

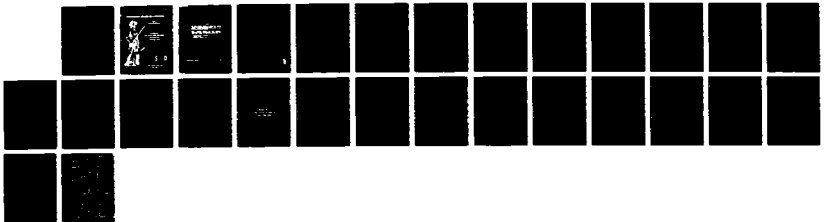
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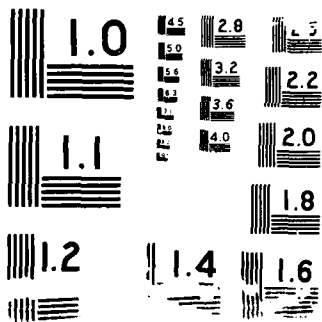
INSTALLATION RESTORATION PROGRAM PHASE 1 RECORDS SEARCH 171
FOR THE 176TH TAC. (U) HAZARDOUS MATERIALS TECHNICAL
CENTER ROCKVILLE MD APR 86 DLA900-82-C-4426

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INSTALLATION RESTORATION PROGRAM

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Phase I
Records Search

Headquarters
176th Tactical Airlift Group (SAC)
Eglin ANG Base
Anchorage, Alaska



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Manuscript Materials Technical Center

April 1986

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INSTALLATION RESTORATION PROGRAM
PHASE I - RECORDS SEARCH FOR
176TH TACTICAL AIRLIFT GROUP
KULIS AIR NATIONAL GUARD BASE
ANCHORAGE, ALASKA

Submitted to:

Air National Guard Support Center
Andrews Air Force Base, MD 20331-6008

Submitted by:

The Hazardous Materials Technical Center
The Dynamac Building
11140 Rockville Pike
Rockville, Maryland 20852

April 1986

Contract No. DLA 900-82-C-4426

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EXECUTIVE SUMMARY

A. INTRODUCTION

1. The Hazardous Materials Technical Center (HMTTC) was retained in October 1985 to conduct the Installation Restoration Program (IRP) Phase I Records Search of the 176th Tactical Airlift Group (TAG), Kulis Air National Guard Base (ANGB), under Contract No. DLA 900-82-C-4426.
2. The Records Search included a detailed review of pertinent installation records and an onsite base visit conducted by HMTTC on October 31, 1985. Activities during the onsite base visit included interviews with ten base employees, and a search of base records.

B. MAJOR FINDINGS

1. The major operations of 176th TAG that have produced hazardous wastes include aircraft maintenance, ground vehicle maintenance, and fire department training. These operations generate varying quantities of waste oils, recovered fuels, and spent cleaners and solvents.
2. The waste materials generated by these operations have been disposed of via the Defense Reutilization and Marketing Office (DRMO).
3. Interviews with ten base personnel and the examination of base records resulted in the identification of no hazardous waste disposal and/or spill sites that pose hazards to human health and the environment.

C. CONCLUSIONS

The lack of any positive presence of hazardous waste and the absence of data indicating anything other than minor spills of waste materials resulted in a finding of No Significant Impact, the conclusion that Hazard Assessment Rating Methodology (HARM) assessment was unnecessary, and the decision by Air National Guard Support Center officials that Kulis ANGB be eliminated from any future IRP studies.

D. RECOMMENDATIONS

Since no sites have been identified at Kulis ANGB that warrant further study under the IRP effort, it is recommended that this report go on record as being the initiation and termination of the IRP study.

I. INTRODUCTION

A. Background

The 176th Tactical Airlift Group (TAG) has been located at Kulis Air National Guard Base (ANGB), Anchorage, Alaska, since 1955. The missions and types of aircraft have changed several times over the years.

Both past and present operations have involved the use and disposal of hazardous materials. Because of this fact, the Air National Guard (ANG) has implemented its Installation Restoration Program (IRP). The IRP is a four-phase program:

Phase I - Records Search (Installation Assessment) to identify and prioritize past disposal/spill sites posing a potential and/or actual hazard to human health or the environment.

Phase II/IVA - Site Characterization/Remedial Action Plan to define and quantify, via field studies, the presence or absence of contamination that may have an adverse impact on human health or the environment, and to develop a remedial action plan (RAP).

Phase III - Technology Base Development (if needed) to develop new technology for accomplishment of remediation.

Phase IVB - Remedial Action.

This study effort is limited to Phase I activities.

B. Purpose

The purpose of this program is to search for, identify, and assess actual or potential contaminant migration at Kulis ANGB by reviewing available records and interviewing current employees who have a knowledge of present and past operations.

C. Scope

The scope of this records search is limited to the ANG property of the 176th TAG based at Kulis ANGB, adjacent to Anchorage International Airport. Thus far, the following actions have been taken:

- o Onsite base visit,
- o Meeting with and interviewing personnel from the 176th TAG,
- o Contact with two outside agencies to collect soil and hydrogeologic data,
- o Review and analysis of all information obtained, and
- o Preparation of recommendations for further action.

The onsite visit took place October 31, 1985. The following personnel were assigned to the team and provided input to this report:

Mr. Donato Telesca, Program Manager
Mr. Timothy Gardner, Environmental Scientist
Mr. Mark Johnson, Geologist

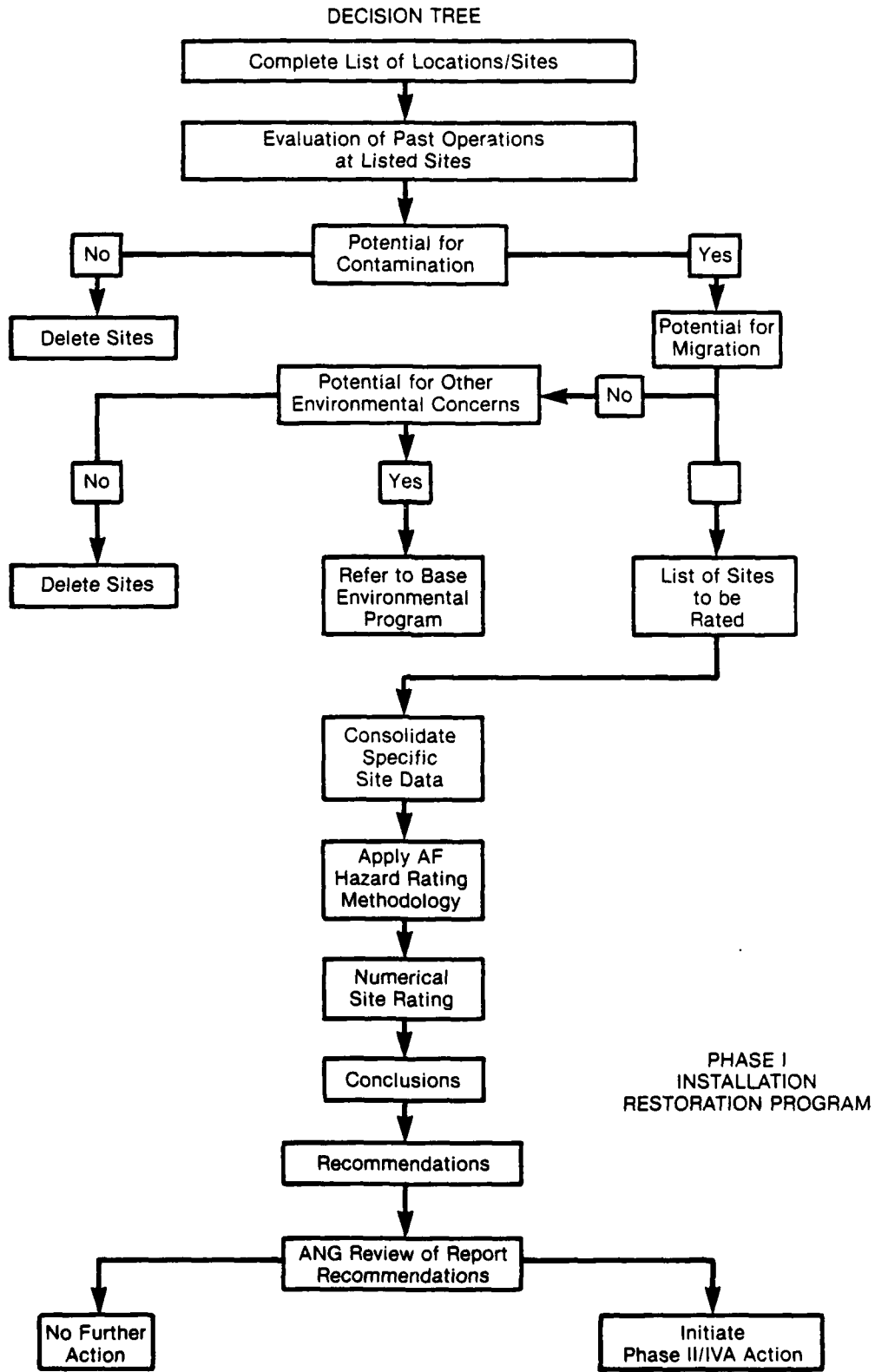
Resumes of the team members are found in Appendix A.

The point of contact at Kulis ANGB who assisted in the records search was Major Dan Duff, Base Civil Engineer.

D. Methodology

Figure 1 is a flowchart of the records search methodology. The team evaluated past and present operating procedures as well as hazardous waste disposal procedures at Kulis ANGB in order to determine whether environmental contamination may have occurred. This evaluation was facilitated by extensive interviews with ten base employees familiar with the various operating areas of the base.

Figure 1. Records Search Methodology Flow Chart.



Base blueprints and records were reviewed to supplement information obtained from the interviews. In addition, the team visited a local university and Soil Conservation Service (SCS) office in order to acquire hydrogeologic and soil data pertinent to Kulis ANGB.

II. INSTALLATION DESCRIPTION

A. Location

Kulis ANGB is located adjacent to Anchorage International Airport. The base is bounded by the airport to the north and Raspberry Road to the south, with the city of Anchorage lying about 2 miles to the northeast. Approximate latitude and longitude readings are 61°13'N and 149°53'W, respectively.

B. Organization and History

In 1955, the Alaska Air National Guard moved to Kulis ANGB. At that time the unit was named the 144th Fighter Bomber Squadron.

In July of 1955, F-86 Sabrejets were deployed at Kulis, and the unit became the 144th Fighter Interceptor Squadron.

In 1957 the 144th was redesignated an Air Transport Squadron with the arrival of C-47 aircraft. In July of 1969 the Squadron was renamed the 176th Tactical Airlift Group, and since then the mission has remained the same with several changes in aircraft. The 176th TAG is currently assigned C-130H aircraft.

III. FINDINGS

A. Activity Review

On October 31, 1985, HMTIC conducted a site visit at Kulis ANGB in order to identify any sites at the base that may be contaminated by hazardous materials/wastes, and could pose hazards to health and welfare. The primary mechanism used to search for such sites was personnel interviews. Additionally, base records were acquired and examined, and two outside agencies were visited to secure soil and hydrologic data pertinent to Kulis ANGB.

The interviews involved 10 base personnel representative of the various activities onbase that handle and dispose of hazardous materials/wastes. The activities represented during the interviews include:

- o Fire Department,
- o POL Management,
- o Vehicle Maintenance,
- o Aerospace Systems,
- o Supply, and
- o Facilities Maintenance

Prior to the interviewing process, it was necessary to clarify the scope of the Phase I Records Search by defining the boundary of Kulis ANGB property. It was explained to all those interviewed that only Kulis ANGB property was to be addressed in this study.

Discussions with the base Fire Chief revealed that the fire training area used by the ANG is located offbase and is State-owned and operated. In addition, the training area is no longer in use because air quality standards imposed by the EPA could not be met. The Chief said that there have been no aircraft crashes onbase, and no other problems have occurred concerning the Fire Department that could have resulted in contamination of the environment by hazardous materials. The Chief has been at Kulis ANGB for 22 years.

Interviews with personnel who deal with petroleum, oil, and lubricants (POL) revealed that the storage capacity at Kulis ANGB is 100,000 gallons of JP-4 stored in aboveground tanks. Fuel inventory is checked weekly, and the tanks are leak-tested annually. The tanks have neoprene-lined earthen dikes, and the associated piping is aboveground. During discussion of fuel losses due to spills or leakage, it was disclosed that no reportable losses have ever occurred during transfer, storage, or distribution of the fuel. The two men interviewed have been at Kulis ANGB for 8 and 3 years, respectively.

Vehicle maintenance activities involve the storage and distribution of MOGAS and diesel fuel. Storage capacity consists of 3 diesel storage tanks (2,000, 4,000, and 20,000 gal.), 1 leaded MOGAS tank (4,000 gal.), and one unleaded MOGAS tank (2,000 gal.). Additionally, it was disclosed that a MOGAS tank once located west of Building 0005 had leaked in the early 1960s. It was dug up at that time, and the contaminated soil was hauled away by the contractor that removed the tank. No reliable estimate exists of the lost volume. Also, a spill occurred in 1959 or 1960 involving 400 to 500 gallons of diesel fuel from the storage tank east of Building 0117. The ground was frozen at the time of the spill, and it is thought that no ground penetration occurred. No other spills or leaks are reported to have occurred in the past 20 or more years. The interviewee representing vehicle maintenance has been at Kulis ANGB for 29 years.

The interview with base supply personnel indicated that no leakage of supply items such as solvents, oils, or strippers has occurred at Kulis ANGB. Additionally, hazardous wastes of that nature are stored in drums in a contained area constructed with concrete flooring and dikes. All such wastes are routed through DRMO for disposal, and no losses or spills have occurred at Kulis ANGB. The base supply manager has been at Kulis ANGB for 26 years.

B. Additional Information Pertinent To Phase I Efforts

Other pertinent information gained through the interviews include the following points:

- o Storm drainage is routed through the Anchorage International Airport sewage system into Lake Hood.
- o All shops at Kulis ANGB are equipped with oil-water separators.
- o Waste JP-4 is salvaged and routed through DRMO.
- o Road oiling for dust control has not been practiced for over 20 years.
- o Sanitary sewage is treated municipally, offbase.
- o Two water wells exist at Kulis ANGB as the sole source of water for the base. The aquifer is in excess of 250 feet deep.
- o Well water is periodically sampled and no POL product has ever been detected. No other contaminants of concern have been detected.
- o There has never been a solid waste dump or ordnance disposal area at Kulis ANGB.
- o Although there has never been a spill of significance on the aircraft parking apron, it was noted that if a large POL spill ever occurred there, no mechanism exists for preventing its flow into the storm drainage system.

Base records acquired during the site visit include:

- o An aerial photo of the base,
- o A topographic map of the base,
- o A base map,
- o A base history,
- o A geologic summary of the base area,
- o Well logs from base wells,
- o Well water test data,
- o POL storage tank inventory and data summary,
- o A map showing depth to water table in the Anchorage area,

- o A SCS soil survey of the Anchorage area,
- o A hazardous materials survey of Kulis ANGB, and
- o NOAA local climatological data - annual summary with comparative data.

IV. CONCLUSIONS

Based on the analysis of the data gathered during the base site visit, as well as the analysis of data gathered from outside agencies, it has been concluded that no hazardous waste disposal/spill sites exist at Kulis ANGB that pose any danger to human health or the environment. Although the interviews disclosed the loss of some POL products on two occasions, it was learned that each event involved rather small amounts. Also, in the case of the leaking tank, it was revealed that contaminated soil was hauled offbase at the time of tank repair. In addition, it is estimated that the time lapsed since the spills would cause any sampling performed now to produce negative results.

V. RECOMMENDATIONS

Since no sites have been identified at Kulis ANGB that warrant further study under the IRP effort, it is recommended that this report go on record as being the initiation and termination of the IRP study.

Appendix A
Resumes of Search
Team Members

DONATO R. TELESCA

EDUCATION

B.S., chemical engineering, Massachusetts Institute of Technology
B.S., business administration, major in management, Rutgers University

EXPERIENCE

Thirty-seven years of technical and managerial experience in process engineering, pollution control engineering, and solid waste and wastewater management. Recent experience in Installation Restoration Program and remedial action for Army, Navy and Air Force. Developed quality assurance program for Corps of Engineers, Omaha. Directed health and safety studies in industry. Principal investigator in projects to identify and evaluate process design, alternative processing systems, characterize waste streams, product intermediates and uses, and disposal options.

Program manager for hazardous waste site cleanup projects involving ambient air monitoring, costing, locating buried drums, landfill excavation, well drilling, and groundwater monitoring; installation restoration program; removal of asbestos; redesign of industrial waste treatment plants; and identification of applicable federal, state and local regulations. Experienced in logistics of multitask projects requiring interdisciplinary field crews at nationwide sites.

EMPLOYMENT

Dynamac Corporation (1977-present): Manager, Remedial Action and Treatment Department

Supervising ten professionals and supporting personnel in the department. Program manager and directly involved in:

- o Phase I Installation Restoration Program, which included records search, interviews and hazardous waste onsite inspections at four Air National Guard, Air Force Bases.
- o Development of design, specifications and cost estimates for remedial action for:
 - Removal of asbestos at 33 radar field sites
 - Removal of drums containing chlorinated solvents at NIROP, Fridley, Minnesota
 - Removal of drums containing DDT, Moody AFB
 - Removal of three contaminated tanks at Sacramento Army Depot
 - Removal of jet fuel from two Air Force Bases
 - Development of closure and post-closure plans for waste pile containing munitions and landfill containing hazardous waste (the latter including design specifications and cost estimates for the Phase IV remedial action plan)

- o Preparation of statement of work for Remedial Action Plan Installation Restoration Program at 12 Air Force Bases
- o Wrote the Quality Assurance Program for the Technical Representative of the Corps of Engineers, Omaha District, for NIROP
- o Directed the study "Thermal Destruction of Low Level Hazardous wastes in Navy Boilers and Incinerators" which consisted of four phases: Problem Definition; Assessment of State of Technology; Technology Projections; and Alternatives and Capability Goals
- o Program manager for a project to "identify and assess potential hazardous waste disposal sites at ten installations operated by the Federal Bureau of Prisons"
- o Manages multitask projects requiring interdisciplinary staff
- o Manages crews doing onsite field studies for programs listed earlier
- o Has directed teams making quick response (within 2 days) to emergency situations at locations in New Mexico, Oklahoma, Alaska and California
- o Directed onsite industry studies to assess pollution control systems for reducing inorganic mercury in waste streams; also studied several industries to develop generic pollutant standards for industries using similar processes (unit processing studies), e.g., hydrocarbon chlorination
- o Investigator on EPA hazardous waste listing program under RCRA
- o Studied process redesign and engineering controls for several DOD fabrication and maintenance operations including degreasing, electroplating, paint still bottoms and sludges
- o Characterized wastewater industrial discharges in a study of 343 industries; chemical and physical data were used to establish pollutant impact, and the need for engineering controls, wastewater stabilization ponds, onsite treatment systems and land disposal systems

Electro-Nucleonics Laboratories, Inc. (1973-1977): Director of Manufacturing

Responsible for establishing protocols for production and adherence to quality control standards. Also assisted in establishing standards and techniques in radioimmunoassay diagnostic work.

Was responsible for specifications, and purchase of instrumentation used in the manufacturing facilities. Was responsible for the disposal of regular biological and radioactive waste.

W. R. Grace and Company (1961-1973): Manager of Process Development

Evaluated regulatory compliance of W. R. Grace Nuclear Reprocessing plant in New York for hazardous waste disposal methods. Where such methods were unsatisfactory, designed improvements such as removal of contaminated filters in high radioactivity area; redesign of collection system for hazardous wastewater; design of procedures for burying the radioactive liquids and solid wastes received from outside the plant. Sampled New York State waters and took soil samples from surrounding farms to determine the extent of contamination by hazardous materials.

Designed new manufacturing procedures to reduce generation of hazardous waste from polycrystalline silica manufacturing. Designed, reviewed and implemented the procedures for disposal of hazardous wastes which included chlorinated hydrocarbon, hydrochloric acid, sodium hydroxide and by-products from the manufacturing process.

Evaluated existing procedures and recommended changes in the collection and disposal of hazardous solids and liquids including heavy metals, acids, bases and organometals.

For Bechtel and Nuclear Fuel Services, certified that construction of a nuclear reprocessing plant met all specifications for disposal of hazardous wastes, including radioactive uranium and daughter products, acids, bases and alcohols. Also assisted in the installation and operation of continuous sampling of plant streams discharging into state waters.

As plant manager of Nuclear Development Facility and Ceramic Facility, was responsible for process procedures and development of equipment. Also produced development quantities of nuclear fuels. Was responsible for collection of solid and liquid radioactive wastes, which were generated in the facility. Redesigned distillation system incorporating infrared detector instrumentation for control of distillation column.

As manager of Process Development, had technical and administrative responsibilities for four chemical engineers and ten technicians. Responsible for control of gaseous, solids, and water emissions from operating equipment. Worked with spray towers, cyclones, hydroclones, filters, spray dryers, etc.

As Staff Project Engineer of Division General Management Group, had technical and administrative responsibilities with regard to expansion projects.

As Production Manager of Chemicals Division, had management responsibilities for production, maintenance and engineering development, quality control and waste disposal for seven producing units. Some of the products produced were: rare earths and polishing compounds, raney nickel, silica gel, desiccant clay, sodium silicate, cracking catalysts and specialty catalysts.

As Project Manager of Water Process Department, worked primarily on an M&O proposal for an Office of Saline Water contract. Assisted in development of anticorrosion studies for desalination equipment.

Grace Electronics Chemicals, Inc. (1960-1961): Vice President and General Manager; President, International Metalloids

General management responsibilities for overall operation of a silicon monocrystalline production, including P&L statements and direct manufacturing costs.

International Metalloids (1959-1960): Vice President and General Manager

Designed standard operating procedures for polycrystalline silicon production, including control technology for gaseous, liquid and waste emissions. Redesigning instrumentation for production of high-purity polycrystalline silicon at thermal cracking furnaces. Was directly responsible for adherence to Puerto Rican regulations regarding hazardous wastes.

Davison Chemicals Company (1954-1959): Chemical Engineer

Developed processes for catalysts, projecting them from scale to preproduction quantities. Redesigning instrument on process equipment at alumina plant to reduce loss of pentasol (5-carbon chain alcohol).

Was responsible for operation and maintenance of the recycle air system in the tableting area of the plant. Was a member of the engineering team representing Grace at the Maryland Clean Water Committee meetings, where standard methods of sampling and control of liquid wastes were formulated.

Hercules Powder Company (1948-1954): Senior Chemical Engineer

Designed instrumentation and changes in plant processes to reduce contamination of waste streams. Process changes were developed to reduce pH, COD, BOD, solids, and total volume.

Invented a new production process and instituted new procedures required for the collection and proper disposal of chlorinated rubber and chlorinated off-grade product, carbon tetrachloride, rubber waste and hydrochloric acid waste.

Developed procedures for the collection and disposal of hazardous wastes resulting from the manufacture of pilot plant lot sizes of sodium carboxymethyl cellulose, plasticizers and other organic based products.

Supervised the operations for disposal of hazardous waste materials from the nitric acid manufacturing unit, sulfuric acid concentrations, nitrocellulose manufacturing and packaging facilities, alcohol distillation unit and cellulose acetate manufacturing facilities.

MIT Chemical Warfare Development Laboratory; U.S. Naval Gun Factory; Marine Manufacturing and Supply Company (1940-1947): Senior Engineer and Draftsman

Made original layouts and designs on various mechanical equipment.

AFFILIATION

American Institute of Chemical Engineers

PUBLICATIONS AND PRESENTATIONS

Telesca, D.R. "The Adsorption of Ethylene-Ethane and Ethylene-Propylene on Activated Carbon." Massachusetts Institute of Technology, Chemical Engineering, 1948.

Telesca, D.R., J.M. Evans, and R.K. Tanita. "Process and Equipment Problems and Solutions in Coal Conversion Processes." Presented at ACS Symposium on Occupational Health Control in Fossil Energy Technologies. Washington, D.C., September 10, 1979.

Evans, J.M., R.K. Tanita, and D.R. Telesca. "Comparative Practices in Worker Protection." Presented at ACS Symposium on Occupational Health Control in Fossil Energy Technologies, Washington, D.C., September 10, 1979.

Telesca, D.R., J.H. Bochinski, and J.A. Gideon. "Review of NIOSH Control Technology Studies to Date." Presented at the Safety and Health Division, Symposium of the American Institute of Chemical Engineers, Boston, Massachusetts, August 1979.

Telesca, D.R. "Means of Implementation of Controls." Presented at the NIOSH Symposium on Control Technology in the Plastics and Resins Industry, Atlanta, Georgia, February 27, 1979.

Gideon, J., L. Reed, and D.R. Telesca. "Control Technology for Coal Gasification and Liquefaction." Presented at the Second Annual NIOSH Symposium, Rockville, Maryland, October 29-31, 1979.

Bochinski, J.H., and D.R. Telesca. "Potential Instrumentation Needs in the Occupational Health Area in Coal Conversion Plants." Presented at the 1980 Symposium on Instrumentation and Control for Fossil Energy Processes, Virginia Beach, Virginia, June 9-11, 1980.

Walker, J., R.K. Tanita, D.R. Telesca, and S.P. Berardinelli. "Organic Contaminants in Direct Coal Liquefaction - A Preliminary Assessment." Submitted June 9, 1980, to the American Industrial Hygiene Association Journal.

Tanita, R.K., D.R. Telesca, J. Evans, and S.P. Berardinelli. "A Study of Coal Liquefaction." Presented by D.R. Telesca at the American Industrial Hygiene Conference, May 20, 1980.

Reed, L. J. Gideon, and D.R. Telesca. "Control Technology for Coal Gasification and Liquefaction." Presented at the American Industrial Hygiene Conference, Houston, Texas, May 18-27, 1980.

Telesca, D.R., D.J. Warner, and M.A. Peterson. "Thermal Destruction of Hazardous Wastes in Existing Incinerators and Boilers. Can it be done safely?" Presented at NSWMA 12th Annual Conference on Waste Technology, Memphis, Tennessee, October 18-20, 1983.

Dias, E.K., D.R. Telesca, and D.J. Warner. "A Method for Planning and Costing Hazardous Waste Site Cleanup." Presented at the 1984 National Conference on Environmental Engineering, Los Angeles, California, June 25-27, 1984.

Telesca, D.R., E.K. Dias, and W.D. Eaton. An Engineering Method for the Development of Plans and Cost Estimates for Cleanup of Hazardous Waste Site. Presented at the 1984 National Conference on Environmental Engineering, Los Angeles, California, June 25-27, 1984.

Telesca, D.R., et al. 1982. Problem Definition - Thermal Destruction of Hazardous Wastes in Navy Boilers and Incinerators.

Telesca, D.R., et al. 1983. Feasibility Study for Thermal Destruction of Liquid Hazardous Waste at the Charleston Naval Shipyard, Charleston, South Carolina.

Telesca, D.R., et al. 1984. Assessment of the State of Technology - Thermal Destruction of Hazardous Waste in Navy Boilers and Incinerators.

Telesca, D.R., et al. 1983. Technology Projection - Thermal Destruction of Hazardous Wastes in Navy Boilers and Incinerators.

Telesca, D.R., et al. 1984. Initiation Decision Report on Thermal Destruction of Low Level Hazardous Wastes in Navy Boilers and Incinerators.

Telesca, D.R., et al. 1983. Final Design Specifications. Naval Industrial Ordnance Plant Site Cleanup, Fridley, Minnesota.

Telesca, D.R., et al. 1983. Final Design Calculations and Cost Estimate. Naval Industrial Ordnance Plant Site Cleanup, Fridley, Minnesota.

Telesca, D.R., et al. 1984. Environmental Assessment: Waste Salt Disposal at the U.S. Army Rocky Mountain Arsenal.

Telesca, D.R., et al. 1984. Final Design and Specifications: Waste Salt Disposal at the U.S. Army Rocky Mountain Arsenal.

Telesca, D.R., et al. 1985. 60% General Design and Specifications, Hazardous Waste (Asbestos) Removal from and Demolition of White Alice Sites. Alaska Air Command.

Telesca, D.R., et al. 1985. Study of Treatment of Hazardous Wastes at Pearl Harbor Industrial Waste Treatment Plant, Hawaii.

Telesca, D.R., et al. 1985. Statement of Work for Phase IVA Remedial Action Plan. Installation Restoration Program, MacDill AFB.

Telesca, D.R., et al. 1984. Navy Assessment and Control of Installation Pollutants. Confirmation Study for Sites 1, 3, 5 and 9 at the Naval Weapons Support Center, Crane, Indiana.

Telesca, D.R., and M.A. Peterson. 1985. Background Study for Thermal Destruction of Hazardous Waste in Navy Boilers and Incinerators. Naval Surface Weapons Center.

Telesca, D.R., et al. Thermal Destruction of Hazardous Waste in Navy Boilers and Incinerators. Presented at the American Defense Preparedness Association in Baltimore, Maryland, October 24, 1985.

Telesca, D.R., et al. Thermal Destruction of Hazardous Waste in Navy Boilers and Incinerators. Presented at the JANNAF conference in Monterey, California, November 7, 1985.

TIMOTHY N. GARDNER

Environmental Scientist

EDUCATION

M.A., Environmental Biology, Hood College
B.S., Forestry/Resource Management, West Virginia University

EXPERIENCE

Mr. Gardner has five years of technical experience in environmental control and research, with emphasis on risk assessment, chemical safety, radiation safety, hazardous waste management (chemical and radiologic), and activated carbon filtration research. His past responsibilities include site risk assessment, chemical and radioactive waste pickup and storage for disposal at a large cancer research facility, and chemical and radioactive spill control, as well as safety surveys and technical assistance in activated carbon desorption research.

EMPLOYMENT

Dynamac Corporation (1984-Present): Staff Scientist

At Dynamac, Mr. Gardner's responsibilities include site surveys and records searches for the Phase I portion of the Installation Restoration Program (IRP) for various Air National Guard Bases. Efforts include risk assessment, site prioritization, and remedial action recommendations. He has also been a contributing author for a closure-post closure plan for a hazardous waste landfill at Clovis AFB, plans and specifications for the removal of asbestos at several Air Force White Alice sites in Alaska, and the update and revision of a DLA regulation for "Disposal of Unwanted Radioactive Material."

NCI-Frederick Cancer Research Facility (1981-1984): Lab Technician

Mr. Gardner worked in radiation and chemical safety as well as environmental research. His responsibilities included monitoring personal and environmental air quality at work areas where free iodinations occurred, monitoring work areas and equipment for isotope contamination, periodic surveys to monitor compliance with NRC safety regulations, isotope inventory control, transfer of isotopes between licenses, and periodic calibration and maintenance of survey instruments. He was also responsible for radioactive and chemical waste pickup and storage for disposal, and served as an advisor for safety-related matters pertinent to radiation and radioactive waste, chemical safety, and industrial hygiene. In the environmental research division, he was involved in activated carbon desorption studies involving the use of analytic laboratory equipment.

PROFESSIONAL AFFILIATIONS

American Tree Farm Association
Hardwood Research Council
West Virginia Forestry Association

MARK D. JOHNSON

EDUCATION

B.S., geology, James Madison University

EXPERIENCE

Five years' technical experience including geologic mapping, subsurface investigations, foundation inspections, groundwater monitoring, pumping and observation well installation, geotechnical instrumentation, groundwater assessment, preparation of Air Force Installation Restoration Program Guidance and preparation of statements of work for the Air Force.

EMPLOYMENT

Dynamac Corporation (1984-present): Geologist

Primarily responsible for preparing statements of work for Phase IV-A of the Air Force's Installation Restoration Program and assessing groundwater of hazardous waste disposal/spill sites on military installations for the purpose of determining rates and extents of contaminant migration and for identifying remedial actions. Prepared guidance document for the Air Force's Phase IV of the Installation Restoration Program.

Bechtel Associates Professional Corporation (1981-1984): Geologist

Performed the following duties in conjunction with major civil engineering projects including subways, nuclear power plants and buildings: prepared geologic maps of surface and subsurface facilities in rock and soil including tunnels, foundations and vaults; assessed groundwater conditions in connection with construction activities and groundwater control systems; monitored the installation of permanent and temporary dewatering systems and observation wells; monitored surface and subsurface settlement of tunnels; and participated in subsurface investigations.

Schnabel Engineering Associates (1981): Geologist

Inspected foundations and backfill placement.

AFFILIATIONS

**Association of Engineering Geologists
British Tunneling Society**

PUBLICATIONS

Eaton, W.D., and M.D. Johnson. "Navy Assessment and Control of Installation Pollutants Confirmation Study for sites 1,3,5, and 9 at the Naval Weapons Support Center, Crane, Indiana." November 1984.

Peters, G.O., Jr., and M.D. Johnson. "Installation Restoration Program Phase IV Management Guidance." March 1985.

Telesca, D.R., and M.D. Johnson. "Statement of Work for Phase IV-A-Remedial Action Plan Installation Restoration Program, MacDill Air Force Base, Hillsborough County, Florida." March 1985.

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