procedure (ESH-17-025).

LANSCE calculates emissions for its facility and sends the results of those calculations to ESH-17. Documentation of calculations by LANSCE is to be maintained by LANSCE.

b. Stack Flow Measurements: A LANL contractor, Johnson Controls International, obtains flow measurements for monitored emission points quarterly and calculates flow rates for those emission points, and the information is transmitted to ESH-17. The work orders for tasks performed by Johnson Controls International expressly identify the appropriate procedure to be used. ESH-17 uses the highest flow rate occurring within the previous 36 months for each emission point as conservative input to calculate emissions and model exposure to radionuclides. Documentation received by ESH-17 is to be maintained by ESH-17 pursuant to its Records Management Procedure (ESH-17-025).

c. Unmonitored Release Points: ESH-17 has primary responsibility for estimating emissions from unmonitored airborne radionuclide sources. The Rad/NESHAP Report Project Leader has overall coordination responsibility for assuring regulatory compliance is achieved. Other groups within the ESH Division may be used to validate or verify unmonitored emissions. The ESH-17 Project Plan for Unmonitored Point-Source Radioactive Air Emissions (ESH-17-UMS) describes the procedures to be followed to identify unmonitored sources, classify point sources, conduct periodic confirmatory measurements, and estimate dose. ESH-17 uses a contractor, Radian, for much of this work. Records generated pursuant to these procedures are to be maintained by ESH-17 pursuant to its Records Management Procedure (ESH-17-025).

d. Other Emissions: Emission data from sources other than discrete emission points are collected as part of the ambient air monitoring system, known as AIRNET, managed by ESH-17 pursuant to ESH-17-AIRNET. ESH-4 Health Physics Analysis Laboratory provides analytical services pursuant to the ESH-4 Health Physics Analysis laboratory Quality Assurance Program Plan (ESH-4-HPAL-QApp-01) and reports results to ESH-17. Outside laboratories, such as Rust Geotech/ Wastren: Grand Junction, provide additional analytical services and report results to ESH-17. Reports received by ESH-17 are to be maintained by ESH-17 pursuant to its Records Management Procedure (ESH-17-025).

e. Meteorological Data: Although the assessment team did not interview ESH-17 personnel with direct responsibility for collection of meteorological data, ESH-17 Plans and Procedures indicate that ESH-17 collects meteorological data at the meteorology tower sites by computer at 15 minute intervals. ESH-17 processes this data by computer to produce data plots and files. Data plots are to be filed as records in the meteorology laboratory, and data files are to be stored on the Common Files System, a centralized, long-term file storage system at LANL.

The ESH-17 quality assurance program binder also included a separate Quality Assurance Project Plan for Meteorological Monitoring prepared in 1993 by LANL Environmental Protection Group, EM-8. This Plan does not reflect current ESH-17 organization, duplicates some information covered in other ESH-17 procedures, and is inconsistent with other information in those other ESH-17 procedures. It was unclear to the assessment team whether any additional meteorological data was produced pursuant to the EM-8 plan and, if so, how that data was utilized by the Rad/NESHAP compliance program or where records generated pursuant to the plan were stored.

f. Calibration and Maintenance of Monitoring Equipment: ESH-17 Plans and Procedures require monitoring equipment to be maintained according to specifications in those Plans and Procedures and to manufacturers' specifications. The actual maintenance work appears to be performed by a variety of personnel, including ESH-17 personnel, other ESH Division personnel, LANL facility service personnel, and outside contractors. For example, ESH-4 Radiation Instrumentation and Calibration calibrates and maintains the bubblers used for tritium emission sampling and ESH-17 is to maintain documentation of the calibration pursuant to its Records Management Procedure (ESH-17-025). Much of the equipment used for stack volumetric flow measurements is calibrated by Johnson Controls International. The assessment team was advised that Johnson Controls maintains the calibration records for equipment it calibrates.

The assessment team did not interview personnel responsible for the meteorological monitoring program. The procedure for calibrating and maintaining instruments for the meteorological monitoring program (ESH-17-402) also was not reviewed because the procedure was not in the quality assurance program binders originally made available to the assessment team.

g. Receptor Information: "Every few years" a LANL subcontractor, Radian Corp. (Radian), conducts a field survey to collect information necessary to identify locations where members of the public may be exposed to radionuclides emitted by LANL. The assessment team did not locate any Plans or Procedures that described this activity.

h. Exposure Modeling: ESH-17 uses Clean Air Package circa 1988 (CAP88) as its computer program to calculate dose from airborne releases of radionuclides. Dose assessment using CAP88 is performed pursuant to ESH-17-501 using the information produced by the activities described above and other information required by CAP88 input parameters. CAP88

output files are to be submitted as records to the ESH-17 records coordinator for retention pursuant to the group's Records Management ESH-17-025.

i. New Construction and Modification: LANL utilizes two mechanisms to initiate review of new construction and modification of facilities.

(1) New construction and modification projects requiring funding over \$150,000 are reviewed by ESH for identification of environmental impacts, including radionuclide emissions, and for compliance with the National Environmental Policy Act (NEPA). Information on all projects reviewed by ESH-ID is transmitted to ESH-17 for evaluation of projected radionuclide emissions to determine whether a regulatory submission to EPA is required. The assessment team did not locate any ESH-17 Plan or Procedure that described how this evaluation would be performed. ESH-ID procedures for review of new construction and modification projects are described in a proposed Laboratory Implementing Requirement, but the Requirement has not been approved and issued as a final Requirement.

(2) Laboratory Standard 104-01.0 requires, among other things, that line management notify ESH-17 (a) if new operations may emit certain listed materials, including radioactive materials, or (b) if changes or modifications to existing sources will cause existing air emissions to increase or new listed materials to be emitted, or change the location of a source. When notified of a new or modified source, ESH-17 is required to perform an air quality review to obtain necessary information and to ensure compliance with regulations. No new construction, new operation, changes or modifications can begin until the air quality review has been performed and necessary air quality approvals have been obtained.

The procedures to be used by ESH-17 during its review are not specified in Laboratory Standard 104-01.0 or in any ESH-17 Plan or Procedure reviewed by the assessment team. Nevertheless, if that review indicates that radionuclide emissions from the new construction or modification is above the Rad/NESHAP standard for prior notification to EPA, ESH-17 prepares a regulatory package for that notification. ESH-17 may prepare the notification itself or may contract with Radian to prepare the notification. When completed, the notification package is forwarded to DOE which reviews the package and formally submits it to EPA.

ESH-ID, ESH-20 and ESH-17 personnel interviewed indicated that previously some projects of a highly secret nature, identified as "Black" projects, may not have been reviewed through the Rad/NESHAP new construction or modification review process. Currently, classified or "Black" projects involving new construction or modifications are reviewed as described above. Other projects involving new research activities funded by federal intelligence agencies are accompanied by proposals that include an ESH Form requiring the project leader at the responsible facility to indicate whether the research will use radionuclides or produce new or modified air emissions. This Form is reviewed by ESH-20 for NEPA compliance, including air quality issues. For certain classified or "Black" projects another laboratory group, NIS-IT, prepares a non-classified review document containing non-classified, environmental information to be reviewed by ESH-ID and ESH-17.

j. Annual Compliance Report: The annual compliance report is prepared by ESH-17 from information collected throughout the year and is transmitted to DOE for acceptance and formal submission to EPA. The procedures used by ESH-17 to prepare the annual compliance report, or monthly reports if required by Rad/NESHAP, were not in any ESH-17 Plan or Procedure reviewed by the assessment team.

k. Resource Availability: Although the assessment team did not directly review the financial and other resources available for the Rad/NESHAP and FFCA compliance, the ESH-17 Project Leader stated a strong opinion that current resources were adequate for compliance activities. If LANL personnel are not available to perform compliance activities, contract employees can be utilized under a contract with Radian to supplement LANL personnel. The Project Leader also was confident that the Group Leader and Division Director would support the Project if additional resources are determined to be necessary for compliance activities.

l. Personnel Training: The ESH-17 Personnel Training Procedure (ESH-17-024) assigns supervisors the ultimate responsibility to assure that their employees receive required training before performing work. Annually and whenever job assignments change, the supervisor is to determine the documents and implementing procedures, on which each employee will be trained, as well as any possible courses required, and is to complete an Employee Training Needs form to document the training determination. The documentation is to be forwarded to the training coordinator who is to enter the information from the Employee Training Needs form into the Employee Development System (EDS) training plans database and to retain a copy of the form in the training files. A proposed training plan for each person within ESH-17 is to be developed by the training coordinator based on information provided by the supervisor. The training coordinator is to forward the proposed training plan to the Project Leader for review and approval, and periodically the training coordinator is to send a copy of the training plan to the employee.

The training coordinator enters the training information from training forms or from class attendee lists into the EDS training database and into a manual recording system documenting course completed and date completed. The training coordinator also retains the training forms and class attendee list as records in the training file.

Although not described as a part of the procedures in ESH-17-024, the training coordinator is to be notified when Plan or Procedure revisions are completed and is to receive a control copy of any approved Plan or Procedure revisions. The training coordinator reviews each ESH-17 group member's training records quarterly to ascertain whether all required training is current and is consistent with the employee's training plan. The training coordinator also reviews, and updates as appropriate, a group member's training records when there have been changes in personnel assignments or revisions to applicable Plans or Procedures.

Training records are maintained by the training coordinator separately from other records maintained pursuant to the ESH-17 Records Management Procedure (ESH-17-025). The procedure for destruction of training records was not in any ESH-17 Plan or Procedure reviewed by the assessment team.

Training requirements and documentation of the completion of required training for LANL personnel by other groups within the ESH Division or by groups, such as LANSCE or TA-55, within other Divisions, are maintained by those groups or Divisions and not by ESH-17. Although ESH-17 Plans and Procedures appear to make training requirements applicable to contractors used by ESH-17 for Rad/NESHAP compliance, documentation of that training is not maintained by ESH-17 for all contractors.

m. Records Management: The ESH-17 Records Management Procedure (ESH-17-025) describes procedures to be followed by ESH-17 records specialists in receiving records, logging records into the Records Control Database, filing records, retrieving and returning records. As noted above, specific ESH-17 Plans and Procedures identify certain documents that are to be forwarded to the records specialists for entry into the record system.

The assessment team was advised that ESH-17-025 records are physically located in the ESH-17 record area or have been forwarded to a central LANL storage repository. ESH-17-025 does not include record retention schedules or destruction procedures, but the assessment team was advised that general DOE record retention policies were followed, that Rad/NESHAP records were maintained in the ESH-17 area for at least five years, and that an LANL-wide project to develop specific retention schedules and record destruction procedures is underway.

Rad/NESHAP compliance records prepared by personnel from other groups, divisions, or facilities, such as LANSCE or TA-55, and records prepared by contractors used by ESH-17 are maintained by ESH-17 only if those records were forwarded to ESH-17 for inclusion in the Rad/NESHAP record series. Otherwise, compliance records are maintained by those entities.

ESH-17 personnel interviewed by the assessment team agreed that the existing record system retained all compliance documentation produced by ESH-17, although there was less confidence expressed that all incoming documents potentially related to compliance issues were formally entered into the ESH-17-025 record system.

n. Deficiency Reporting System: ESH-17 utilizes a deficiency reporting system that allows any individual within the group to identify deficiencies or areas for improvement in any plan, procedure, or activity performed by the group. Deficiency reports are directed to the Quality Assurance Officer who refers all significant deficiency reports to the responsible Project Leader. The Project Leader assigns someone to correct the deficiency, and when the deficiency is corrected, returns a corrective action report to the Quality Assurance Officer who signs the report and sends a copy to the person who initiated the deficiency report. All deficiency reports also are reviewed annually by the Project Leader.

5.0 Oversight and Reporting Systems

5.1 LANL Including University of California

5.1.1 LANL Oversight

The developing management structure at LANL vests great responsibility and authority with Facility Managers. Specifically, continuous compliance with the Rad/NESHAP relies on management of TA-53 (LANSCE area) and other radionuclide sources. ESH-17, Air Quality Group, has direct responsibility for monitoring and reporting emissions compliance. Yet, the authority of ESH-17 to reduce emissions, when necessary, is indirect at best. In the event issues arise between ESH Division and Facility Managers, senior management groups, e.g. Laboratory Leadership Council and its Operations Working Group, are expected to resolve them.

Other LANL functions also may influence Rad/NESHAP compliance assurance. Legal counsel participates in developing and implementing all LANL environmental policies. The Audits and Assessments Office (AAO) offers sporadic internal reviews of environmental management procedures. Additionally, the Director of AAO participates on the Laboratory Leadership Council. Ultimately, within LANL, FFCA compliance is the responsibility of the Laboratory Director.

5.1.2 University of California Oversight

The Regents of the University of California operate LANL pursuant to a contract between the United States of America, represented by the United States Department of Energy (DOE), and the Regents of the University of California, effective October 1, 1992, a Supplemental Agreement to Contract No. W-7405-ENG-36. Among other things, the 1992 Supplemental Agreement restructured the then-existing Management and Operating contractual relationship to provide for expanded and enhanced University management oversight of LANL, with anticipated lessened oversight presence at LANL by DOE.

The President of the University has established an advisory committee, the Council on national laboratories, to advise him on issues relating to the national laboratories administered by the University, including LANL. Although the Council is primarily concerned with programmatic, rather than operational, issues, the Council has created a subpanel to deal with Environmental, Safety and Health issues. The subpanel typically visits LANL once each year and on recent visits was briefed on the status of FFCA and Rad/NESHAP compliance and on technical issues, such as sampling technology and emission and dose calculations.

The primary University oversight function for FFCA and Rad/NESHAP compliance matters at LANL, however, is performed by the Director of Environmental, Safety and Health within the Laboratory Administration group in the Office of the President. This individual reports to the Special Assistant for Laboratory Administration, who reports to the Senior Vice

President for Finance and Administration for the University, who reports to the University President.

The Director of Environmental, Safety and Health has oversight responsibility for all National Laboratories administered by the University, including LANL. Working with a small staff (one technical staff member and one administrative staff member) the Director interacts directly with DOE and LANL, but the Director's primary oversight tool is the annual performance evaluation required by the 1992 Supplemental Agreement.

Article XIV of the 1992 Supplement Agreement requires the University to comply with all applicable environmental laws, including laws and regulations of the United States, executive orders, and DOE directives. Appendix F, Part A, to the 1992 Supplemental Agreement identifies specific, objective performance measures used annually for rating the University's achievement of environmental, safety, and health requirements. At the beginning of each Federal fiscal year, the Director meets with LANL and DOE to negotiate specific targets for the year and to articulate grading criteria.

For example, Performance Objective #1 states that the Laboratory will conduct operations in a safe manner that protects human health, the environment and the public and prevents adverse impacts thereon. When assessing the level of performance for that objective for Fiscal Year 1996, Performance Measure 1.1.b. required that public radiation doses to the maximally exposed individual from DOE operations be measured or calculated and controlled to assure that applicable Federal limits are not exceeded. For Fiscal Year 1997, Performance Measure 1.1.b requires that a program be in place to ensure radioactive air emissions do not exceed the limits of Rad/NESHAP.

Similarly, Performance Objective #2 states that the laboratory will comply with applicable Federal, state and local environmental, safety, and health laws, regulations and ordinances and with applicable and accepted DOE directives. Performance Measures used to assess the level of performance for that objective look for downward trends in the number of validated environmental violations and findings resulting from inspections by regulatory agencies and formal audits and in the number of reportable environmental releases exceeding regulatory or permitted levels imposed by local, state or Federal agencies.

At the end of each fiscal year, the Performance Objectives are assessed and ratings are assigned for each Objective. Environmental Performance Objectives are combined with other Performance Objectives and an overall rating for the Laboratory is determined for that year. The annual rating is used to calculate the salary multiplier that affects the salary pool available for compensation for senior executives at LANL (e.g., Director, Deputy Directors, and Division Leaders).

The University does not perform environmental audits of LANL activities and feels that such audits would be duplicative of DOE audits. Whether the University will assume a more active oversight and audit role in the future will depend on contract negotiations with DOE. The University is, however, involved in an ESH Oversight Pilot Program intended to focus DOE

audits on performance, to reduce duplicative audits, and to improve the LANL self-assessment systems.

5.2 Department of Energy

DOE manages operations at the LANL site through DOE's Albuquerque Operations Office, with programmatic direction provided by the DOE Headquarters Offices of Defense Programs and Environmental Management. Continuous onsite DOE presence and day-to-day oversight and direction to the University of California for operations at LANL, including compliance with Rad/NESHAP and the FFCA, is the responsibility of the DOE's Los Alamos Area Office (LAAO) of the Department of Energy. The LAAO also has authority to sign, on behalf of DOE, documents and reports submitted to EPA for Rad/NESHAP and FFCA requirements. In contrast, programmatic oversight, such as Research and Development oversight and oversight of general environmental, safety and health programs, is the responsibility of the Albuquerque Operations Office of DOE.

The LAAO Mission Statement provides that the LAAO, among other things, assures that LAAO and LANL activities comply with applicable laws and requirements in a manner that protects employees, the public and the environment. The Assistant Area Manager for Environment and Projects is responsible for, among other things, an Environmental Protection Team that monitors and evaluates contractor performance in environmental and resource protection and monitoring, including interpretation and compliance with Federal and state legislation, rules, and regulations.

Within the Environmental Protection Team, the NESHAP Project Officer works closely with ESH-17 in implementing LANL's Rad/NESHAP compliance program. For example, the Project Officer works with ESH-17 in developing the annual compliance report required by Rad/NESHAP and then reviews the completed report after it has been formally transmitted to the LAAO for submission to EPA. In addition to Rad/NESHAP oversight, the NESHAP Project Officer has responsibility for FFCA project management, EPA pre-construction reviews, EPA reporting and interface, LANSCE emission tracking, ESH-17 group daily interface, and UC Contract Appendix F measures. The NESHAP Project Officer also consults with the ESH-17 Group Leader on matters such as interpretation of regulatory requirements. Other personnel in the LAAO are involved in an area air monitoring program that is coordinated with the ESH-17 Rad/NESHAP monitoring program.

The LAAO also has recently assigned Facility Representatives to individual LANL facilities. These Facility Representatives from time to time are called upon to become involved in Rad/NESHAP matters, but the primary, day-to-day oversight responsibility for the Rad/NESHAP program clearly resides with the NESHAP Project Officer.

DOE provides the formal interface with regulatory agencies, including EPA and the New Mexico Environment Department (NMED). For example, annual compliance reports prepared by LANL ESH-17 are forwarded to LAAO where they are reviewed and, when acceptable to

LAAO, are adopted by LAAO, acting on behalf of DOE, and formally submitted to EPA by LAAO.

In addition to reports to EPA required by Rad/NESHAP or the FFCA, DOE also has instituted additional management tools to track performance of Rad/NESHAP obligations. For example, although LANL believes it is in compliance and therefore only required by Rad/NESHAP to prepare an annual compliance report for EPA, DOE requires LANL to prepare monthly reports of the total dose contributed by LANSCE (when operating) for that month and the cumulative total dose contributed by LANSCE during the past twelve months.

5.3 Environmental Protection Agency (EPA)

EPA has current regulatory responsibility for the Rad/NESHAP and FFCA requirements. EPA has worked closely with DOE and LANL to develop the FFCA and believes that the FFCA has assisted LANL in developing a strategy to successfully achieve compliance with Rad/NESHAP compliance.

As noted above, LANL's formal interface with EPA is through the LAAO of DOE. Although the DOE NESHAP Project Officer is designated by the FFCA as the contact for FFCA matters, EPA also appears to have an effective working relationship with others at DOE and with LANL staff.

As noted below, it is anticipated by EPA and NMED that in the future regulatory responsibility for the Rad/NESHAP program will be transferred to NMED.

5.4 New Mexico Environment Department (NMED)

The State of New Mexico has received a grant from EPA to upgrade its radionuclide air emission program in order to receive delegation of Rad/NESHAP enforcement responsibilities. Using this grant, NMED has been improving its program to meet standards for delegation and intends to eventually incorporate the Rad/NESHAP program into its air permit program established pursuant to Title V of the Federal Clean Air Act. In anticipation of this transition, LANL and LAAO have initiated Rad/NESHAP communications with NMED.

6.0 External Communications

Examples of both internal and external communications are quite pervasive throughout the LANL organizational structure. This section of the report addresses the activities of the Community Involvement Office with the local communities. In addition, special relationships have been established with the local tribes with respect to environmental, safety, health, environmental management and restoration, and waste management issues.

6.1 Community Involvement and Outreach

Throughout the LANL organizational structure is an array of communications activities carried out by various divisions for different purposes. Internally, approximately 31 divisions and programs have an expressed need for outreach and education. Some of these have been established by individual programs or divisions, others are mandated by DOE/UC (e.g., Citizens Advisory Groups), others by EPA or NMED, and others as required by statute (e.g. NEPA as it is applied to the Site-Wide EIS, the Radioactive Liquid Waste Treatment Facility).

The Community Involvement Office is a program with a commitment to address community issues and concerns. With a staff of over 35 and nearly \$3 million budget, the office is engaged in various community education projects regarding LANL activities. In general, this office can be regarded as an intermediary or as a facilitating office between the various divisions and programs and the public. "Outreach" and "Involvement" team members are assigned to various divisions and programs both for purposes of information gathering and dissemination. A second group which directly supports the Office for Educational Services for the benefit of students, teachers and the public is the Bradbury Science Museum.

To enhance the public understanding of LANL programs and issues externally, the Community Involvement Office has important functions which include: 1) community councils established in Espanola, Las Vegas, Los Alamos, Santa Fe and Taos; 2) circuit riders and outreach centers in the same communities; and 3) tribal relations and accords with several Pueblos. At the Espanola outreach center, a display board includes a variety of LANL and DOE programs and services of interest to the general public. These includes documents which the environmentally-conscious public could find of particular interest, such as the environmental surveillance report, scoping report of the Site-Wide EIS, and the Transuranic (TRU) Waste Inspectable Storage Project. It could not be determined how much the outlying public depends on the centers for information, nor could it be determined if the literature is appropriate for public understanding. The TRU report, for example, although a very important issue, may be too technical for public consumption.

6.2 Tribal Accords and Cooperative Agreements

The history of LANL and tribal relations began in the early 1970's on issues related to employment of local Pueblo members. During the 1980's, the relationships became more formalized through the hiring of staff and initiatives undertaken on various issues related to economic, educational and environmental concerns. By the 1990's, these initiatives were transformed into Tribal Accords and Cooperative Agreements, procedures to enhance LANL, DOE and tribal governmental relations.

These accords and agreements serve different purposes, and their official status differs. Accords are established by DOE and Pueblos. Agreements are made between Laboratory personnel and the Pueblos. In 1992, accords were established by DOE management with San Ildefonso, Jemez, Cochiti and Santa Clara Pueblos. These were established in recognition of the

need for special government-to-government relationships to address and resolve issues of mutual concern, allowing for meaningful participation in DOE regulatory decision-making and promoting dialogue between the two parties. The Area Manager of the LAAO is charged with implementing the accords along with Pueblo representatives who are accountable to their respective tribal governments.

It is noteworthy that DOE and LANL took recognition of these government-to-government provisions in the drafting of the FFCA. Section I of the draft agreement was later amended to include language contained in the accords: "...DOE has agreed to consult with the Pueblos to assure that tribal rights, responsibilities, and concerns are addressed prior to DOE taking actions, making decisions, or implementing programs that may effect the Pueblos or their culture, religious and environmental resources." Another important amendment is found in Section XXI.127 which reads: "this Agreement shall be undertaken in accordance with the requirements of all applicable local, tribal, state and Federal laws and regulations..."(emphasis provided).

While the accords are regarded as official recognition of Federal-tribal relations, the Cooperative Agreements provide a programmatic relationship between the Laboratory, the University of California, and the Pueblos to address environmental, cultural, educational, employment and related tribal concerns. In 1994, agreements were signed with San Ildefonso, Jemez and Cochiti Pueblos.

With the establishment of the Tribal Accords and Cooperative Agreements, several projects have been implemented, and more collaborative projects are expected. Some of these projects are either related or indirectly related to Rad/NESHAP:

(1) Pueblo consultation on the FFCA which produced important changes incorporated in the draft FFCA. Stone Lions Corporation provided assistance to the Pueblos at various stages of the drafting of the FFCA, primarily on technical analysis. However, the corporate principals were not interviewed for this assessment.

(2) Pueblo involvement in Area G Radiological Performance Assessment. Several meetings have been held with the Pueblos in determining how best to manage future radioactive and industrial liquid waste.

(3) Pueblo participation in environmental restoration, waste and environmental planning and management in Los Alamos Canyon and Pueblo Canyon. Funding is expected to enable Pueblo participation in the Canyon Restoration Field Unit.

(4) Environmental surveillance and community monitoring projects have been extended to the Pueblos. "AIRNET" and "TLDNET" sampling stations are located at San Ildefonso and Jemez. Also, the Neighborhood Environmental Watch Network (NEWNET) units, which tribes can access regarding air emissions, are located in San Ildefonso and Cochiti.

(5) DOE has invited the Accord tribes to be active participants in the Site-Wide

Environmental Impact Study (SWEIS) currently underway. In particular, the Pueblos are interested in the protection of Traditional Cultural Properties. GRAM, the SWEIS contractor, has worked closely with the Pueblos on ethnographic studies to identify Cultural Properties.

(6) Other studies have been made on Pueblo-specific concerns. Examples include radionuclide concentrations in soils and food stuff, hydrogeological field studies, and groundwater sampling for tritium.

In February 1995, another milestone event which DOE, LANL and the Pueblos hope will strengthen relations was the first executive-level meeting between the LANL Director and Pueblo Governors. Discussed were collaborative projects underway, improving communications, and steps for enhancing participatory decision-making in the future on issues of mutual concern. Also from this executive meeting, "Environmental Quality Working Groups" were established on the following: Tritium in Groundwater, Water Quality, Laboratory Impacts on Elk, Air Quality, Environmental Restoration, Area G Radioactive Waste Storage Facility, the DARHT Facility, and Asthma Concerns. It is not certain if the discussions included further implementation of the Accords in the study groups, or if the strong government-to-government language inserted in the final FFCA would be carried on in future collaborative activities.

7.0 Conclusions

The assessment team developed numerous conclusions regarding LANL's management system as it relates to implementation of the FFCA. Two conclusions have been identified as particularly important- 7.1 LANL Management Structure and 7.2 Professional Commitment. Other noteworthy conclusions follow in Section 7.3.

7.1 LANL Management Structure

The LANL management structure and its concomitant organizational structure and policy development structure have accurately been described by on-site personnel as ever-changing, complex, matrix-based, flat, and currently developing. Nevertheless, the dominant radionuclide source operation, LANSCE, with essential support from ESH-17, has a well-documented and viable Rad/NESHAP compliance strategy. ESH-17 also has a well-documented and viable Rad/NESHAP compliance strategy applicable to all significant contributing sources.

7.2 Professional Commitment

LANL personnel with direct roles in FFCA compliance are well-qualified. Equally importantly, these individuals were found to be extraordinarily dedicated, loyal, and enthused about their roles and responsibilities. These characteristics were weighted heavily by the

assessment team and were found to contribute significantly to the Rad/NESHAP compliance program.

7.3 Other Conclusions

7.3.1 Currently, LANL has multiple facility-wide policies and management procedures. This may inhibit a cohesive approach to full Rad/NESHAP compliance. (See Recommendation 8.1.)

7.3.2 The procedures for assuring compliance with Rad/NESHAP requirements for new construction or modification of existing sources should be effective if followed for all projects, but there does not appear to be an effective procedure to assess or monitor whether all line management is complying with those procedures. (See Recommendation 8.2.)

7.3.3 The "Quality Assurance Project Plan for Meteorological Monitoring" does not reflect current organizational or operational procedures. The ESH-ID procedure utilized as one of the mechanisms to initiate Rad/NESHAP review of new construction and modification of facilities has not been approved and issued as a final Procedure. The ESH-17 procedure for Rad/NESHAP review of new construction and modification of facilities has not been documented. (See Recommendation 8.3.)

7.3.4 LANL Plans and Procedures establish training programs and requirements for LANL professionals and documentation of that training is maintained by LANL. Those same Plans and Procedures also make those training requirements applicable to contractors used by LANL for Rad/NESHAP compliance activities, but documentation of that training is not maintained by LANL. In some cases, documentation of compliance activities performed by contractors is maintained by those contractors and not by LANL. (See Recommendation 8.4.)

7.3.5 In some cases (e.g., record retention by ESH-17 and ESH-17 training documentation), compliance activities or documentation of compliance are performed by a single employee and other employees have not been trained to perform those activities in that person's absence. (See Recommendation 8.5.)

7.3.6 Deployment of ESH-17 personnel to LANSCE facilities promotes effective monitoring and documentation of radionuclide emissions and compliance status and facilitates a close working relationship between the two groups.

7.3.7 The developing management structure (i.e., the Facility Management Model) places unusual pressure on LANL's environmental monitoring and support operations. If LANL continues to decentralize support functions through the further implementation of the Facility Management Model, the centralized Rad/NESHAP program developed by ESH-17 for radionuclide source operations other than LANSCE may need to be modified. (See Recommendation 8.6.)

7.3.8 The communications and working relationships between LANL and DOE are excellent and appropriate. (See Recommendation 8.7.)

7.3.9 Communications with EPA are timely and effective. (See Recommendation 8.7.)

7.3.10 Communications with NMED will become increasingly important as the NESHAP program is delegated to that agency. (See Recommendation 8.7.)

7.3.11 Other internal and external communications programs are timely and effective. (See Recommendations 8.7 and 8.8.)

8.0 Recommendations

The following recommendations are based on LANL management systems related to Rad/NESHAP compliance as those systems were observed in late 1996. As the decentralized management program continues to develop, these observations should be considered.

8.1 The responsibilities and authorities of LANL-wide management functions should be clearly defined. The specific roles of the Laboratory Leadership Council, Facilities Management Council, and Operations Working Group, for example, should be specified as they relate to the FFCA. The complex and changing network of operating procedures (i.e., DPs, PRs, LIRs, LIGs, etc.) should be completed promptly.

8.2 An effective procedure to assess and monitor whether line management is complying with Laboratory Standard 104-01.0 should be established.

8.3 Existing ESH-17 Plans and Procedures should be reviewed to determine which ones do not reflect current practices and should be revised as appropriate. The ESH-ID procedure utilized as one of the mechanisms to initiate Rad/NESHAP review of new construction and modification of facilities should be completed, approved and issued as a final Procedure. The ESH-17 procedure for Rad/NESHAP review of new construction and modification of facilities should be documented.

8.4 All subcontractors implementing LANL Rad/NESHAP procedures and protocols should be trained with regard to those procedures and protocols and documentation of that training should be maintained by LANL. Documentation of any compliance activities performed by subcontractors also should be maintained by LANL.

8.5 In cases where compliance activities or documentation of compliance are performed by a single employee, LANL should consider whether other individuals could be effectively and efficiently cross-trained to perform those duties if the regular employee unexpectedly becomes unavailable.

8.6 To the extent LANL continues its decentralization of support functions and assigns to individual facilities Rad/NESHAP compliance activities currently performed by ESH-17, documented compliance strategies will need to be developed for those facilities (as they have been developed for the LANSCE facility). Because of the facility-wide nature of some Rad/NESHAP compliance roles, some centralized Rad/NESHAP functions should continue. A strong internal compliance audit function also should be established to assess and monitor how the facilities perform those compliance activities. Centralized resources to provide technical consultation and support to the facilities also should be maintained.

8.7 An effective regulatory and public communications program should be sustained. The high profile of LANL, and the FFCA specifically, warrants extraordinary efforts to share all relevant information in a timely and effective manner.

8.8 All major Laboratory initiatives should continue to recognize, respect, and uphold the DOE mandate recognizing government-to-government relationships with Indian tribes.

Appendix A

Resumes of Assessment Team Members

William M. Auberle, P.E.

James D. Boyd

William D. Jeffery

Virgil Masayeva

William M. Auberle, P.E.

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Education:

Graduate Studies
Columbia University, New York
University of Missouri, Columbia, MO

M.S.E., Environmental Engineering
West Virginia University
Morgantown, WV - 1967

B.S.I.E
West Virginia University
Morgantown, WV - 1966

Professional Experience:

Mr. Auberle is an Associate Professor of Civil/Environmental Engineering at Northern Arizona University. He currently teaches courses in environmental engineering, environmental risk management, and environmental laws and regulations. He continuously guides graduate and undergraduate research projects. Concurrently, Professor Auberle is Director of the NAU/EPA American Indian Air Quality Training Program.

From 1980 to 1990, Professor Auberle was a practicing consulting engineer and manager. His professional expertise and experience includes environmental management, air pollution control, and environmental risk analysis. Professor Auberle was President of the national environmental consulting firm of Yates & Auberle, Ltd. In this capacity, he directed professionals in the disciplines of environmental engineering, industrial hygiene, hydrogeology, and environmental monitoring and analysis.

Prior to entering business and education, Professor Auberle served governmental agencies as an author and administrator of environmental laws and regulations. His responsibilities have included the direction of programs in air quality management, water pollution control, radiation protection, noise control and solid/hazardous waste

William M. Auberle, P.E.

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management. In 1978 and 1979, Professor Auberle managed all environmental protection programs for the State of Colorado.

Registration and Certification:

Licensed Professional Engineer
Qualified Environmental Professional

Professional Societies:

Diplomate & Past Trustee, American Academy of Environmental Engineers
Member, National Society of Professional Engineers
Member, Arizona and Louisiana Societies of Professional Engineers
Fellow Member & Past Vice President, Air & Waste Management Association
(A&WMA)
Member, Grand Canyon Section, A&WMA
Member, USEPA's Clean Air Act Advisory Committee
Past Chairman, A&WMA Committees on Risk Assessment/Management,
Regulations and Standards, and Strategic Planning
Past Trustee, Institute of Professional Environmental Practice
Member, Tau Beta Pi

Publications:

Auberle, W.M., and Linsky, B., Effects of Air Pollution on Property Values, Air Pollution Control Association Annual Meeting, 1968.

Auberle, W.M., Burkhart, W.T. and Peden, D.B., Air Quality Report, Montgomery County (Ohio) Department of Health, 1970.

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Auberle, W.M. and Barber, W.C., "Knowing the Pros: New Certification Offered for Environmental Experts," Engineering News Record, Environmental Engineering, 1993

Selected Presentations:

Professor Auberle has developed more than 350 technical policy addresses as a public official, technical consultant and educator. He has been a frequent television and radio guest and participated in a weekly radio program for four years regarding Ohio environmental affairs.

Mr. Auberle has been a member of the faculty of the University of Colorado, School of Medicine, Community College of Denver and Dayton Engineering and Science Institute. His courses and lectures have covered such topics as air pollution engineering, environmental policy, environmental health, and environmental risk management.

"Effects of Air Pollution on Property Values," Annual Meeting of American Industrial Hygiene Association, 1968.

"Sulfur Oxide/Suspended Particulate Relationships," Western Ohio Science Teachers' Association, 1971.

"Air Quality Standards-What Do They Mean?" Ohio Association of Sanitarians, 1971.

"New Air Pollution Laws and Regulations," Cincinnati Bar Association, 1973.

"Who Manages Our Environment?" Institute of Electrical and Electronic Engineers, 1973.

"Air Quality, Water Quality, Solid Waste," Ohio Environmental Health Association, 1974.

William M. Auberle, P.E.

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Air Pollution Control Association, East Central Section, General Conference Chairman, 1975.

Testimony to U.S. Senate, Subcommittee on Environment, 1977.

"Environmental Issues in the Rocky Mountains," National Environmental Health Association, 1978.

"Energy Development and the Environment," Western Interstate Energy Board, Environmental Committee, 1978.

"Colorado's Air Quality," Colorado Municipal League, 1978.

National Motor Vehicle Emission Control Conference, General Chairman, 1979.

Conference of State Sanitary Engineers, Annual Meeting, General Chairman, 1978.

"Acid Rain in the Ohio River Valley," Rotary International, 1980.

"Viewpoints on Toxic Air Contaminants," APCA Forum on Air Toxins, 1983.

"Environmental Risk Analysis," Chemical Industry Training Seminar, 1985.

"Hazardous Waste Issues on Indian Reservations," Council of Energy Resource Tribes, 1985.

"Air Toxins: Where Are We Going?" Young Lawyers Section, Chicago Bar Association, 1986.

"Environmental Issues on the Navajo Reservation," Navajo Tribal Air Quality Workshop, 1986.

"Risk Assessment and Priority Setting," APCA-Ontario Section, 1986.

"The Use of Risk Assessment in Environmental Regulations," West Virginia Conference on the Environment, 1986.

"A Critical Review of Risk Assessment in Air Toxins Regulation," International Workshop on Air Toxins, Air Pollution Control Association, 1987.

"Environmental Risks - Real and Perceived," International Corporate Seminar, 1987.

William M. Auberle

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"Managing Environmental Risks," APCA Specialty Conference (Technical Program Chairman), Washington, D.C., 1987.

"Risk Assessment in the Siting Process," (Technical Session Chairman), APCA Conference on Siting of Waste Management Facilities, St. Louis, MO., 1988.

"Risk Management in the Environmental Impairment Liability Insurance Industry, MMS, New Orleans, LA., 1988.

"Environmental Risk Assessment," Seminar for Industrial Consortium, 1988.

"Effects of Acidic Precipitation on Materials and Visibility," (Technical Session Chairman), APCA's International Conference.

"Acidic Precipitation: A Technical Amplification of NAPAP's Findings," Pittsburgh, PA., 1988.

"Environmental Exposures," National Association of Mutual Insurance Companies-Roundtable, 1988.

"Perspectives on Acid Deposition Research," (Technical Session Chairman), APCA Conference, Chicago, IL., 1988.

"Environmental Risks in the Synthetic Organic Chemical Manufacturing Industry," Corporate Seminar, 1990.

"A Rational Approach to the Environmental Crisis," NAU Honor's Lecture, 1991.

"Environmental Engineering at NAU," American Society of Civil Engineers, Northern Arizona Chapter, 1991.

"We're All Environmentalists, Aren't We?," AZCON '92, Embry Riddle University, 1992.

"AWMA - Strategy for the Year 2000," Annual Meeting of the Air & Waste Management Association, 1992.

"Environmental Engineering for the College Freshman," William H. Auberle and Spencer L. Brinkerhoff, ASEE - PWS Annual Meeting, 1992.

William M. Auberle, P.E.

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"Professional Certification and Professional Ethics," Air & Waste Management Association, Annual Meeting, 1993.

"Grand Canyon Visibility Transport Commission's Public Advisory Committee," Air & Waste Management Association, Annual Meeting, 1993.

"Visibility Protection in Western Parks and Wilderness Areas," American Society of Civil Engineers - Northern Arizona Chapter, 1993.

"Environmental Issues on Indian Lands," U.S. Geological Survey Lecture Series, 1994.

"Introduction to the Grand Canyon Visibility Transport Commission," Quality of Life Committee Forum, Arizona's Comparative Environmental Risk Project, 1994.

"Industry's Role in Sustainable Development," Second Nature Workshop for HBCU/MI and Brazilian University Consortia, Clark Atlanta University, 1994.

"Public Advisory Committee to the Grand Canyon Visibility Transport Commission," AWMA and AGU Specialty Conference on Atmospheric Physics and Optical Measurements, Snowbird, UT., 1994.

"Career Opportunities in Environmental Engineering," Center for Applied Fluid Dynamics Lecture Series, Arizona State University, 1994.

"Protecting Visibility on the Colorado Plateau," Center for Environmental Science and Education Lecture Series, Northern Arizona University, 1994.

"Professional Credentials for Environmental Scientists and Engineers," Florida Environmental Expo, Tampa, FL., 1994.

"Cooperation Among State, Local and Tribal Air Quality Management Programs," STAPPA/ALAPCO Annual Meeting, San Diego, CA., 1994.

"The Business of Engineering," Hanzehogeschool, The Netherlands, 1995.

"Grand Canyon Visibility Transport Commission - Progress," Southwest Public Power and Water Symposium, Las Vegas, NV., 1995.

"Careers in Environmental Sciences and Engineering," Associated Students in the Environmental Professions, Flagstaff, AZ., 1996.

James D. Boyd

Summary: Chief Executive Officer of nation's largest state air pollution control program pioneering many motor vehicle, toxic, and stationary source controls. Over 30 years as a state government administrator and recognized as a world leader in directing the development and implementation of innovative and effective air pollution control strategies. Consults with and addresses gatherings of many international leaders on the subject of air pollution control and the California programs. Currently Vice-President of the international Air & Waste Management Association. Successful record as developer and manager of staff.

Experience and Accomplishments

1976-Present California Air Resources Board

Executive Officer of California's air pollution control agency for fourteen years. Directs a \$100 million budget and a staff of 950 employees engaged in: (1) research into environmental effects of air pollution and air pollution control, (2) air quality monitoring and modeling, (3) air pollution law enforcement, (4) motor vehicle emission control, and (5) industrial source emission control. Directed formulation and implementation of California's pioneering low emission vehicle/clean fuels, toxic air contaminant, and consumer product control programs. Conceived the award winning Compliance Assistance Program. Directed development and submission of the first State Implementation Plan that provides for attainment of the federal air quality standards. As Chief Deputy and Deputy Executive Officer supported Executive Officer and directed operation of multiple divisions and programs.

1972-1976 Assistant Secretary, California Health and Welfare Agency

Deputy Director and Manager, Financial Management Branch, Department of Health, State of California

As Assistant Secretary, directed operational and administrative policy for State Health and Welfare Agency, an organization consisting of eight major departments comprising over thirty thousand employees and budgets exceeding \$3 billion. As Deputy Director of the Health Department, directed staff of 1,200 employees and managed all administrative activities of one of the largest State departments including the State's medical, public health, mentally disabled and mentally ill programs and hospital systems. As Financial Manager, directed all financial activities of the Health Department.

Education: B.S. Business Administration; Minor in Mechanical Engineering
University of California, Berkeley

Honors: American Lung Association Clean Air Award
Society of Public Administrations Outstanding Public Administrator Award

Publications: Numerous publications and articles on air pollution control.

References: Furnished upon request.

JAMES D. BOYD

BIOGRAPHY

James D. Boyd, California Air Resources Board (CARB) Executive Officer, has over 30 years experience as a state government administrator. He was CARB's Chief Deputy Executive Officer from June 1979 to his appointment as Executive Officer in August 1981 and has served with the CARB over 19 years.

During Boyd's tenure as CARB's Chief Executive, the organization has pioneered many motor vehicle, toxic and stationary source control techniques and regulations and is recognized as a world leader in air pollution control. He has consulted with and addressed gatherings of international leaders on the subject of air pollution control and the California programs.

Mr. Boyd was elected on June 23, 1994 to serve a three year term on the Air and Waste Management Association's (AWMA) Board of Directors. In June 1995, he was appointed a Vice President of this Association. In addition, Mr. Boyd is an Honorary Board Member and former Founding Chairman of the Mother Lode Chapter.

The American Lung Association of California presented Mr. Boyd with the 1993 American Lung Association's Clean Air Globe Award. This award was established in 1976 and is presented to individuals who have made the most significant contribution to the cause of cleaner air in California.

Mr. Boyd is a past member of the Board of Directors of the State and Territorial Air Pollution Administrators (STAPPA) and is listed in "Who's Who in Government." He has been the recipient of the Sacramento Chapter of the American Society of Public Administration's 1986 Outstanding Public Administrator Award, co-chairman of the subcommittee on technical considerations of the Governor's task force on Toxics, Waste and Technology, and past president of the California State Fiscal Management Association. He is also a member of the Commonwealth Club.

Prior to his appointment to CARB, Boyd served as Assistant Secretary of the California Health and Welfare Agency and as Deputy Director of the Department of Health. He also worked for the Department of Water Resources and Department of Finance where he served in a variety of management capacities.

He is a 1961 graduate of the University of California at Berkeley, with a Bachelor of Science in Business Administration and a minor in Mechanical Engineering.

WILLIAM D. JEFFERY

PROFESSIONAL EXPERIENCE:

Northern Arizona University Flagstaff, AZ

1996 - Present Adjunct Faculty

General Responsibilities: Teaching advanced seminars on environmental regulatory and management topics, including Air Quality Laws, Regulations and Policies, Waste Management Laws and Regulations, Water Management Laws and Regulations, and Environmental Protection Strategies: Today and Tomorrow.

Environmental, Health & Safety Law Department Syntex (U.S.A.) Inc. Palo Alto, CA

1992 - Present Assistant Director
1989 - 1992 Supervisory Attorney
1987 - 1989 Senior Attorney
1985 - 1987 Staff Attorney

General responsibilities: Provide in-house environmental, health, and safety legal services for international health care company with \$2 billion in annual sales. Legal representation in enforcement and environmental cleanup litigation brought by regulatory agencies; multi-party cost allocation proceedings; environmental due diligence and contract negotiations related to corporate acquisitions and divestitures; construction and other contracts related to environmental projects; third party manufacturing contracts; compliance with SEC disclosure requirements; and compliance with environmental, health & safety requirements. Manage budget for legal department with up to \$4.5 million in annual expenses; supervise in-house attorneys, paralegals, and administrative staff; and manage outside litigation counsel.

Recent Representative Projects and Awards:

- Sale of medical diagnostic subsidiary valued in excess of \$250 million (1995)
- Cost allocation agreement for \$45 million groundwater contamination remediation project (1994)
- Cost allocation agreement for \$200 million hazardous waste site cleanup (1993); work resulted in Syntex Chairman's Recognition Award (1994)
- State Bar of California Certificate of Recognition -- Pro Bono Services (1991)
- Construction of environmental remediation projects ranging from \$3 to \$16 million (1989 - 1994)

LEGAL EDUCATION: Stanford Law School
JD 1975

Publications: Harris, Jeffery, and Stewart Interstate Environmental Problems (1974)

UNDERGRADUATE EDUCATION: University of Colorado, Boulder
BA 1971

Honors: Phi Beta Kappa
Magna Cum Laude

PREVIOUS PROFESSIONAL EXPERIENCE:

1980 - 1991 Instructor
Environmental Studies Department
San Jose State University
San Jose, CA

1983 - 1985 Teaching Fellow
Stanford Law School
Stanford, CA

1982 - 1983 Pro Bono Work
Environmental Defense Fund
Berkeley, CA

1979 - 1981 Staff Attorney and Assistant Regional Counsel
U.S. Environmental Protection Agency
Region IX
San Francisco, CA

1976 - 1979 Deputy County Counsel, Public Defender, and Attorney
Plumas County
Quincy, CA

1975 - 1976 Associate
Stearns & Pattillo
Santa Barbara, CA

1974 Extern
Justice Winslow Christian
California Court of Appeals
San Francisco, CA

Member: California Bar Association (1975)

RESUME

Virgil Masayesva

Office: (520) 523-9651

FAX: (520) 523-1266

EDUCATION:

University of Arizona; Tucson, Arizona
Bachelor of Science, 1973
Major: Business/Public Administration

Arizona State University; Tempe, Arizona
Master in Regional Planning, 1982

Arizona State University; Tempe, Arizona
Post-graduate work (18 Hours)
Emphasis: Health Care Policy

TRIBAL AFFILIATION:

Hopi Tribe - Arizona

EXPERIENCE:

Director
Northern Arizona University
Institute for Tribal Environmental Professionals
PO Box 15600
Flagstaff, Arizona 86011-1560

October 1, 1993 to present. Plan and implementation of the institute to address environmental issues on Indian lands. The institute is established under the Office of the Vice President - Academic Affairs. Broad goals include the enhancement of education and training programs for tribal environmental professionals; improving the effectiveness of environmental resource management on Indian lands; and development of educational pipelines with schools on the reservations with a focus on environmental studies, math, science and technology. The institute also manages the American Indian Air Quality Training Program and the tribal environmental clearinghouse in conjunction with College of Engineering and Technology.

*Special Assistant to the President
Northern Arizona University
Office of Native American Program Planning & Development
PO Box 4085
Flagstaff, Arizona 86011
(602) 523-9557*

January 8, 1990 to September 30, 1993. This position supports the work of NAU faculty and staff both on- and off-campus to assist Indian tribes in the areas of Education, Health Services, Economic and Natural Resource Development. Responsibilities include liaison with Indian tribes and organizations, prepares annual reports of NAU-tribal partnerships and accomplishments to the Arizona Board of Regents, recruitment and retention of Indian student, and related work on the NAU campus under the direction of the President's Council on Native American Programs.

*Contract Officer
Phoenix Area Indian Health Service
US Public Health Service
3738 North 16th Street
Phoenix, Arizona 86016
(602) 640-2078*

August, 1984 to January, 1990. Negotiated the procurement of hospital and professional medical services contracts for Indian beneficiaries under PHS/Indian Health Services programs in four-state area. Assisted Indian tribes in contracting for tribal specific health care programs. Implementation of PHS/HHS policy in the use of Medicare Reimbursement Methodologies in the acquisition of medical services from private sources. Procurement of commercial construction contracts primarily for the construction/renovation of health care facilities, well-drilling and water-sewer systems on Indian lands. Recognized for "Superior Performance" for each year of service from USPHS.

*Planner
Economic Development
Indian Development District of Arizona, Inc.
1777 West Camelback Road, Suite A-108
Phoenix, Arizona 85015
(602) 248-0184*

October, 1981 to March, 1984. Duties included providing technical planning assistance for IDDA member tribes in economic and program planning. Responsible for writing program and management plans, grants and contracting proposals. IDDA is a non-profit corporation founded and directed by Arizona Indian tribes. IDDA's primary goal is to promote social and economic development among 19 members tribes in Arizona.

General Manager/Part Owner
ACKCO, Inc.
3300 Arapahoe Avenue, Suite 221
Boulder, Colorado 80303
(303) 444-3911

June, 1978 to September, 1981. Position responsibilities included overall management of the company including procurement of contracts, operation of all company contracts, management of 13 staff, utilization of consultants, development of operating policies and procedures, and maintenance and technical assistance in the areas of comprehensive social and economic development planning. Also performed duties as a consultant to tribes on major policy and legislative issues. Ackco, Inc. is an Indian-owned, SBA 8(a) certified management consulting firm.

Project Coordinator
Arizona Commission of Indian Affairs
1645 West Jefferson
Phoenix, Arizona 85007
(602) 255-3123

June, 1977 to June, 1978. Responsible for gathering and analyzing data pertaining to Indian employment within state agencies. The result of the study was a report which included recommendations for improving Indian employment opportunities within the Arizona State government. Project funded by the Four Corners Regional Commission under the auspices of Governor's Affirmative Action Office. One-year appointment in concurrence with graduate studies at Arizona State University.

Program Director
The Hopi Tribe
PO Box 123
Oraibi, Arizona 86039
(520) 734-2445

December, 1974 to August, 1976. Responsible for grant application, implementation and monitoring of programs under the Comprehensive Employment and Training Act (CETA) on the Hopi Indian Reservation. Also responsible for the development of employment and training, compilation of labor market information and development of comprehensive manpower plans.

Acting Director
The Hopi Tribe
PO Box 123
Oraibi, Arizona 86039

February, 1974 to December, 1974. Responsible for overall operations of the program including program, fiscal, personnel management (85 staff). In addition to the Hopi Action Program, administered Headstart/Fellow Through Program, Home School Project, Alcoholism, and Tribal Work Experience Program.

REFERENCES:

Dr. Henry O. Hooper*
Vice President, Academic Affairs
Northern Arizona University
PO Box 4085
Flagstaff, AZ 86001
(520) 523-2230

* Also serves as Chairman, President Council on Native American Programs,
NAU

William M. Auberle **
Associate Professor
College of Engineering and Technology
Northern Arizona University
PO Box 15600
Flagstaff, AZ 86011
(520) 523-5845

** Also serves as Director, American Indian Air Quality Training Programs,
NAU