**Long-Term Surveillance and Monitoring Program**

# Long-Term Surveillance Plan for the Hallam Nuclear Power Facility Hallam, Nebraska

September 1998

Prepared for
U.S. Department of Energy
Albuquerque Operations Office
Grand Junction Office

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# 1.0 Introduction

## 1.1 Purpose

This Long-Term Surveillance Plan (LTSP) is a technical plan that explains how the U.S. Department of Energy (DOE) will fulfill its responsibilities as the long-term custodian of the Hallam Nuclear Power Facility (HNPF) at Hallam, Nebraska.

## 1.2 Legal and Regulatory Requirements

The basis for radiological surveillance was previously established while a contract termination agreement was in effect that involved the Nebraska Public Power District and the Atomic Energy Commission (AEC). In addition, the Chicago Operations Office and the Nebraska Department of Health agreed to install a shallow ground-water monitoring system as part of the environmental surveillance program.

The surveillance at the site is currently scheduled to end in fiscal year 2005, with no further activities planned afterwards. At that time, the current plan is that the site will be transitioned to the Nebraska Public Power District (NPPD). Future use of the facility is assumed to remain restricted.

Since the HNPF was owned by the AEC, the AEC (now DOE) has title to and responsibility for the entombed radioactive materials (AEC 1971a).

## 1.3 Role of the Department of Energy

In 1988, the DOE designated the Grand Junction Office (GJO) to be the program office for long-term surveillance and maintenance of all DOE remedial action project disposal sites, as well as other sites as assigned, and to establish a common office for the security, surveillance, monitoring, and maintenance of these sites. The DOE established the Long-Term Surveillance and Monitoring (LTSM) Program at the GJO to carry out this responsibility.

The LTSM Program is responsible for the preparation, revision, and implementation of this LTSP, which includes site inspection and monitoring. The LTSM Program is also responsible for reporting the results of site inspections and monitoring as well as for maintaining site records.

# 2.0 Site Background Information

## 2.1 Description of Site Area

### 2.1.1 Location and Property Ownership

Located in southeastern Nebraska, the Hallam Nuclear Power Facility (HNPF) is approximately 19 miles south of Lincoln, on the Southwest ¼, Southeast ¼, and Northeast ¼, of Section 19, Township 7 North, Range 6 East, in Lancaster County, Nebraska. The NPPD owns Section 19 and the HNPF occupies a rectangular 18-acre portion of the 640-acre site. Section 19 is the location of the present Sheldon Power Station. The entombed reactor is located slightly southeast of the center of the site (Figure 2-1).

The Lancaster County, Nebraska, land and title records have been annotated appropriately regarding the remainder of the dismantled facility (AEC 1971a). A copy of the Lease Agreement between NPPD and the AEC, which includes the legal description of the 18-acre site, is included in this document as Appendix A.

Directions and mileage to the site are as follows:

From Lincoln Municipal Airport:

Take Interstate 80 west to the first exit (the bypass); proceed south on Highway 77 for 20 miles to the Hallam exit (2.5 miles south of Princeton). After exiting, drive 2 miles toward Hallam. Just before Hallam (0.5 mile), turn north on the gravel road and proceed 1 mile, then turn west for 1 mile. Power plant should be obvious at this point.

### 2.1.2 Topography and Surface Hydrology

Consisting of rolling hills and valleys typical of the loess areas of the Great Plains region, the entombed reactor is situated on top of a topographic ridge that has a maximum elevation of approximately 1,460 feet above mean sea level immediately south of the entombed reactor. Part of the original hilltop was graded and the uppermost soil mantle was removed to facilitate construction of the Sheldon Power Station and the HNPF. The ground elevation at the entombed reactor site is approximately 1,440 feet above mean sea level. Regionally the topography gradually recedes to the north to form the valley of the Platte River.

The site lies within the glacial drift hills in the drainage basin of the Salt Creek, a tributary of the Platte River. It is on relatively high ground on the northeast slope of, and near the divides separating, the Salt Creek drainage basin of the Blue River, which drains to the Republican River, and the basin of the Big Nemaha River, which in turn drains to the Missouri River. Being on a topographically high feature, the HNPF is well-drained (ORISE 1993).

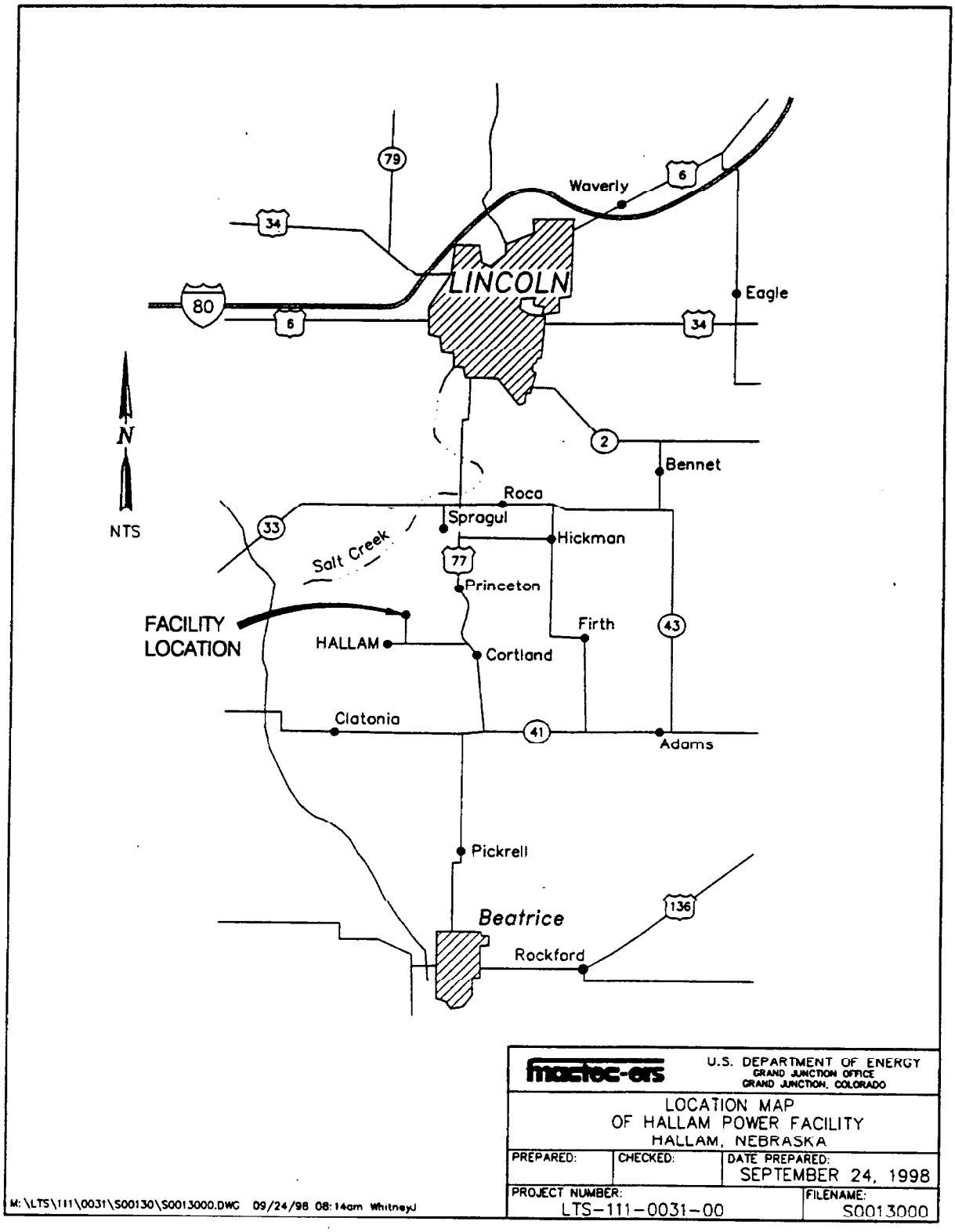


*Figure 2-1. Location Map of Hallam Nuclear Power Facility, Hallam, Nebraska*

## 2.1.3 Geology and Hydrogeology

### Geology

The Hallam area is underlain by unconsolidated Pleistocene Age deposits which, in places, exceed a thickness of 400 feet. These deposits consist of clay, silt, and sand and gravel materials, which overlie limestone and shale bedrock of Permian Age that often lack sufficient permeability to produce water. In some places, the Dakota Sandstone of Cretaceous Age overlies the rocks of the Permian Age and forms the uppermost bedrock below the Pleistocene Age deposits (Heine 1969).

Before the sediments of the Pleistocene Age were deposited, an eastward trending drainage pattern was developed on the surface of the rocks of the Permian and Cretaceous Ages. The eastward-trending broad valley in the vicinity of the HNPF site was filled with sediment during Pleistocene time when glacial ice sheets deposited huge quantities of clay, silt, sand, and gravel, so that no surface evidence of the valley remains. Two epochs of glaciation contributed to the sediments in the area. The first of the ice sheets, the Nebraskan, overrode or encircled the high places and filled the valleys in its course with sand and gravel and, when it melted, left the area mantled with a bluish-gray till, studded with boulders. The deposits of the Nebraskan ice sheets were later removed locally by erosion, but remnants of these deposits in the Hallam area are as much as 80 feet thick. Later, the Kansan ice sheet advanced into the area, blocking streams and bringing about thick deposits of silt, sand, and gravel. When the Kansan glacier melted, it left a mantle of till which locally is more than 200 feet thick and which is eroded into many small valleys and divides that form a well-developed, natural drainage system. Although the Kansan till is the principal surficial material in the area, it is mantled in many places by thin loess or alluvium (Heine 1969).

### Regional Ground Water

Sand and gravel deposits that were laid down by glacial meltwater streams during the Kansan Glacial epoch, and referred to as outwash deposits, constitute an aquifer in the Hallam area. These unconsolidated deposits may be assumed to be a single aquifer because the formations are generally interconnected. The saturated thickness of these sands and gravels ranges from only a few feet to more than 200 feet, and the depth to the regional water table, which is located in these sediments, ranges from less than 10 feet in the valley of the Olive Branch to more than 180 feet below the highest hills. The depth to the regional water table at the reactor site is about 150 feet (ORISE 1993).

### Perched Ground Water

Where surficial loess deposits are preserved, the underlying lower permeability glacial till may act as an impervious platform that collects infiltration and saturates the lower parts of the overlying loess. The result is a perched ground-water system that is much shallower than the regional ground-water system (ORISE 1993).

The perched water does not occur in all places or at all times. The occurrence is more widespread during wet years. In places, perched ground water has been reported to be present in amounts sufficient to supply small yields of water to shallow wells. Depths to water in such cases may range from 3 to 10 feet (ORISE 1993).

The level of the perched water table fluctuates with precipitation periods and periods of dry weather. The regional aquifer, which is generally overlain by low-permeability glacial till, probably receives very little recharge locally. Most of the recharge to the regional ground-water system occurs further to the west (ORISE 1993).

### 2.1.4 Climate

Southeastern Nebraska, including the Hallam area is characterized by a continental climate subject to a wide seasonal range in temperature. Light rainfall, hot summers, and severe winters are typical of the area.

Precipitation reaches a maximum in the spring or early summer and dwindles to small amounts, mostly in the form of snow, in the winter. Torrential rains are rare, although occasionally the storms are sufficiently intense to cause considerable destruction to crops, roads, bridges, and buildings. Average annual precipitation at the HNPF site is 27.5 inches.

Average maximum summer temperatures are generally 80 to 90°F, but readings of 100 to 110°F may be expected for a few days each year. The mean daily temperature for June, July, and August is 76°F. During the months of December, January, and February, the mean daily temperature is 28°F. A temperature of 0°F or below may be expected for approximately 10 days each winter, with -29°F being the lowest recorded temperature for the area.

From February 1 to May 1, the prevailing wind is from the north; during most of the rest of the year it is from the south. Strong winds are common, and the average annual wind velocity is 10.5 miles per hour.

Nebraska is considered to be on the western edge of the tornado belt, which extends northward from the Gulf of Mexico and, on rare occasions, tornadoes accompany storms in the area, most often in the spring (Heine 1969).

## 2.2 Site History

The HNPF was a 240 megawatt (thermal) sodium-cooled graphite-moderated nuclear reactor. It was built and operated by the U. S. Atomic Energy Commission (AEC) between 1962 and 1964. The AEC concluded in June 1966 that the HNPF had fulfilled its objectives in the Power Demonstration Program. In 1967, the Nebraska Public Power District was authorized to decommission and dismantle the facility. This activity ended in 1969, and the facility was retired by the AEC in 1971 (AEC 1971b). There is currently no evidence of contamination being released from the facility.

## 2.3 Stabilization/Isolation Approach

The "final" dismantled condition of the HNPF consists of a massive, below-grade reinforced concrete structure. The reactor building was razed, and the surface of the remaining structure has been weatherproofed by covering with sand, and waterproof polyvinyl membrane and earth. This cover was sloped for positive drainage and drain tile was installed at the periphery.

The intermediate heat exchanger structure, which protrudes above grade, was weatherproofed by a layer of polyvinyl sheet and a protective cover of concrete. This approach is intended to preclude the ingress of water to interior portions of the structure. Human access to the entombed structure can be gained only by extensive effort utilizing a combination of explosives, air hammers, and cutting tools.

Prior to final sealing of the facility, all nuclear fuel and all bulk sodium were removed from the site. Residual sodium was reacted with steam to form sodium hydroxide, thus removing any potential for hydrogen formation at some later date should water enter the facility.

Within the structure that housed the reactor, three principal locations were utilized for long-term storage of most of the radioactive materials that remained at the site. These locations are the reactor cavity, fuel storage pit no. 3, and the moderator element storage cells. Each of these cavities is steel-lined and surrounded by several feet of concrete and other structural materials that were provided for shielding in the operational plant. Approximately 300,000 curies of radioactive material were stored at these locations with more than 99 percent of it being located in the reactor cavity. Most of this activity is immobile since it is in the form of neutron activation products dispersed in metallic components.

The former radioactive waste disposal building remains on site. No significant amount of radioactive material remains in this building. The below-grade portions of this building and a connecting pipe tunnel have been sealed to prevent access.

All the cavities in which radioactive components are stored have been sealed by welded closures in such a manner that they are isolated from the rest of the structure. All other cavities, pipe ways, and stair wells were sealed by welding existing closures or providing a closure constructed of reinforced expanding concrete (AEC 1971b).

## 2.4 Site Maps and Drawings

A site plan for the HNPF is included in this document as Plate 1.

Documents describing the contents and construction of the isolation structure were sealed in two capsules composed of 24-in. by 19-in. by 4-in. stainless-steel boxes which were secured at two accessible locations in the isolation structures; one in a niche cut into the Intermediate Heat Exchanger (IHX) vaults superstructure, and one at the center of the steel plate covering the reactor vessel loading face shield. The documents contained in the capsules and the construction and mounting of the capsules are described in detail in Paulett 1969.

Capsule Located in IHX Vaults Superstructure

The capsule in the IHX vaults superstructure was set into a niche in the south face of the superstructure at a point due north of the center of the reactor vessel loading face shield. The capsule was secured in the niche by means of concrete anchors and was covered by a stainless-steel plaque engraved with a warning notice similar to that described below.

**HALLAM NUCLEAR POWER FACILITY**

**NOTICE**

**THE RECTANGULAR AREA DEFINED BY LINES LOCATED 77 FEET WEST, 78 FEET EAST, 90 FEET NORTH, AND 200 FEET SOUTH OF THIS PLAQUE OUTLINES THE REMAINING REACTOR VAULT STRUCTURES CONTAINING RADIOACTIVE MATERIALS.**

**DO NOT, UNDER ANY CIRCUMSTANCES, ATTEMPT TO BREAK THROUGH THE CONCRETE SUPERSTRUCTURE OR EXCAVATE IN THE ABOVE DEFINED RECTANGULAR AREA.**

**TO ACCOMMODATE AN EMERGENCY SITUATION OR THE LOSS OF OTHER RECORDS, A COMPLETE SET OF DOCUMENTS DESCRIBING THE CHARACTER OF THE ABOVE AND BELOW GRADE STRUCTURES AND THEIR CONTENTS IS CONTAINED IN A SEALED METAL BOX BEHIND THIS PLAQUE.**

**NORTH AMERICAN ROCKWELL CORPORATION/USAEC**

Capsule Located at the Reactor Centerline

The capsule located at the reactor centerline is buried beneath the isolation structure protective covering, and is welded to the top surface of the steel plate covering the reactor vessel loading face shield. The outside surface of the capsule is engraved with the following words.

**HALLAM NUCLEAR POWER FACILITY**

**DOCUMENTATION CAPSULE**

**–WARNING–**

**IF YOU DO NOT HAVE PERMISSION TO BE HERE, LEAVE IMMEDIATELY. DO NOT OPEN THIS CAPSULE UNLESS YOU HAVE PERMISSION TO DO SO. THE CAPSULE CONTAINS ENGINEERING DOCUMENTS AND OTHER INFORMATION PREPARED BY THE ATOMICS INTERNATIONAL DIVISION OF NORTH AMERICAN ROCKWELL CORPORATION DESCRIBING THE NUCLEAR REACTOR FACILITY AND CONTENTS IN DETAIL.**

**THIS CAPSULE IS LOCATED OVER THE CENTER OF THE ENTOMBED NUCLEAR REACTOR VESSEL. FLOOR ELEVATION HERE IS 1440 FEET 6 INCHES.**

**THERE IS RADIOACTIVE MATERIAL AND SODIUM HYDROXIDE BELOW WHERE YOU ARE STANDING AND WITHIN THE OUTLINE SHOWN BELOW. WHEN ENTRY TO THE REACTOR FACILITY IS AUTHORIZED, REFER TO THE ENGINEERING DOCUMENTS AND OTHER INFORMATION CONTAINED IN THE CAPSULE BEFORE ATTEMPTING TO OPEN THE REACTOR VESSEL OR MAKE ANY PENETRATION OF THE VAULT. AUTHORIZATION TO OPEN THE CAPSULE, TO OPEN THE REACTOR VESSEL, OR TO PENETRATE THE VAULT MUST BE OBTAINED IN ACCORDANCE WITH REQUIREMENTS STATED IN THE LAND RECORDS OF LANCASTER COUNTY, NEBRASKA.**

**UNITED STATES**

**ATOMIC ENERGY COMMISSION**

**1969**

## 2.5 Ground-Water Conditions

Around 1990, the Nebraska Department of Health (NDH) expressed concerns about the possibility of shallow ground water coming in contact with buried radiological materials along the buried walls of the reactor (DOE 1998). Investigations were conducted to characterize the hydrologic conditions of the shallow ground water at the HNPF. Flow directions and hydraulic conductivities were determined, and sampling and analysis of the installed monitoring points was conducted.

The glacial till was found to have very low hydraulic conductivities and flow directions varied with depth flowing from northwest to southwest at the shallower levels and flowing to the northwest at the deeper levels.

Results of sampling analyses revealed no radiological ground-water contamination (DOE 1998).

There is no evidence of the HNPF affecting the regional ground water.

## 2.6 Specific Site Surveillance Features

Since the HNPF site is on property owned and institutionally controlled by the NPPD, fencing, signs, and property markers all fall under the jurisdiction of the NPPD. The DOE will be inspecting the following specific features.

- Intermediate heat exchanger structure, which protrudes above grade.
- 19 Monitor wells.
- The 1.4 acre grass-covered mounded area.

There is a permanent plaque on the side of the intermediate heat exchanger structure that provides some information about the reactor entombment. Encased behind the plaque is information regarding the entombment of the HNPF.

# 3.0 Long-Term Surveillance Program

## 3.1 Environmental Monitoring/Inspections

### 3.1.1 Ground-Water Monitoring

Ground-water monitoring will be conducted annually. The DOE has 19 wells at the site. Water level measurements will be obtained from all 19 DOE wells. Samples for analysis will be obtained from 17 of the DOE wells.

The samples will be analyzed for gross alpha, gross beta, tritium, gamma spectrometry, and nickel-63.

The DOE monitor wells are identified as OBS1A through OBS6A, OBS1B through OBS8B, OBS2B2, OBS2C2, OBS4C, OBS7C, and OBS8C. Wells OBS6A and OBS6B are used for water level measurements only due to very slow recovery rates. Locations of the DOE monitor wells are shown on Figure 3-1.

### 3.1.2 Visual Site Inspection

The concrete-encased intermediate heat exchanger that protrudes above ground will be inspected for signs of deterioration or other damage. The 1.4 acre grass-covered mounded area will be checked to assure the grass is healthy and that no erosion is occurring on the side slopes. Monitor wells and well points will be examined for damage or deterioration that may require repair.

## 3.2 Monitoring/Inspection Reports

The DOE will compile an annual monitoring and surveillance report. This report will discuss the results of the ground-water monitoring and summarize the physical condition of the HNPF. This report will also discuss the need for follow-up inspections, monitoring, or maintenance actions, should any be necessary.

A copy of the annual report is provided to NPPD and NDH.

## 3.3 Maintenance and Emergency Measures

### 3.3.1 Custodial Maintenance

The DOE is responsible for making any necessary repairs to the concrete-encased intermediate heat exchanger structure (AEC 1971b). This may require periodic sealing and other concrete repairs to maintain integrity.

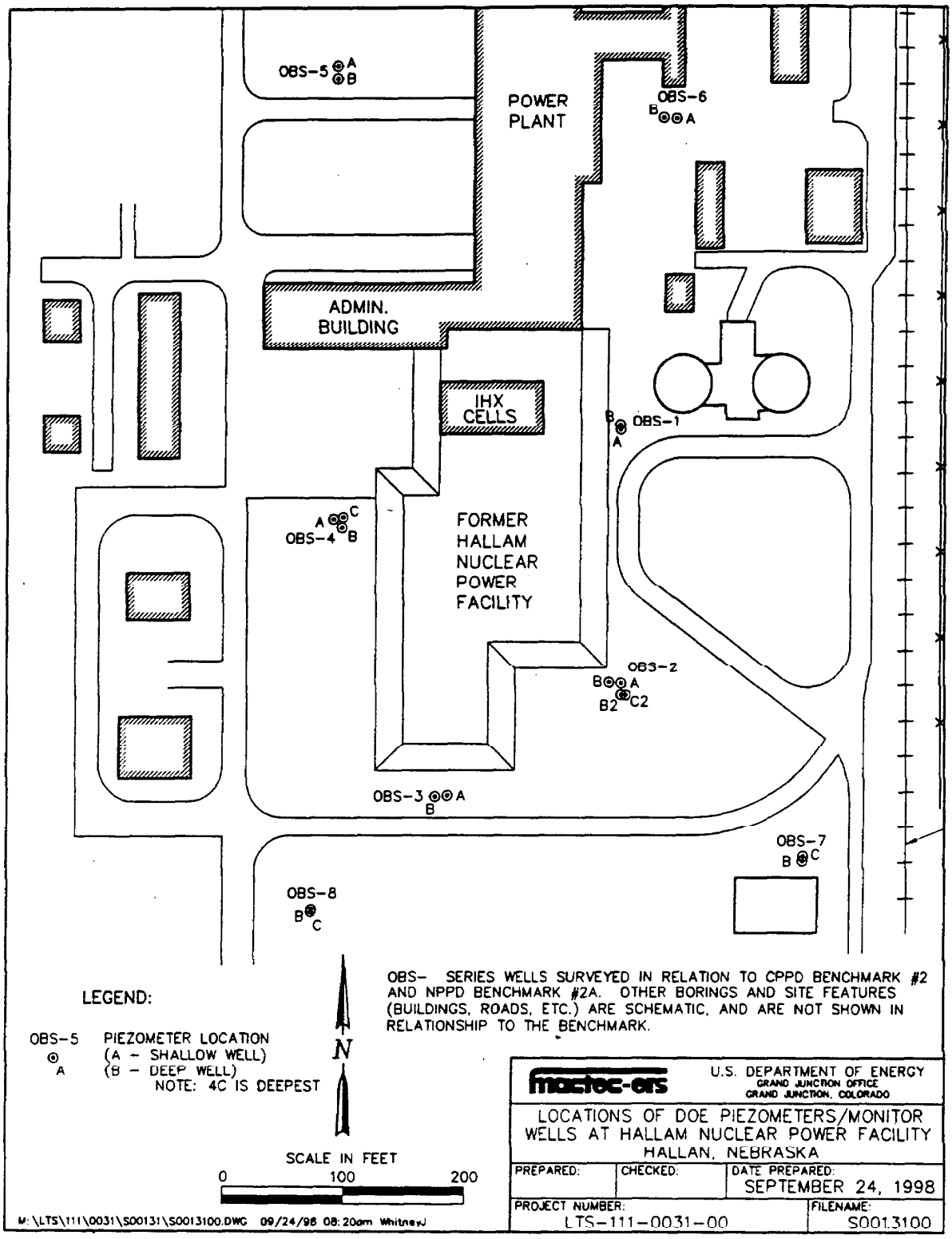


*Figure 3-1. Locations of DOE Monitor Wells at Hallam Nuclear Power Facility, Hallam, Nebraska*

### 3.3.2 Emergency Measures

Emergency measures are the actions the DOE will take in response to "unusual damage or disruption" that threaten or compromise site safety, security, or integrity. The DOE will contain or prevent dispersal of radioactive materials in the unlikely event of an actual breach in site containment materials.

## 3.4 Records

The LTSM Program maintains site records in a permanent site file at the DOE-GJO. These records are available for inspection by government agencies or the public.

All LTSM Program records are maintained in full compliance with DOE requirements:

1. DOE Order 1324.2A, Records Disposition
2. DOE Order 1324.5, Records Management Program
3. DOE Order 1324.8, Rights and Interests Records Protection Program
4. DOE Order 5500.7B, Emergency Operating Records

## 3.5 Quality Assurance

The long-term custody of the HNPF and all activities related to surveillance and maintenance of the site will comply with DOE Order 5700.6C, Quality Assurance (QA).

QA requirements will be transmitted through procurement documents to subcontractors when appropriate.

## 3.6 Health and Safety

Health and safety procedures for LTSM Program activities are consistent with DOE orders, regulations, codes, and standards.

Health and safety concerns specific to the HNPF are listed in an inspection checklist. Also in the Health and Safety section of the inspection checklist are 24-hour emergency telephone numbers for fire, hospital, ambulance, police, and sheriff; directions from the site to the nearest hospital with an emergency room are also included. The checklist is updated before each inspection to advise on-site personnel of new and continuing health and safety considerations. A Job Safety Analysis is prepared before each inspection and is presented as part of a prerequisite-inspection briefing held several days before the site visit. At the briefing, personnel who will be on the site review the Job Safety Analysis and are instructed on hazards that may be present at the site and health and safety procedures that must be followed.

Subcontractors that may be retained for certain tasks are advised of health and safety requirements through appropriate procurement documents. Subcontractors must submit health and safety plans for all actions subject to Occupational Safety and Health Administration (OSHA) requirements. Subcontractor health and safety plans will be reviewed and approved before the contract is awarded. Proposals from subcontractors without an adequate health and safety plan will be rejected.

# 4.0 References

AEC, 1971a. United States Atomic Energy Commission, letter from Peter A. Morris to Nebraska Public Power District, Enclosure 2. Notice of Termination, July 20, 1971.

AEC, 1971b. United States Atomic Energy Commission, letter from Peter A. Morris to Nebraska Public Power District, Enclosure 3, Safety Evaluation, July 20, 1971.

DOE, 1998. *Environmental Monitoring Summary, Entombed Hallam Nuclear Power Facility*, James D. Paulson, March 11, 1998.

Heine, W. F., 1969. *Final Status Report and Safety Analysis of the Hallam Nuclear Power Facility Site and Remaining Structures*, Atomics International, September 30, 1969.

Paulett, T.A., 1969. "Storage of Engineering Documents in the HNPF Retirement Complex, *Atomics International* TI-690-12-002.

ORISE, 1993. *Project Work Plan for the Investigation of Perched Groundwater at the Hallam Nuclear Power Facility, Hallam, Nebraska*, March 1993.

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# Appendix A

## Lease, Legal Description, and Other Deed Book Information

14

TEC.980402.0003

Date JUL 24 1959

LEASE OF LAND
BETWEEN
CONSUMERS PUBLIC POWER DISTRICT
AND
THE U. S. ATOMIC ENERGY COMMISSION

This LEASE is entered into this 24th day of July, 1959, effective as of January 16, 1959, between the UNITED STATES OF AMERICA (called the "Commission"), and CONSUMERS PUBLIC POWER DISTRICT, a public corporation and political subdivision of the State of Nebraska, with its principal office located at Columbus, Nebraska (called "Consumers").

Recitals

On September 20, 1957 the Government and Consumers entered into a contract identified as Contract No. AT(11-1)-513 (hereinafter called the "contract") pursuant to which, inter alia, the Commission has undertaken to furnish a nuclear reactor plant (utilizing certain facilities provided by Consumers) for the production of steam for the generation of electricity in Consumers' turbogenerator and related conventional type power facilities, the Lessor to furnish the site for the overall plant. The contract is in connection with and in furtherance of the Commission's civilian reactor program. Under the contract Consumers agrees to lease to the Government, rent-free and for a term of forty years, the parcel of land on which the reactor and related facilities are to be located, together with rights of ingress and egress over the adjacent tracts of land to which Consumers holds title.

The land hereby leased has been acquired by Consumers for the purpose of leasing it to the Government and is not otherwise necessary for use by Consumers in its operations; therefore, this lease is permitted under the terms of Consumers' Bond Resolution.

NOW THEREFORE, the parties agree as follows:

In consideration of the commitments and obligations of the parties under the contract and of One Dollar ($1.00) and other good and valuable considerations, the receipt and sufficiency of which are hereby acknowledged, Consumers does hereby lease and demise to the Government the following described tract of land located in Section 19, T-7-N, R-6-E, Lancaster County, State of Nebraska;

> From the south east corner of said Section 19, T-7-N, R-6-E, thence 2479.6 feet north and 957 feet west to the point of beginning; thence west 920 feet; thence south 850 feet; thence east 920 feet; and thence north 850 feet to the point of beginning,

NOV 1 3 1988

together with a right of ingress and egress over and along a roadway to be provided by Consumers to and from an existing public road;

This lease shall be for a term commencing on the 16th day of January, 1959 and ending on the 15th day of January, 1999, unless sooner terminated as herein provided or by consummation of a sale of the nuclear facilities to Consumers resulting from exercise of its option therefor under the contract.

The Government shall have no obligation to pay rent for the demised land. Consumers' title in fee simple to the demised premises is hereby warranted by Consumers.

The parties further agree to the following terms and conditions:

ARTICLE I

In accordance with the provisions of the contract and for the purpose of performance of the work thereunder, Consumers shall have the right, during the term of the contract and any extensions thereof, to occupy and use jointly with the Government the property covered by this lease. Subsequent to the expiration or termination of the contract, the Government, acting directly or through contractors of its choice, shall have the right, during the existence of this lease, to utilize the demised land.

ARTICLE II

The Government shall have the right, during the existence of this lease, to erect structures, install equipment, attach fixtures and make any other changes beneficial to the operation of the facilities to, in, or upon the leased property. Subject to Consumers' rights under the contract such structures, equipment, fixtures, or other devices provided by the Government shall be and remain the property of the Government and may be removed or otherwise disposed of by the Government.

ARTICLE III

The Government may terminate this lease at any time by giving Consumers a six-months written notice in advance.

ARTICLE IV

Upon expiration or termination of this lease, subject to Consumers' rights under the contract the Commission shall at its expense make the premises safe from a radiation standpoint and may, but will be under no obligation to restore the leased land to its original condition or remove any or all Government-owned portions of the nuclear plant, facilities, components or equipment.

ARTICLE V

Consumers owns premises known as the Hallam Site, of which the demised premises are a part, consisting of approximately 640 acres, to the north

of Hallam, Nebraska. Said Hallam Site consists of Section 19 (except existing right-of-way of Chicago, Rock Island, and Pacific Railway Co.), T-7-N, R-6-E, located in Lancaster County, the deeds thereto being recorded in the office of the Register of Deeds in said Lancaster County, reference being made thereto for a more particular description of said tract. Consumers agrees that so long as the project defined in the contract continues and for any additional period required to make the property safe for other uses, it will retain title to and control of said Hallam Site and will not permit activities thereon or uses thereof which, under Commission reactor safeguard criteria, are inconsistent with nuclear reactor operations.

ARTICLE VI

the demised premises of sufficient width and at an appropriate location (so as not to interfere with the Commission's use of the premises) for any facilities required during the existence of this lease in connection with the operation of the turbine generator portion of the plant for the generation, transmission, and sale of power.

ARTICLE VII

Consumers also reserves the right on the expiration or termination of this lease to leave on the premises equipment or facilities supplied by Consumers for the nuclear facilities.

ARTICLE VIII

In the event that the contract expires without renewal, or is sooner terminated, Consumers agrees to grant, without charge, to the Government at the Commission's request (a) a right of access to and a right to use, in connection with its activities on the demised premises, any railroad siding or sidings which may be built by Consumers on that part of the site not included in this lease, and (b) rights of way over, across, and under that part of Consumers' site not included in this lease, of sufficient width and at an appropriate location for any facilities required during the existence of this lease in connection with the operation of the nuclear portion of the plant, and (c) a right of use for the nuclear facilities to the system of wells to be constructed by Consumers. Any such grant to the Government shall limit the Government's use to that generally contemplated for a nuclear reactor having requirements similar to those contemplated by the project.

ARTICLE IX

It is agreed that neither party during the existence of this lease will assign this lease or sell or assign its interest in the demised premises or in any improvements remaining thereon or make any subleases thereof to any person or persons without the previous written consent of the other party hereto. Both parties recognize that utilization of radiation may make it desirable for others to build and operate facilities on the demised land, in which case the approval of both the Government and Consumers will be required.

ARTICLE X

Consumers warrants that no person or selling agency has been employed or retained to solicit or secure this lease upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by Consumers for the purpose of securing business. For breach or violation of this warranty, the Government shall have the right to annul this lease without liability or in its discretion to deduct from the contract price or consideration the full amount of such commission, percentage, brokerage, or contingent fee.

ARTICLE XI

No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this lease or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this lease if made with a corporation for its general benefit.

ARTICLE XII

Consumers agrees that the Comptroller General of the United States or any of his duly authorized representatives shall until the expiration of three years after final payment of the agreed rental, have access to and the right to examine any directly pertinent books, documents, papers and records of Consumers involving transactions related to this lease.

ARTICLE XIII

Any notices required hereunder shall be sufficient if sent to the appropriate party at the addresses indicated below:

Manager, Chicago Operations Office
U. S. Atomic Energy Commission
P. O. Box 59
Lemont, Illinois

General Manager
Consumers Public Power District
Columbus, Nebraska

IN WITNESS WHEREOF, the parties hereto have executed this lease on the date first above written.

THE UNITED STATES OF AMERICA

By _____
Kenneth A. Dunbar, Manager
Chicago Operations Office
U. S. Atomic Energy Commission

CONSUMERS PUBLIC POWER DISTRICT

By _____
President

_____
Assistant Secretary

14

Lease of Land Page No. 5

STATE OF NEBRASKA )
) ss.
PLATTE COUNTY )

On this 7th day of July, 1959 before me, the undersigned, a Notary Public in and for said County, personally came Wayne E. Barber, President of Consumers Public Power District, to me known to be the President and the identical person whose name is affixed to the above Lease, and acknowledged the voluntary act and deed of said District and that the seal of said District was thereto affixed by its authority.

WITNESS my hand and Notarial Seal the day and year last above written.

Catherine Frischholz
Notary Public

CATHERINE FRISCHHOLZ GENERAL NOTARY COMMISSION EXPIRES DEC. 18, 1961 STATE OF NEBRASKA

My commission expires Dec. 18, 1961.

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