FORM NRC-2
(7-77)
10 CFR 40

Approved by, GAO
R0203

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR SOURCE MATERIAL LICENSE

Pursuant to the regulations in Title 10, Code of Federal Regulations, Chapter 1, Part 40, application is hereby made for a license to receive, possess, use, transfer, deliver or import into the United States, source material for the activity or activities described.

1. (Check one)
- ☐ (a) New license
- ☐ (b) Amendment to License No. _____
- ☒ (c) Renewal of License No. SUA-1324
- ☐ (d) Previous License No. _____

2. NAME OF APPLICANT
ENERGY FUELS NUCLEAR, INC.

3. PRINCIPAL BUSINESS ADDRESS
1515 Arapahoe Street, Suite 445
3 Park Central, Denver, Colorado 80202

4. STATE THE ADDRESS(ES) AT WHICH SOURCE MATERIAL WILL BE POSSESSED OR USED
Post Office Box 787, Blanding, Utah 84511

5. NAME OF PERSON TO BE CONTACTED CONCERNING THIS APPLICATION
Donald K. Sparling

6. TELEPHONE NO. OF INDIVIDUAL NAMED IN ITEM 5
(303) 623-8317

7. DESCRIBE PURPOSE FOR WHICH SOURCE MATERIAL WILL BE USED
Natural uranium will be stored for processing in applicant's proposed White Mesa Uranium Mill.

8. STATE THE TYPE OR TYPES, CHEMICAL FORM OR FORMS, AND QUANTITIES OF SOURCE MATERIAL YOU PROPOSE TO RECEIVE, POSSESS, USE, OR TRANSFER UNDER THE LICENSE

(a) TYPE	(b) CHEMICAL FORM	(c) PHYSICAL FORM (Including % U or Th.)	(d) MAXIMUM AMOUNT AT ANY ONE TIME (kilograms)
NATURAL URANIUM	Natural Uranium Ore	Crushed	Unlimited
URANIUM DEPLETED IN THE U-235 ISOTOPE			
THORIUM (ISOTOPE)			

(e) MAXIMUM TOTAL QUANTITY OF SOURCE MATERIAL YOU WILL HAVE ON HAND AT ANY TIME (kilograms)
Unlimited

9. DESCRIBE THE CHEMICAL, PHYSICAL, METALLURGICAL OR NUCLEAR PROCESS OR PROCESSES IN WHICH THE SOURCE MATERIAL WILL BE USED, INDICATING THE MAXIMUM AMOUNT OF SOURCE MATERIAL INVOLVED IN EACH PROCESS AT ANY ONE TIME, AND PROVIDING A THOROUGH EVALUATION OF THE POTENTIAL RADIATION HAZARDS ASSOCIATED WITH EACH STEP OF THOSE PROCESSES
See Section 3, Blanding Ore Buying Station Process and Equipment in attachment.

10. LIST THE NAMES AND ATTACH A RESUME OF THE TECHNICAL QUALIFICATIONS, INCLUDING TRAINING AND EXPERIENCE OF APPLICANT'S SUPERVISORY PERSONNEL AND THE PERSON RESPONSIBLE FOR THE RADIATION SAFETY PROGRAM (OR OF APPLICANT IF AN INDIVIDUAL).
See Section 5.2, Qualifications in attachment.

Applicant
Check No. 9137 $50 + 9145 $20 (2D)
Date of Check 3/20/78 | 3-21-78
Date Check Rec'd 3/21/78 | 3-31-78
Received By CWISJ

11. DESCRIBE THE EQUIPMENT AND FACILITIES WHICH WILL BE USED TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE OR PROPERTY AND RELATE THE USE OF THE EQUIPMENT AND FACILITIES TO THE OPERATIONS LISTED IN ITEM 9. INCLUDE: (a) RADIATION DETECTION AND RELATED INSTRUMENTS (including film badges, dosimeters, counters, air sampling, and other survey equipment as appropriate. The description of radiation detection instruments should include the instrument characteristics such as type of radiation detected, window thickness, and the range(s) of each instrument).
See Section 3.3 for Radiation Safety Instruments and Section 5.5 for Radiation Safety.

(b) METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED IN (a) ABOVE, INCLUDING AIR SAMPLING EQUIPMENT (for film badges, specify method of calibrating and processing, or name supplier).
See Section 5.5-Radiation Safety

Rec'd 3/21/78

Form NRC-2 (7-77)

11(c) VENTILATION EQUIPMENT WHICH WILL BE USED IN OPERATIONS WHICH PRODUCE DUST, FUMES, MISTS, OR GASES, INCLUDING PLAN VIEW SHOWING TYPE AND LOCATION OF HOOD AND FILTERS, MINIMUM VELOCITIES MAINTAINED AT HOOD OPENINGS AND PROCEDURES FOR TESTING SUCH EQUIPMENT.

See Section 4.1 - Gaseous Waste Management System.

12 DESCRIBE PROPOSED PROCEDURES TO PROTECT HEALTH AND MINIMIZE DANGER TO LIFE AND PROPERTY AND RELATE THESE PROCEDURES TO THE OPERATIONS LISTED IN ITEM 9. INCLUDE (a) SAFETY FEATURES AND PROCEDURES TO AVOID NON-NUCLEAR ACCIDENTS, SUCH AS FIRE, EXPLOSION, ETC., IN SOURCE MATERIAL STORAGE AND PROCESSING AREAS

See Section 5.5 Radiation Safety.

See Appendix A for Safety Instructions and Procedures.

(b) EMERGENCY PROCEDURES IN THE EVENT OF ACCIDENTS WHICH MIGHT INVOLVE SOURCE MATERIAL.

Not Applicable

(c) DETAILED DESCRIPTION OF RADIATION SURVEY PROGRAM AND PROCEDURES.

See Section 5.5

13 WASTE PRODUCTS: *If none will be generated, state "None" opposite (a), below. If waste products will be generated, check here* ☐ *and explain on a supplemental sheet:*

(a) Quantity and type of radioactive waste that will be generated.

(b) Detailed procedures for waste disposal. NONE

14 IF PRODUCTS FOR DISTRIBUTION TO THE GENERAL PUBLIC UNDER AN EXEMPTION CONTAINED IN 10 CFR 40 ARE TO BE MANUFACTURED, USE A SUPPLEMENTAL SHEET TO FURNISH A DETAILED DESCRIPTION OF THE PRODUCT, INCLUDING:

(a) PERCENT SOURCE MATERIAL IN THE PRODUCT AND ITS LOCATION IN THE PRODUCT.

(b) PHYSICAL DESCRIPTION OF THE PRODUCT INCLUDING CHARACTERISTICS, IF ANY, THAT WILL PREVENT INHALATION OR INGESTION OF SOURCE MATERIAL THAT MIGHT BE SEPARATED FROM THE PRODUCT.

(c) BETA AND BETA PLUS GAMMA RADIATION LEVELS (*Specify instrument used, date of calibration and calibration technique used*) AT THE SURFACE OF THE PRODUCT AND AT 12 INCHES.

(d) METHOD OF ASSURING THAT SOURCE MATERIAL CANNOT BE DISASSOCIATED FROM THE MANUFACTURED PRODUCT.

CERTIFICATE

(*This item must be completed by applicant*)

15 *The applicant, and any official executing this certificate on behalf of the applicant named in Item 2, certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Part 40, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.*

BY: M D Vincelette
(*Signature*)

Dated March 20, 1978

M. D. Vincelette
(*Print or type name*)

Vice President - Uranium Operations
(*Title of certifying official authorized to act on behalf of the applicant*)

WARNING: 18 U.S.C. Section 1001; Act of June 25, 1948; 62 Stat. 749, makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

LIST OF PLATES

LIST OF TABLES

APPENDIXES

ENERGY FUELS NUCLEAR, INC.
WHITE MESA URANIUM ORE BUYING STATION
BLANDING, UTAH

1.0 PROPOSED ACTIVITIES

Energy Fuels Nuclear, Inc., the Applicant, a Colorado corporation with corporate headquarters in Denver, Colorado, request a specific source materials license to operate an existing uranium ore buying station and ancillary laboratory facilities approximately six miles south of Blanding, Utah. The station is operating under Interim License No. SUA-1324 (Docket or Ref. No. 40-8676) issued on February 3, 1978. This application provides the information asked for in the February 3, 1978 branch position for uranium ore buying stations prepared by the United States Nuclear Regulatory Commission and is submitted to facilitate a determination that issuance of a Source Material License will not result in undue risk to the health and safety of the public. Applicant's Environmental Report submitted previously on February 8, 1978, in compliance with paragraph 40.31(f) of 10 CFR Part 40, included this ore buying station. (See materials submitted under docket number 40-8681).

Activity Summary

The Blanding Ore Buying Station is located in a remote and desolate region in Southeastern Utah. It purchases uranium ore from numerous small independent and few company owned mines within a radius of about 125 mi. Virtually all of the mines supplying ore to the buying station have operated intermittently for 20-25 years.

The ore buying station is located on private land owned by Energy Fuels Nuclear, Inc. and has been in operation since May of 1977. Ore received from the various mines is weighed, crushed to a nominal 1½-inch size, sampled and stockpiled. The stockpiled ore is to be processed in Energy Fuels' proposed White Mesa

Uranium Mill to be situated next to the ore buying station. The buying station can process up to 125 tons of ore per hour and has a projected life of 15 years. In the future, it will be necessary to increase the crushing rate of this plant to suit the proposed White Mesa Uranium Mill. The ore contains an average of 0.13% U_3O_8 (2.6 lbs U_3O_8/ton) and approximately 0.30% V_2O_5 (6 lbs per ton V_2O_5) and varying amounts of copper.

Associated facilities for assaying the ore samples are now located in a small temporary laboratory. Energy Fuels Nuclear intends to construct a larger laboratory within the near future to more adequately serve the needs of the Blanding and Hanksville ore buying stations. Office facilities will also be provided in the new laboratory building.

2.0 SITE DESCRIPTION

See environmental report submitted to the Nuclear Regulatory Commission on February 8, 1978, which was prepared by Dames & Moore in conformance with NRC Regulatory Guide 3.8, "Preparation of Environmental Reports for Uranium Mills" for details of the geographical, demographic, meterorological, hydrological, seismological, and geological characteristics of the site and surrounding vicinity. These subjects are described briefly in this section under 2.1, 2.2, 2.3 and 2.4.

2.1 Geography and Demography

2.1.1 Geography

The project site encompassing the ore buying station is owned by Energy Fuels Nuclear, Inc., and is approximately 6 mi south of Blanding, Utah in San Juan County. It consists of 1,480 acres of private land and includes all of Section 28 and portions of Sections 21, 22, 27, 32 and 33 of T37S, R22E (Plate 2.1-1). The restricted area is approximately 50 acres in Section 28 also shown on Plate 2.1-1. Plate 2.1-2 shows the topography of the site and nearby features. A regional map is shown on Plate 2.1-3.

The project site is located on White Mesa and is drained by intermittent runoff into Corral Creek and Westwater Creek, both being tributary to the San Juan River. The general region is characterized by an arid climate, a sparse population, and diverse topography. It is used for livestock grazing, wildlife range, and exploration for minerals, oil and gas. No economic deposits of oil, coal or minerals are known to be present on the project site. The mesa is bounded by the deeply incised Westwater and Corral Creeks to the west and east of the site, respectively. The southerly sloping topography creates a drop in elevation across the project site of about 150 feet.

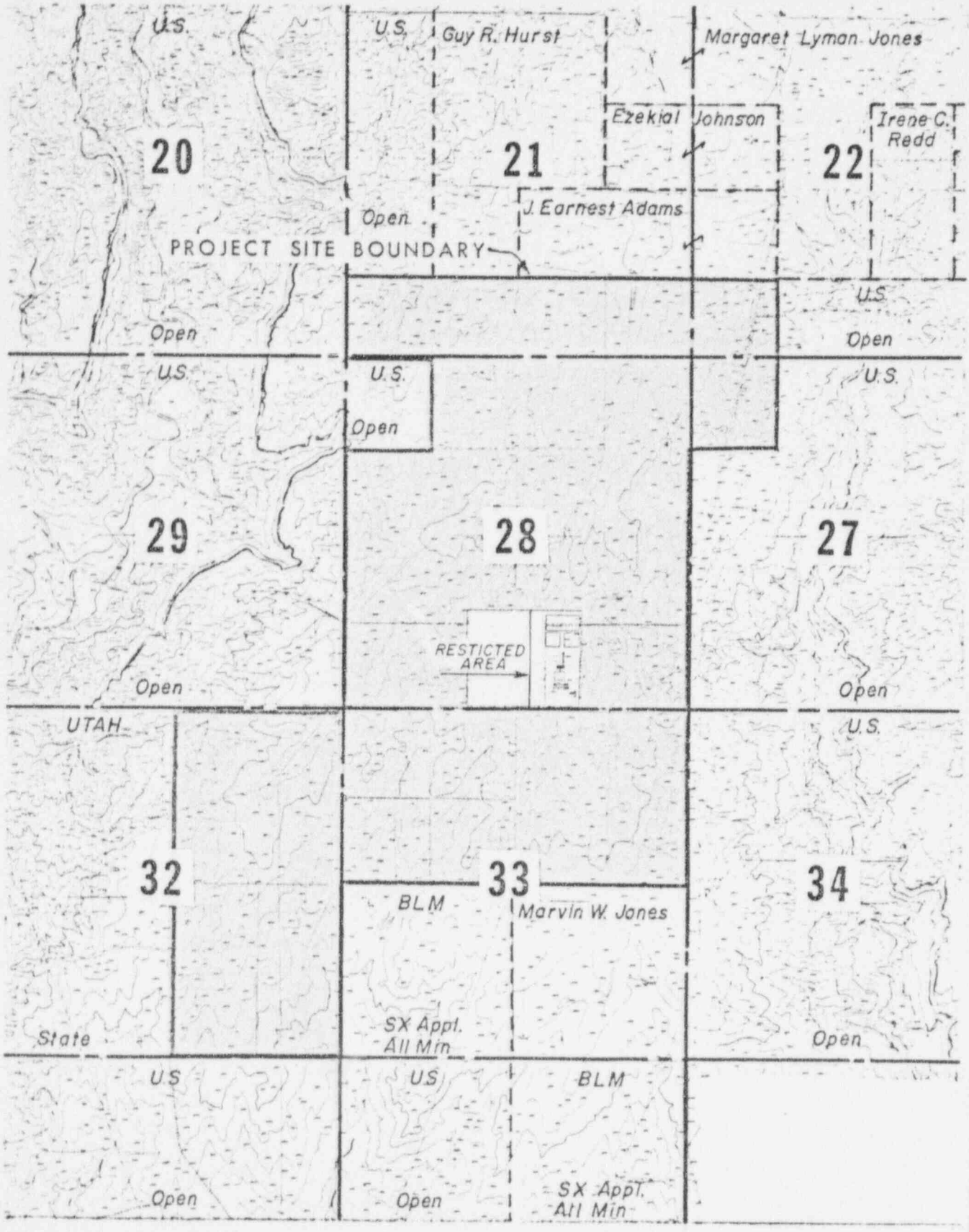


PLATE 2.1-1

PROJECT SITE MAP

(TOWNSHIP 37 SOUTH RANGE 22 EAST)

DAMES & MOORE

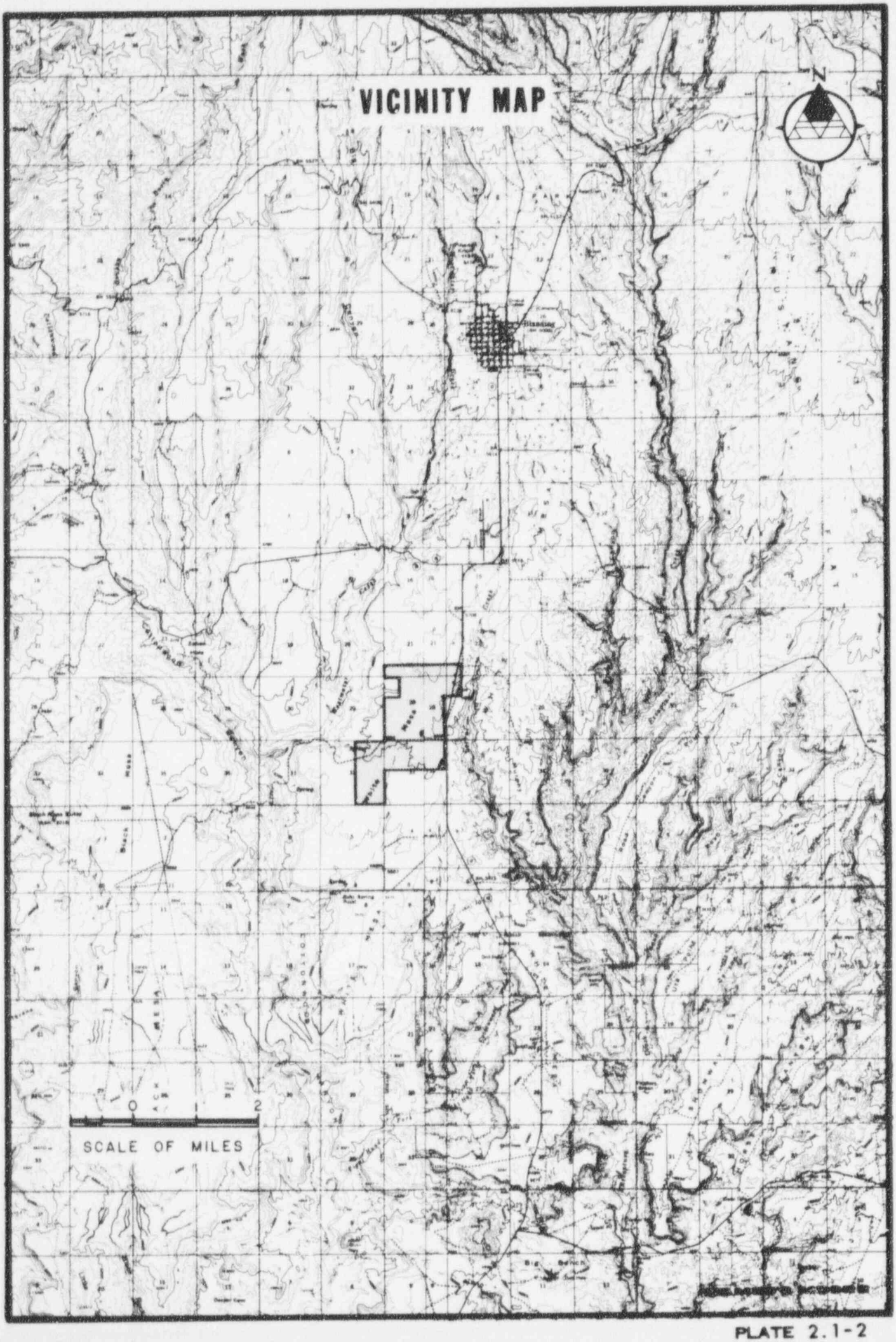


PLATE 2.1-2

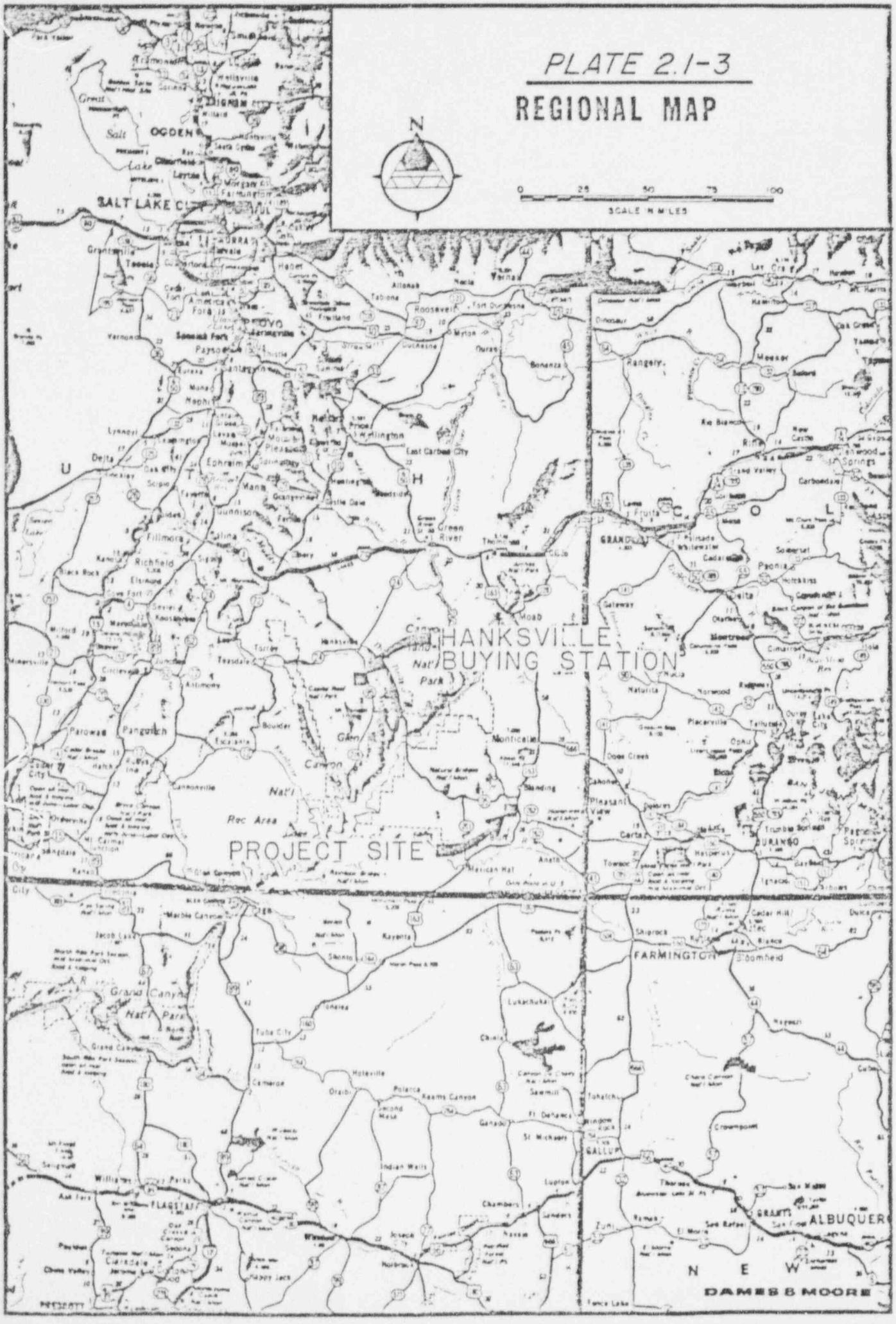


PLATE 2.1-3
REGIONAL MAP
N
0 25 50 75 100
SCALE IN MILES
HANKSVILLE
BUYING STATION
PROJECT SITE
SALT LAKE CITY
OGDEN
PROVO
FARMINGTON
FLAGSTAFF
GALLUP
ALBUQUERQUE
Grand Canyon Nat'l Park
Roc Area
DAMES & MOORE

All creeks and drainages in the vicinity of the site are intermittent.

2.1.2 Demography

San Juan County is the largest county in Utah in terms of acreage and is sparsely inhabited with a 1977 population of 13,368. The 1977 average density of the county was 1.7 persons per square mile, compared to a statewide density of 14.6 persons per square mile in 1975. Table 2.1-1 summarizes the population centers of the area. Navajo Indians, most of whom reside on or near the Navajo Reservation, total 6,000 and represent 45 percent of the county total.

Since the early 1970s, however, San Juan County and its principal communities have experienced a steadily increasing population due to renewed interest in uranium mining and related activities.

2.2 Meteorology

2.2.1 Temperature

Plate 2.2-1 summarizes means and extremes of temperatures recorded at Blanding, Utah from 1951 through 1974. The normal diurnal variation of temperatures is 15.5°C (27.9°F), but normally the range is greater in the summer months and narrower in the winter.

On the average, temperatures can be expected to rise to 32°C (90°F) or above 35 days per year and fall to -18°C (0°F) or below only 4 days per year. Only on an average of 15 days per year does the daily maximum temperature fail to rise above freezing but the daily minimum temperature dips to freezing or below on approximately 161 days per year.

TABLE 2.1-1

POPULATION CENTERS OF THE REGION

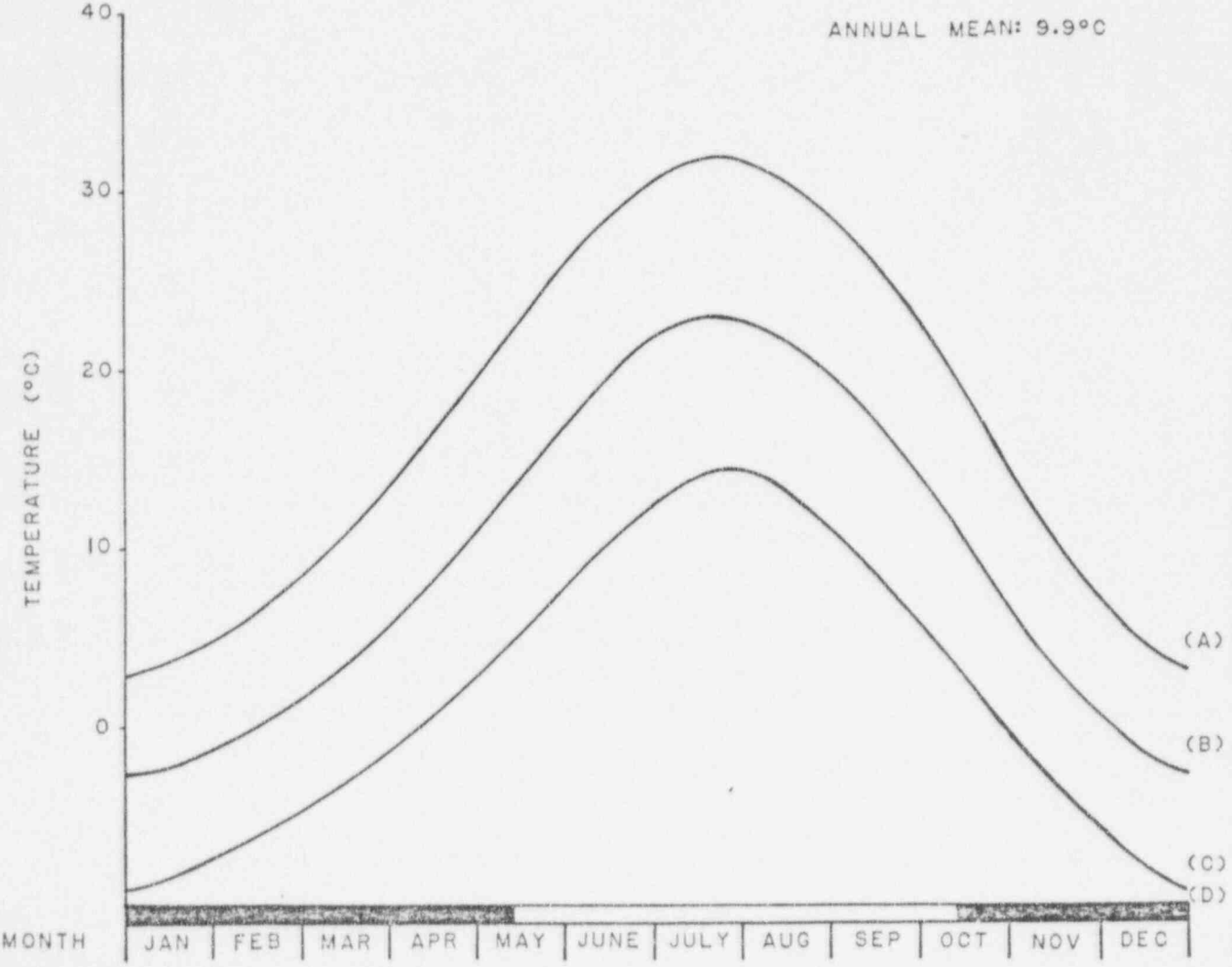
	1970 Population	1975 Population	Approximate Highway Mileage From the Project Site (Miles)
COLORADO	2,209,596	2,541,311	
Grand Junction	24,043	27,729	180
Cortez	6,032	6,793	85
Durango	10,333	11,771	130
UTAH	1,059,273	1,202,672	
Blanding	2,250	2,768	6
Monticello	1,431	1,726	30
Bluff	119	150	20
Hanksville	na[a]	160[a]	132
Moab	4,793	4,500	80
NEW MEXICO	1,017,055	1,143,827	
Farmington	21,979	27,802	160

[a]An official census estimate of the Hanksville area is not available because Hanksville is not incorporated. The 1975 estimate is by Westinghouse Environmental Systems Department (1977).

Source: U.S. Bureau of Census, 1976, 1977.

PLATE 2.2-1

MONTHLY MEANS AND EXTREMES OF TEMPERATURES BLANDING, UTAH



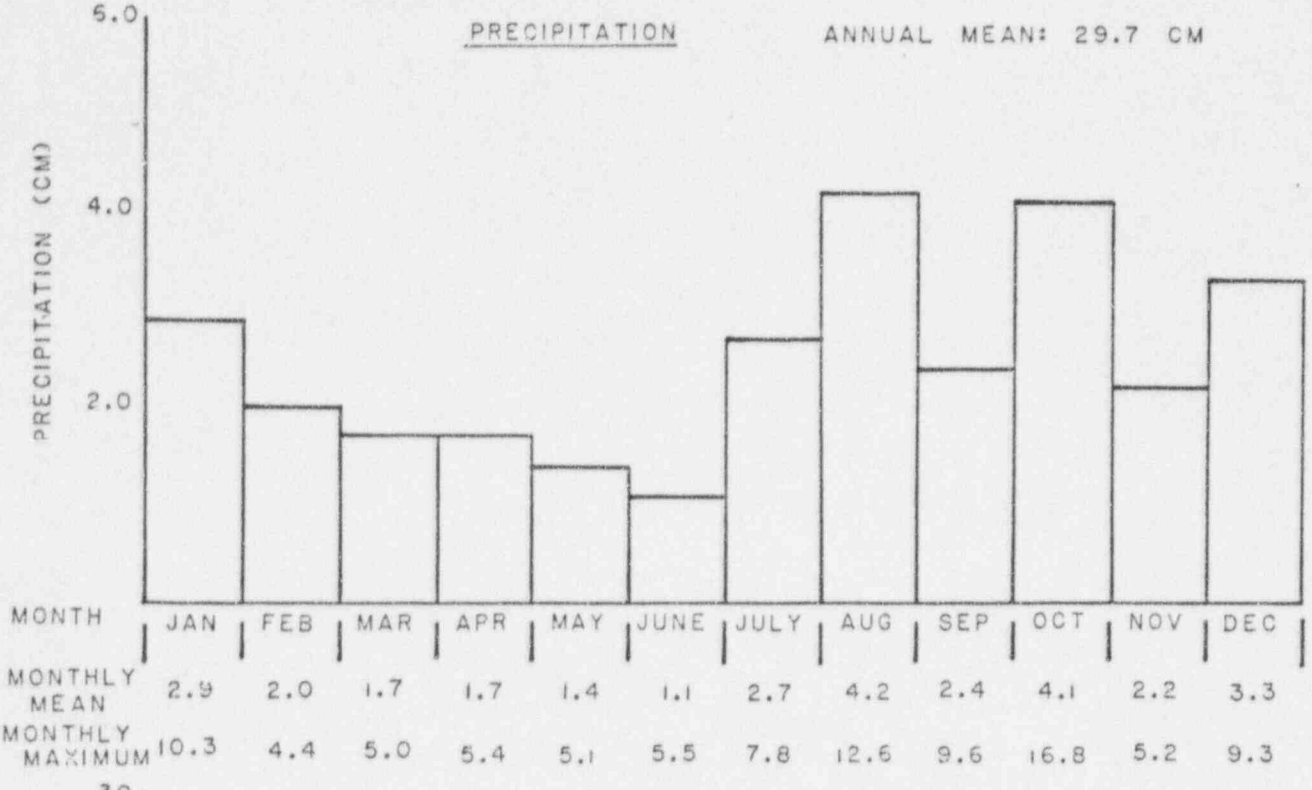
MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
EXTREME MAX.	16	18	24	27	33	38	38	37	34	29	21	15
MEAN MAX.	3.8	6.9	10.9	16.3	22.8	28.7	31.9	30.2	26.0	18.8	10.2	4.5
MEAN	-2.5	0.5	3.4	8.4	14.1	19.4	23.1	21.6	17.2	10.9	3.6	-1.7
MEAN MIN.	-8.8	-5.9	-3.2	0.4	5.4	10.1	14.2	13.1	8.4	2.9	-3.2	-7.8
EXTREME MIN.	-29	-22	-15	-11	-6	-1	8	3	-5	-12	-19	-22

(A) MEAN DAILY MAXIMUM
(B) MEAN MONTHLY
(C) MEAN DAILY MINIMUM
(D) FREEZE DATES

DAMES & MOORE

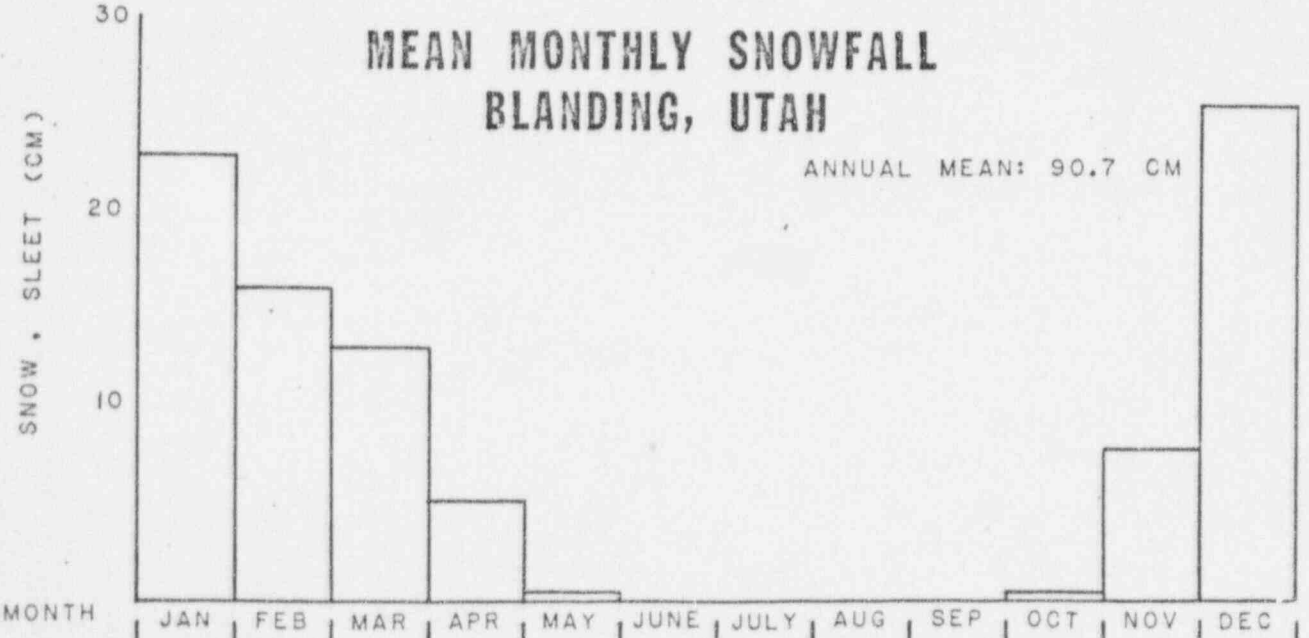
PLATE 2.2-2

MEAN MONTHLY PRECIPITATION
BLANDING, UTAH



	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
MONTHLY MEAN	2.9	2.0	1.7	1.7	1.4	1.1	2.7	4.2	2.4	4.1	2.2	3.3
MONTHLY MAXIMUM	10.3	4.4	5.0	5.4	5.1	5.5	7.8	12.6	9.6	16.8	5.2	9.3

MEAN MONTHLY SNOWFALL
BLANDING, UTAH



	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
MONTHLY MEAN	22.9	16.0	13.0	5.1	0.3	0.0	0.0	0.0	0.0	0.3	7.9	25.4
MONTHLY MAXIMUM	93.5	55.9	45.5	38.6	4.1	-	-	-	-	3.3	27.9	73.7

DAMES & MOORE

As shown in Plate 2.2-1, the normal last and first freezes (temperature occurrences of 0°C or below) occur on May 12 and October 13, respectively. The average freeze free period is 153 days. However, freezing conditions have been recorded in every month except July and August.

2.2.2 Precipitation

Plate 2.2-2 indicates the monthly means and extremes of precipitation recorded at Blanding, Utah from 1951 through 1974. While most of the precipitation in the Blanding vicinity falls as rain, snowfall accounts for approximately 30 percent of the total annual precipitation. The annual average snowfall at Blanding is 90.7 centimeters (35.7 in), and some snowfall is normally recorded in every month from October through May. Monthly snowfall data are summarized in Plate 2.2-2 and show that the monthly maximum recorded snowfall was 39.5 centimeters (15.6 in). The greatest snowfall recorded from a single storm was 50.8 centimeters (20.0 in).

2.2.3 Relative Humidity

While relative humidity data are not routinely collected at Blanding, the U. S. Department of Commerce (1965) presents general estimates for this area. The mean annual relative humidity is 44 percent and on a monthly basis is highest in January and lowest in July, averaging 62 and 35 percent, respectively.

2.2.4 Evaporation

The closest point to the Blanding project site where evaporation data have been collected is Green River, Utah approximately 160 kilometers (99.4 mi) to the north-northwest. Data from there indicates an average evaporation of 118.8 centimeters (46.8 in) from May through October. The greatest monthly evaporation occurs in July, averaging 25.8 centimeters (10.15 in). The average total annual evaporation rate is about 64 inches per year based on studies by Dames and Moore.

2.2.5 Winds

A wind rose of the annual percent frequency distribution of winds recorded at the Blanding NWS station from 1970 through 1974 is shown on Plate 2.2-3. Seasonal wind roses are presented in Plate 2.2-4.

High wind speed occurrences are not common, and wind speeds in excess of 10 meters per second (22.4 mph) occur on an average of only 0.8 percent of the time annually. High winds are most common in spring, especially in March and April when they occur 2.0 percent and 1.9 percent of the time, respectively.

2.3 Hydrology

2.3.1 Surface Water

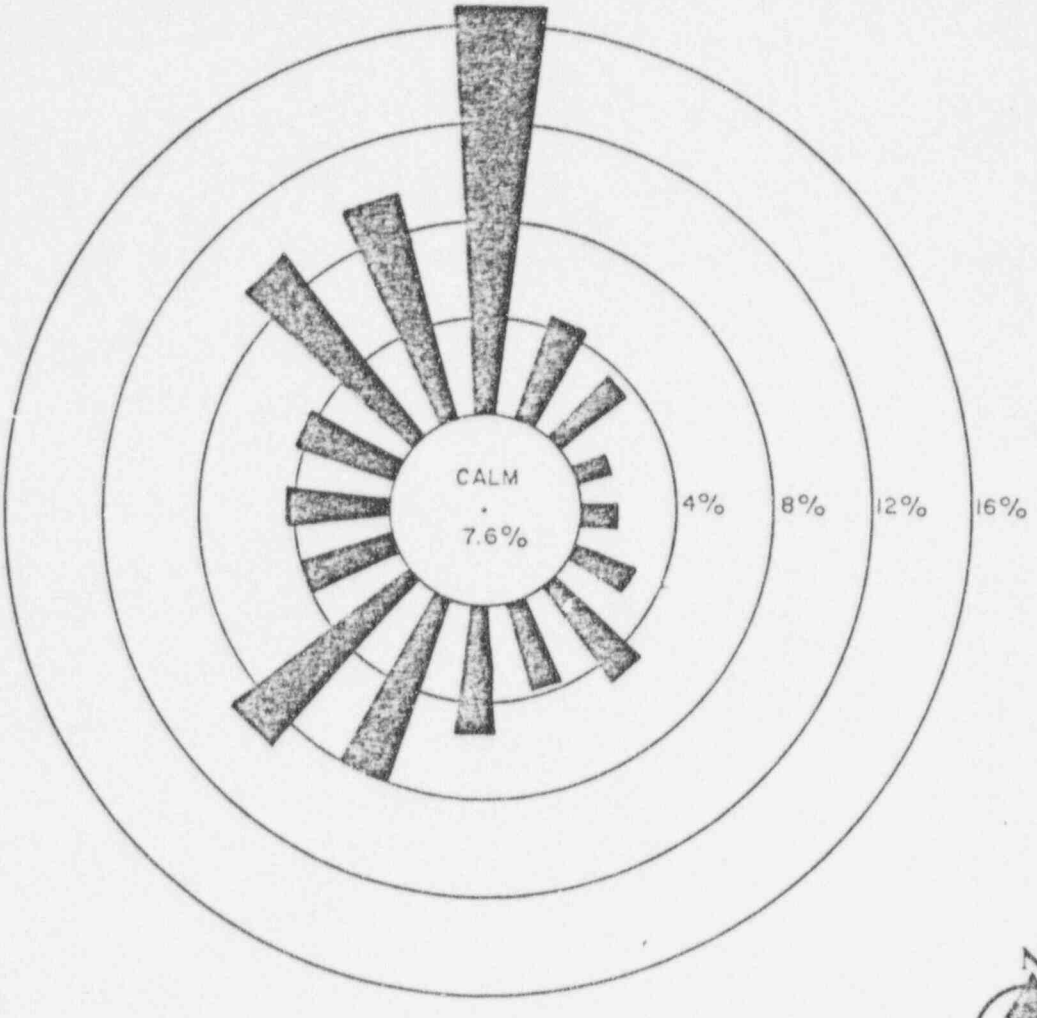
Since the project facilities are located on a relatively flat, slightly sloping mesa, the surface water drainage patterns are poorly defined. Westwater Creek to the west and Corral Creek to the east are the major drainage channels which define the mesa; however, the southern end of the project drains directly to Cottonwood Wash below its confluence with Westwater Creek. The project is situated within that portion of the mesa which drains to Cottonwood Wash. Corral Creek, on the eastern edge of the mesa, receives flow from only a small part of the buying station.

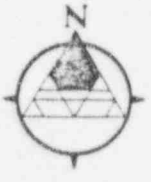
2.3.2 Ground Water

The project site, located on a flat-top mesa approximately 2 to 3 miles wide, is partly covered with a thin veneer of loessal soils which in some places are underlain by the Mancos shale and in other locations by the Dakota sandstone formation. The Mancos is not an aquifer at the site. Stratigraphically below the Mancos shale is the Dakota sandstone, the Burro

PLATE 22-3

ANNUAL PERCENT FREQUENCY DISTRIBUTION OF WIND BY DIRECTION BLANDING, UTAH 1970-1974





DAMES & MOORE

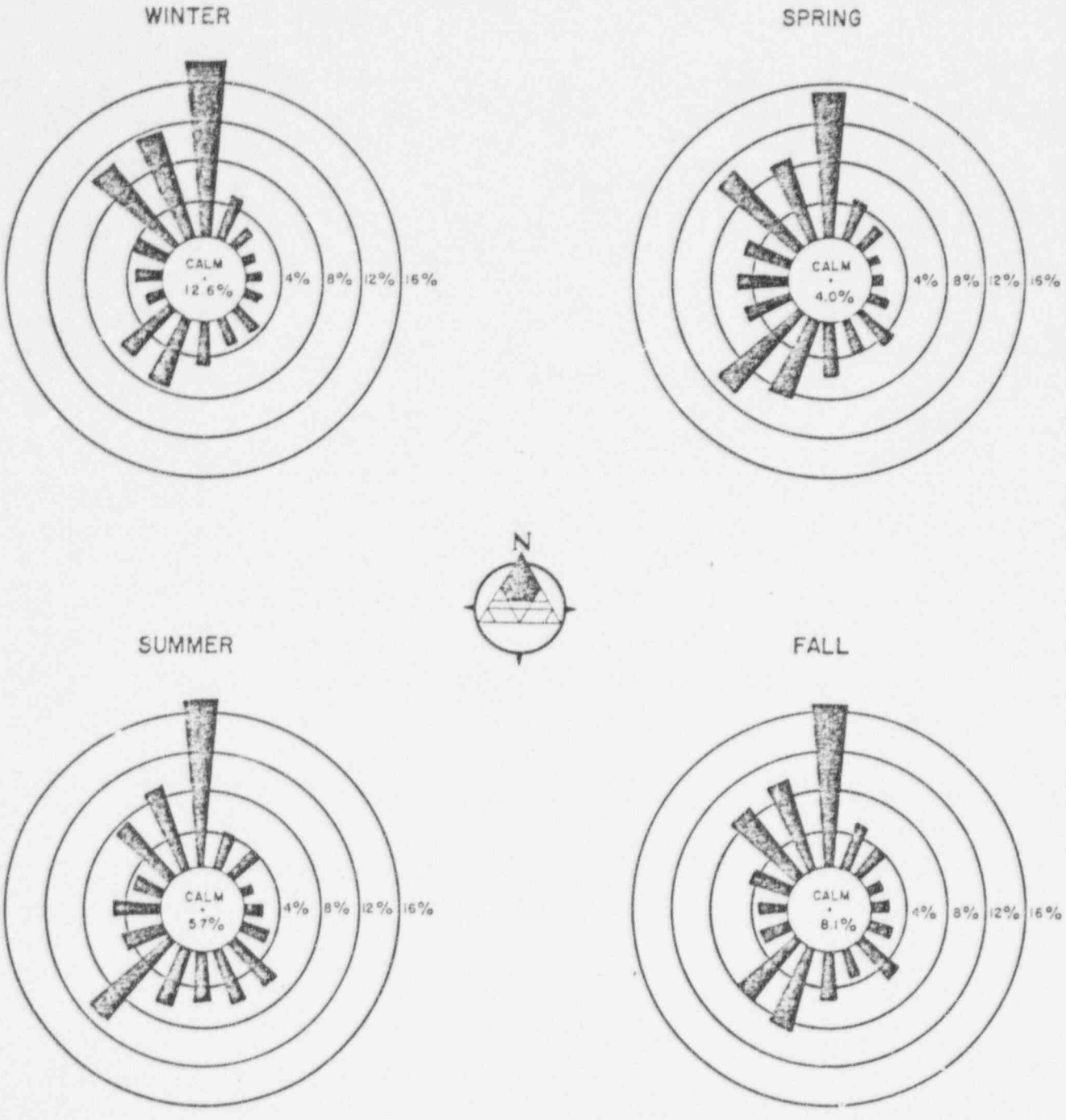


PLATE 2.2-4

SEASONAL PERCENT FREQUENCY DISTRIBUTION OF WIND BY DIRECTION BLANDING, UTAH 1970-1974

DAMES & MOORE

Canyon formation and the Morrison formation which yield fresh to slightly saline water in shallow wells in the project vicinity. Both the Dakota sandstone and the Burro Canyon formation crop out in the canyon walls and valleys on Cottonwood Creek and Corral Creek near the site. The formations are continuous beneath the site, extending from the outcrops in Corral Creek Canyon east of the site to the Canyon of Cottonwood Creek and Westwater Creek west of the site.

In the site area, the Dakota sandstone and Burro Canyon formation are well jointed by a series of sub-parallel joint sets trending between roughtly N10-18E and N60-85E. These joints provide pathways for the percolation of rainfall and downward infiltration of ponded surface waters. The joints also act as conduits for the local movement of ground water.

The ground water depth is in the range of 50 to 60 feet in the area of the ore buying station. This water is thought to be a perched table confined to the Dakota sandstone and Burro Canyon formations.

The movements of ground water occurring at shallow depths in the Dakota sandstone and Burro Canyon formation at the project site is confined to a very local area. These formations are exposed and crop out in the canyon walls of the surface drainages both east and west of the site. The near surface formations dip one or two degrees to the south. Thus, water percolating into the near surface formations of the project site, such as the Burro Canyon and Dakota sandstone, will generally migrate southward downdip.

2.4 Geology

The site is near the western margin of the Blanding Basin, part of the Canyon Lands section of the Colorado Plateau physiographic province, in southeastern Utah and within the Monticello uranium mining district. Structurally, the basin is a relatively equidimensional, shallow feature with approximately 700 feet of relief and is bounded on the west by the Monument Uplift; the Abajo Mountains and Paradox Fold and Fault Belt on the north; the Four Corners Platform on the east; and structural influence of the Defiance Uplift on the south. In general, resistant sedimentary rocks covering the basin's surface form a structural slope nearly horizontal in an east-west direction but descends southward with a regional slope of approximately 2000 feet over a distance of nearly 50 miles.

The thickness of sedimentary rocks underlying the project vicinity exceed 8,000 feet and range in age from Cambrian to Upper Cretaceous. These rocks overlie a basement complex of Precambrian metamorphic and igneous rocks. Only rocks of late Pennsylvanian to Upper Cretaceous ages are exposed on southeastern Utah, and the ages of rocks in the project vicinity are limited to upper Jurassic, Lower and Upper Cretaceous. Generalized stratigraphic sections based on oil well logs and field mapping are shown in the environmental report.

Rocks exposed in the project vicinity include, in ascending order, the Upper Jurassic Salt Wash, Recapture, Westwater Canyon, and Brushy Basin members of the Morrison Formation; the lower Cretaceous Burro Canyon Formation; and the Upper Cretaceous Dakota Sandstone.

In most of eastern Utah, the Salt Wash member underlies the Brushy Basin. However, just south of Blanding in the project vicinity, the Recapture Member replaces an upper portion of the Salt Wash and the Westwater Canyon Member replaces a lower part of the Brushy Basin.

The Salt Wash Member is composed dominantly of fluvial fine grained to conglomeratic sandstones with interbedded mudstones. Numerous uranium-vanadium deposits occur in the coarse grained basal beds that fill stream-cut scour channels in the underlying Bluff Sandstone, or in similar channels cut in the Summerville Formation where the Bluff Sandstone has been removed by pre-Morrison erosion. Cliff forming massive sandstone and conglomeratic sandstone in discontinuous beds make up to 50 percent or more of the member.

The Recapture Member is typically composed of interbedded, fine to medium grained sandstone and silty to sandy claystone. Bedding is gently to sharply lenticular. Just north of the project site, the Recapture intertongues with and grades into the Salt Wash and the contact between the two cannot be easily recognized.

Exposures of the Westwater Canyon Member in Cottonwood Wash west of the project site are typically composed of interbedded, lenticular, fine to coarse grained, arkosic sandstone and minor amounts of sandy shale and mudstone. Like the Salt Wash, the Westwater Canyon Member is fluvial in origin having been deposited by streams flowing north and northwest, coalescing with streams from the southwest depositing the upper part of the Salt Wash and the lower part of the Brushy Basin.

The Brushy Basin Member is dominantly thin and regularly bedded, variegated bentonitic mudstone and siltstone. Scattered, lenticular, thin beds of distinctive green and red chert-pebble conglomeratic sandstone are found near the base of the member. Thin, discontinuous beds of limestone and beds of siltstone of local extent suggest that much of the Brushy Basin is probably lacustrine in origin.

The early Cretaceous Burro Canyon Formation rests unconformably on the underlying Morrison Formation. Most of the Burro Canyon consists of hard, well cemented, massive, cross-bedded, fluvial conglomerate; conglomeratic sandstone; and sandstone. Most of the conglomerates are near the base. Thin bedded mudstones occur near the top of the formation and thin bedded limestones are sometimes locally interbedded with the mudstones.

Unconformably overlying the Burro Canyon is the Dakota Sandstone of Upper Cretaceous Age. Typical Dakota is dominantly fluvial, thick bedded to massive, intricately cross-bedded, locally well cemented, fine to coarse grained quartzose and conglomeratic sandstone. Subordinate thin, lenticular beds of mudstone, carbonaceous shale, and, locally, thin seams of impure coal are interbedded with fine to medium grained sandstone in the upper part of the formation.

Quarternary alluvium within the project vicinity is of three types--alluvial silt, sand and gravels deposited in the stream channels; colluvium deposits of slope wash, talus, rock rubble and large displaced blocks on slopes below cliff faces and outcrops of resistant rock; and eolian silt and fine sand, partially cemented with calcium carbonate, that covers the surface of the project site.

The geologic structure at the project site is comparatively simple. Strata of the underlying Mesozoic sedimentary rocks are nearly horizontal, and only slight undulations along the caprock rims of the upland are preceptible; faulting is absent. Dips in the sedimentary rocks underlying the project site were not measured in excess of 1 degree during field exploration programs. The prevailing regional dip is approximately 1 degree to the south.

Jointing is common in the resistant sandstone caprock along the mesa's rim. Primary joints are predominantly parallel to the cliff faces and the secondary joints are nearly perpendicular to the primary joints.

3.0 FACILITY DESIGN AND CONSTRUCTION

3.1 Crushing Process

3.1.1 Receiving and Stockpiling of Delivered Ore

Ore from the numerous small mines in the area is delivered by truck to the Blanding buying station; whereupon, it is weighed on a 60-ton truck scale and dumped in a specified space on the ore pad. The empty truck is reweighed to determine the net wet tons of ore delivered. A "grab" moisture sample is immediately taken from the ore as it is dumped on the concrete ore pad for moisture content determination. The net dry tons of ore in the load is then calculated. Each truck load is handled in this manner and each mine (shipper) has its designated dumping space. After numerous truck loads of ore from a specific mine have been accumulated on the pad, the "lot" is closed and is processed through the sampling plant of the buying station.

The sample obtained from the sampling plant is prepared for chemical assay and payment for the ore is made to the independent operator based on the uranium content.

3.1.2 Crushing of Delivered Ore

The sampling plant at the Blanding ore buying station is housed in a 40 foot by 100 foot building and has a capacity of approximately 125 tons of ore per hour.

A front-end loader moves the ore from the concrete pad to a receiving hopper which feeds the sampling plant. In the sampling plant, the ore passes through three stages of crushing with closed circuit crushing-screening in the secondary stage and intermediate mechanical samplers between each stage. Plate 3.1-1 is a quantitative flow diagram of the sampling plant and

shows the points where dust is generated and collected. A plant layout is shown on Plate 3.1-2. This operation produces a small sample (minus 3/16") representative of the lot of ore and a reject constituting most of the original ore at a nominal 1½-inch size.

3.1.3 Stockpiling of Crushed Ore

The crushed ore (reject) at the Blanding buying station is collected on a central belt conveyor which discharges to one 50 foot long conveyor and then onto a 110 foot long portable belt stacker. The stacker discharges into a 50 ton capacity ore bin. The ore is discharged from the bin through a bottom gate into a truck which hauls it to the appropriate stockpile. This system offers considerable flexibility in segregating the ore according to grade and ore type.

3.1.4 Sample Preparation

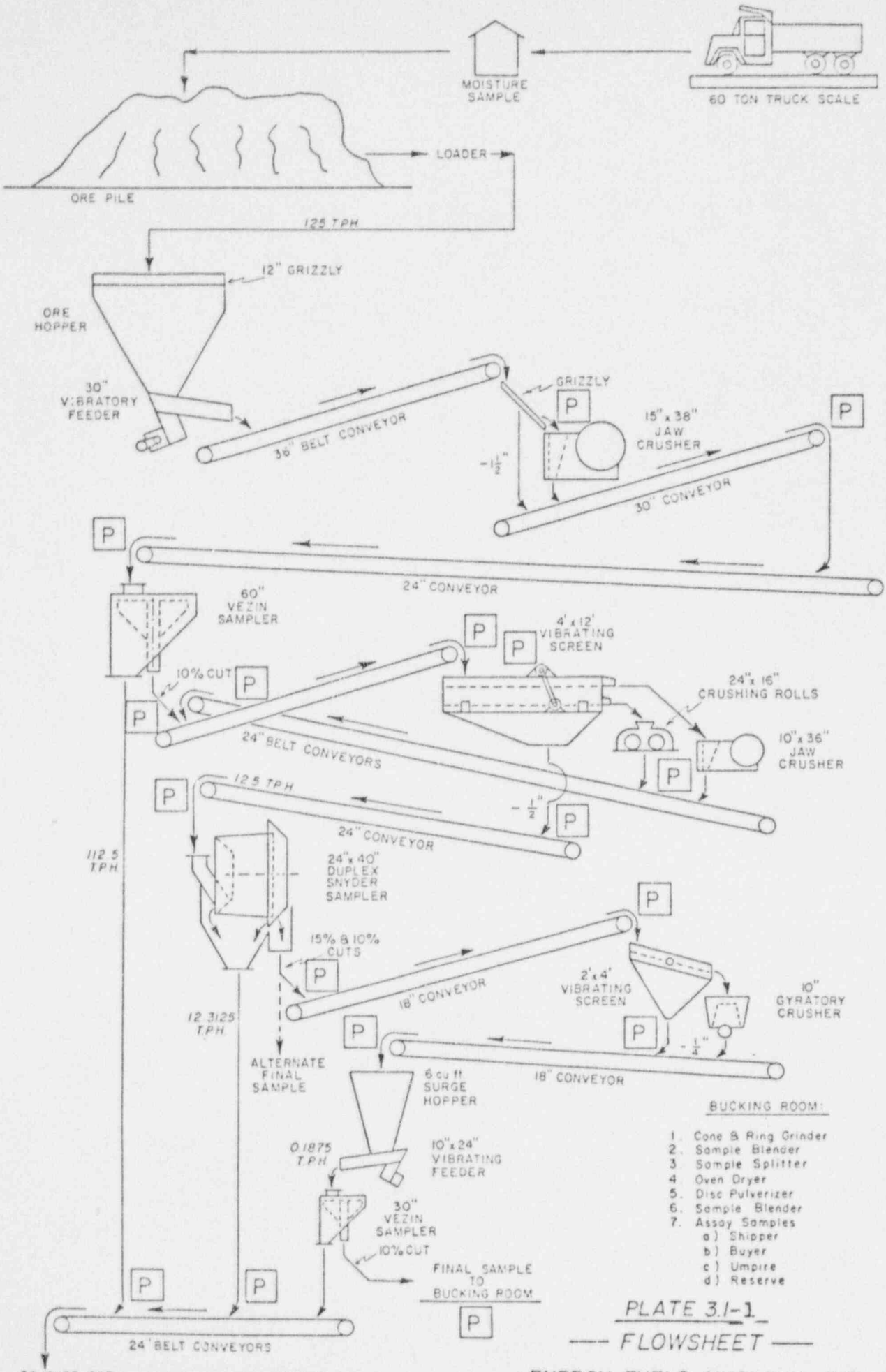
The sample obtained from the final mechanical sampler is prepared for assaying using standard procedures. The sample is crushed to -10 mesh, mixed, split, dried overnight at 110^{o}C, pulverized to -100 mesh, mixed, and final samples split for assay.

3.2 Major Equipment

The major equipment at the Blanding ore buying station consists of a primary jaw crusher and intermediate crushing and sampling. Plate 3.1-1 shows the major equipment types and sizes, and the points where the dust is generated and collected. These dust collection systems are described in Section 4.0 of this application.

3.3 Instrumentation

The material handling circuits in the ore buying station provide shut down by electric interlocks in the event of equipment failure. Safety pull shut down cords are situated along each belt conveyor for emergency shut downs.



BUCKING ROOM:

1. Cone & Ring Grinder
2. Sample Blender
3. Sample Splitter
4. Oven Dryer
5. Disc Pulverizer
6. Sample Blender
7. Assay Samples
   a) Shipper
   b) Buyer
   c) Umpire
   d) Reserve

LEGEND

P = Pick Up Point For Dust To Bag Collectors

PLATE 3.1-1

FLOWSHEET

ENERGY FUELS NUCLEAR, INC.

URANIUM
ORE BUYING & SAMPLING PLANT
Blanding, Utah

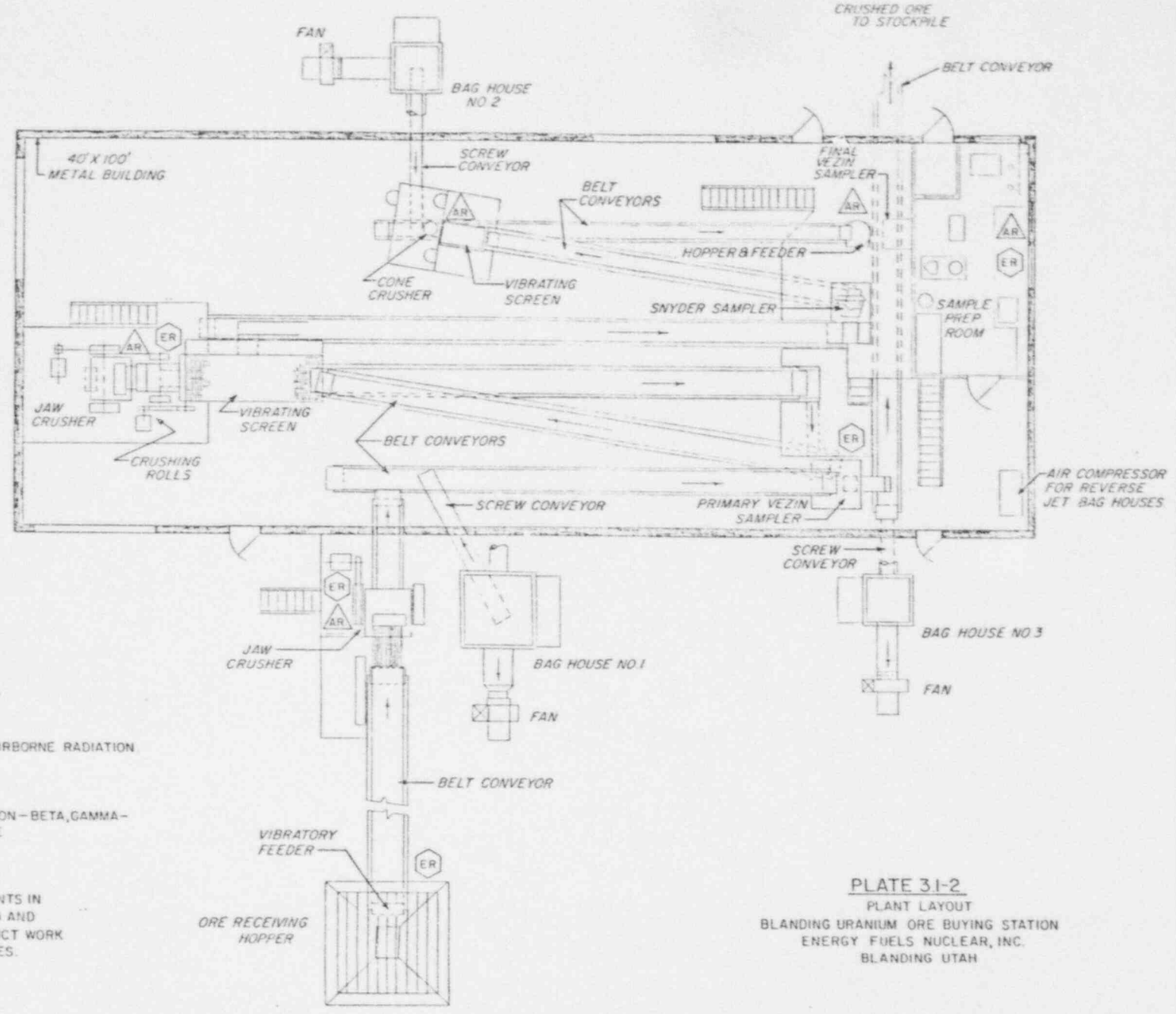


PLATE 31-2

PLANT LAYOUT

BLANDING URANIUM ORE BUYING STATION

ENERGY FUELS NUCLEAR, INC.

BLANDING UTAH

3.3.1 Radiation Safety and Monitoring Instruments

The various types of radiation and monitoring instruments used to conduct the radiation safety program are discussed below.

1. Film Badges: Used for external radiation exposure monitoring. Contract services for film badges are presently provided by R. S. Landauer, Jr. and Company. Evaluation and calibration is part of the contract services. Badges will be monitored by supplier on a monthly basis.

2. Hi-Volume Air Samplers: Used for taking air samples in non-restricted areas. Capacity is up to 70 cubic feet/min. with built-in air flow indicators for calibration. Equivalent to Staplex type tF/A air sampler.

3. Low Volume Air Samplers: Used for taking air samples in the sampling plant area to determine Airborne Radiation concentrations. Sampler manufactured by Scientific Industries, Inc. H25004. Capacity up to 20 liters per minute. Built-in air flow indicator for calibration.

4. Radon Gas Monitor - Eberline Model RGM-1 is used for measurement of radon gas.

5. Radon Daughter Particulate - MSA, Model S, Montaire (or equivalent).

4.0 WASTE MANAGEMENT SYSTEM

The methods used for the control of dust are discussed below.

4.1 Gaseous

Dust generated during crushing and handling of the ore in the Blanding ore buying station is collected in three automatic reverse jet bag houses. The collected dust is recombined with the ore at appropriate points so as to not influence the grade of ore. See Plate 3.1-1 showing the dust pickup points.

All feeders, chutes and crusher transfer points are enclosed in hoods connected to a system of ducts under negative pressure. The ducts discharge to their respective bag houses shown on Plate 3.1-2. The design parameters for the bag house collectors are summarized in Table 4.1-1 below.

TABLE 4.1-1

BLANDING SAMPLING PLANT DUST COLLECTION SYSTEM

SYSTEM	WESTERN PRECIPITATION MODEL	CFM AIR VOLUME	SQ. FT. BAG AREA	AIR: CLOTH RATIO	MANUFACTURERS RATED % EFFICIENCY
1	PF^{2}4510-144	9750	1742	5.6 to 1	99.6
2	PF^{2}4510-49	3000	593	5.1 to 1	99.6
3	PF^{2}4510-49	3250	593	5.5 to 1	99.6

The ducts are sized for air velocities of 3,500 to 5,000 feet per minute and equipped with appropriate blast gates.

At times when exceedingly dry or dusty ores are encountered, (usually less than four percent moisture) the ore is sprayed with water before it is fed to the sampling plant. This practice, which is the responsibility of the sampling plant foreman, reduces the dust potential and results in adequate control of dust within the plant.

Control of dust in the sample preparation room is accomplished by two wall-mounted hoods over the sample grinders. These hoods are connected by duct work and discharge to the System 3 bag collector listed in Table 4.1-1.

No chemical emissions are produced in the sampling plant since the process is simply a series of mechanical crushing and sampling steps.

4.2 Liquids and Solids

No liquid wastes are produced in the sampling plant. Small quantities of liquid wastes are produced by the existing analytical laboratory associated with the ore buying station and discharged to an underground disposal field approved by the Utah State Division of Health. Information on the ore retention system is given below.

The handling of delivered ore is described in Section 3.1.1. Storage of uncrushed ore on the pads seldom exceeds a period of 30 days because the independent operator insists on frequent payment to meet his operating expenses.

Plate 4.2-1 illustrates the typical system used for the stockpiling of crushed ore at the ore buying station. As noted in Section 3.1.3, the crushed ore is collected in a 50 ton capacity ore bin and then discharged into a truck which transports the ore to the appropriate stockpile. This system offers considerable flexibility in segregating the ore according to grade and ore type. As the stockpiles encroach one another in the future, it will be necessary to expand the present area using the same stockpiling system. The ore buying station is totally fenced and conspicuously posted in accordance with Section 20.203(e)(2) of 10 CFR 20.

In the event the truck used for stockpiling should require major repairs, the portable belt stacker delivering

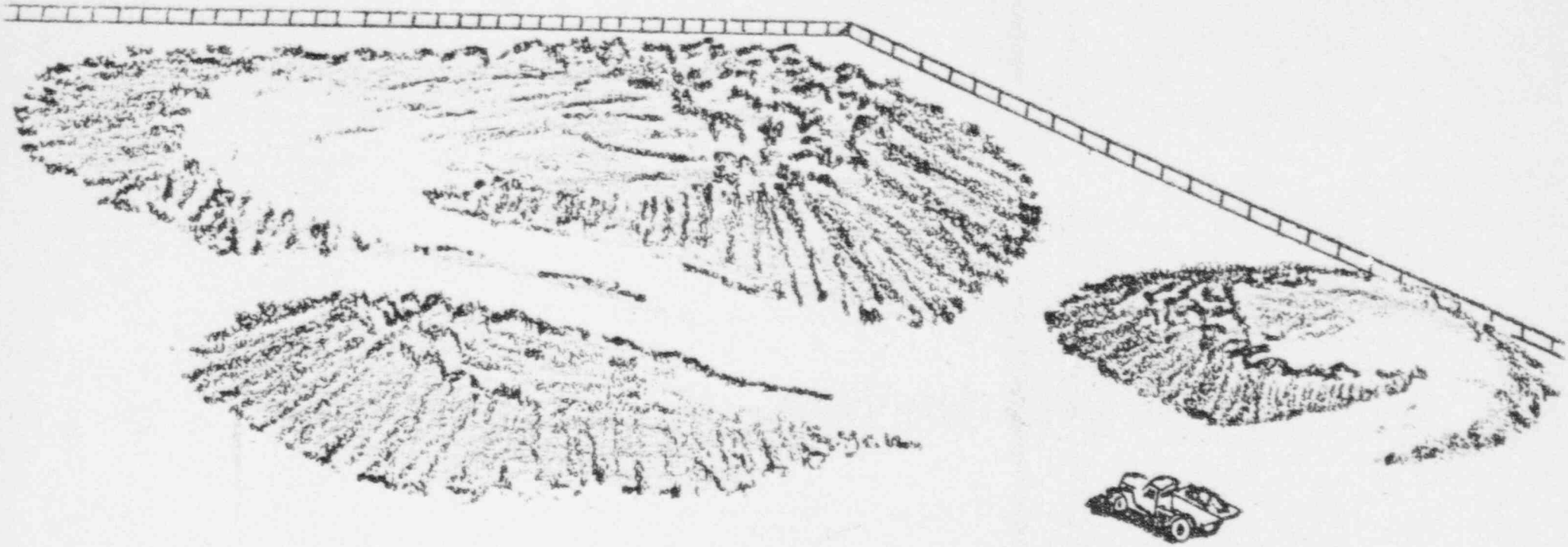


PLATE 4.2-1

TYPICAL SYSTEM USED FOR STOCKPILING CRUSHED ORE
BLANDING ORE BUYING STATION
ENERGY FUELS NUCLEAR, INC.

crushed ore to the 50 ton bin can be moved to the side and temporary storage achieved. The temporary stockpile formed in this manner can later be transferred to the truck using a front-end loader and hauled to the appropriate stockpile.

Unlike the tailing from a uranium milling operation, the crushed ore from the ore buying station is of relatively coarse rock size and of low moisture content. Since the slope of the stockpile faces is formed by the natural angle of repose, the pile(s) are very stable. Seepage is not considered to be a problem because of the absence of free water in the stockpiles. Water resulting from rain and snowfall onto the stockpiles is largely absorbed, and rather than being objectionable, is actually beneficial for the suppression of blowing particulate matter.

A typical screen analysis of the crushed ore in the stockpiles is as follows:

SIZE	% RETAINED
2"	2.6
1"	40.3
½"	61.7
¼"	70.9
4 mesh	72.4
6	74.0
8	75.1
10	76.2
14	77.2
20	78.5
28	79.9
35	81.4
48	83.3
65	85.7
100	88.7
150	91.0
200	92.3
270	93.1
325	93.7
400	93.9

When necessary, water sprinkling of the ore piles is practiced to control fugitive dust.

4.3 Contaminated Equipment

All equipment contaminated in the ore buying station will be buried in a designated zone within the restricted area or decontaminated as specified in ANNEX A (Guidelines for De-Contamination of Facilities and Equipment Prior to Release for Unrestricted Use) NRC, November, 1976. Any solid waste from the ore buying station will be buried with overburden material in accordance with 10 CFR 20.304 and 20.401.

5.0 OPERATIO

5.1 Corporate Organization and Administrative Procedures

5.1.1 Energy Fuels Nuclear, Inc. Organization

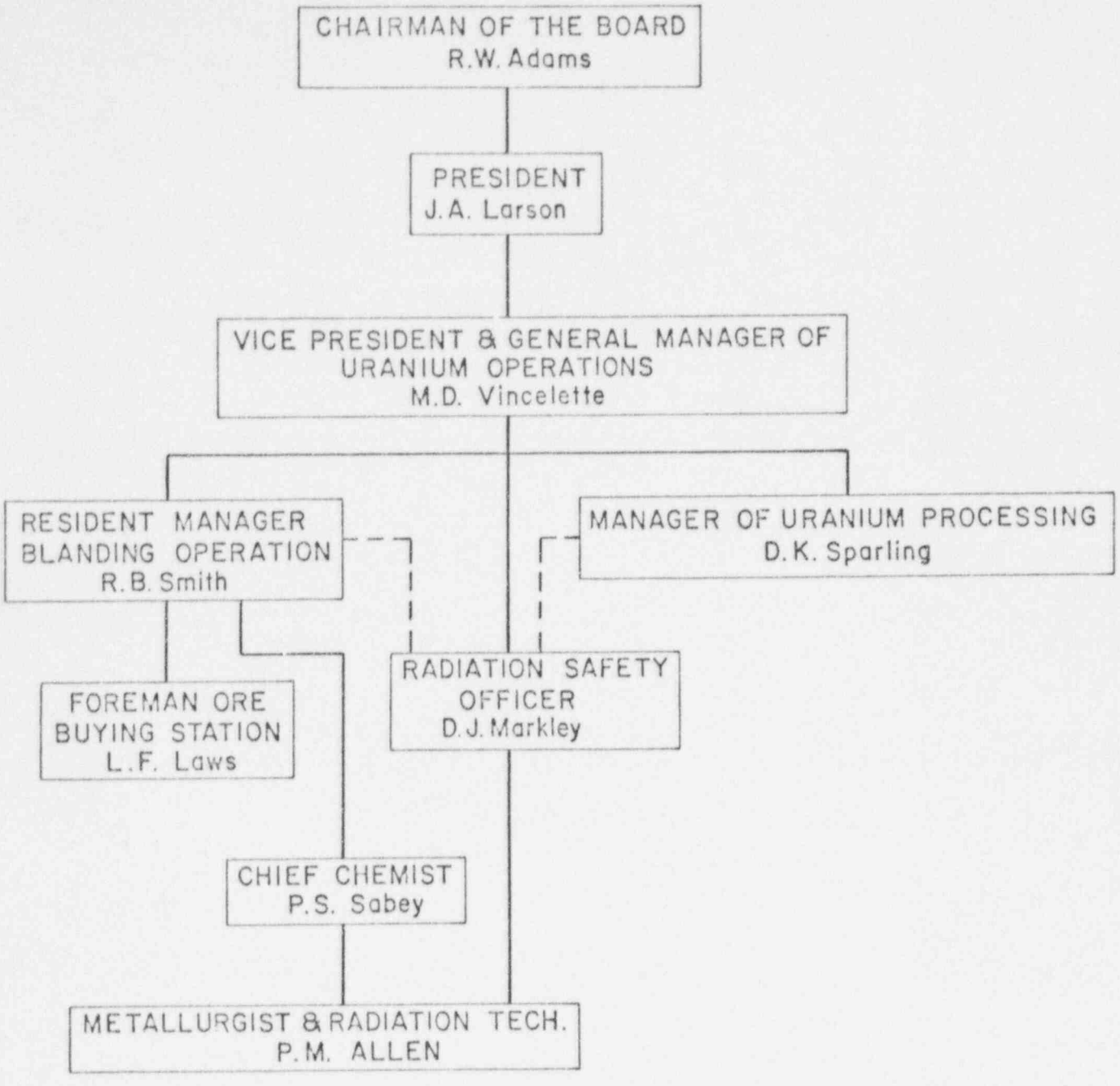
Energy Fuels Nuclear, Inc., is a privately owned company with headquarters in Denver, Colorado. The company's business is the mining and procuring of uranium bearing ores to produce uranium concentrate (yellow cake), and by-products. The relevant company organization and the personnel occupying each position are shown in Table 5.1-1.

The authority and responsibility of each level of management as shown in Table 5.1-1 are as follows:

The Chairman of the Board is responsible for all of the practices and decisions made by those management personnel reporting to him. He delegates the authority for the decisions in the uranium mining and mill operations to the President and Vice President of Uranium Operations.

The Vice President (and General Manager) of Uranium Operations reports directly to the President of the Company, and is responsible for uranium operations. The Radiation Safety Officer reports on a direct line to the Vice President, who is responsible for all recommended radiation safety programs and any changes to these programs. He will further assure tne implementation of such approved program through the line organization.

The Resident Manager of the Blanding operations is responsible to the Vice President of Uranium Operations for operating the company's Blanding ore buying station in a safe and efficient manner. These responsibilities include production operations, company safety practices, approval of revisions to



ENERGY FUELS NUCLEAR ORGANIZATION
BLANDING ORE BUYING STATION
TABLE 5.1-1

operations, maintenance procedures, and overall security practices. He is the highest level manager at the facility and directly responsible for the administration of the occupational radiation safety program in compliance with 10 CFR 20 "Standards for Protection against Radiation."

The Manager of Uranium Processing assists the Resident Manager and Radiation Safety Officer in maintaining radiological protection for plant personnel. He reviews plant operating procedures and equipment for radiological safety. He, along with the Radiation Safety Officer, and Resident Manager, perform a quarterly inspection of the radiation safety program, including all records, data, training programs and procedures. A written report of their inspection will be submitted to the Vice President and General Manager.

The Manager of Uranium Processing reports directly to the Vice President of Uranium Operations and works closely with the Resident Manager of the ore buying station.

The Radiation Safety Officer, with the assistance of his staff, is responsible for developing, implementing, monitoring, and reporting functions that assure the plant safety and the radiological protection of plant personnel and the public. This responsibility includes training of all personnel in radiation and industrial safety; monitoring plant effluents; monitoring, recording, and evaluating personnel exposure records and plant area surveys; posting radiation areas; providing surveillance of tasks in higher than routine radiation exposure areas; maintaining plant radiation monitoring equipment; and preparing reports to regulatory agencies. He is also responsible for investigating personnel safety related incidents. He reviews

normal plant procedures and equipment for radiological safety. The Radiation Safety Officer reports directly to the Vice President of Uranium Operations. He works closely with the Resident Manager, but is not a part of the line organization at the buying station.

The Chief Chemist will be responsible for the chemical laboratory and the analytical work performed in the laboratory, including ore lot assays for ore purchasing and assaying for Energy Fuels Exploration Department. The Chief Chemist will report to the Resident Manager and will supervise a staff of chemists and analysts. He will also work closely with the Foreman of the ore buying station.

The Metallurgist and Radiation Technician, is responsible to determine the metallurgical characteristics of the ore purchased and stockpiled. He will also perform the necessary duties required to monitor the radiation safety program. This will include (a) Monthly determination of uranium and radon concentrations in air throughout the ore buying station to determine occupational exposures; (b) Document occupational exposures and make data available for NRC inspections; (c) Conduct the program for measurement of beta and gamma radiation exposure to employees and make data available for NRC inspections; (d) Maintain records on radiation safety in accordance with 10 CFR 20 Standards for Protection Against Radiation.

The Ore Buying Station Foreman is responsible for maintaining and operating the Sampling Plant in a safe and efficient manner. This includes the responsibility to see all dust collection equipment is operating satisfactorily and according to specifications.

He is also responsible to see that all employees are advised of the proper methods to wear protective equipment and how to maintain this equipment. He advises employees how to clean up spills and maintain good housekeeping. The ore buying station foreman reports directly to the Resident Manager.

5.2 Qualifications

Guidelines have been established to provide the minimum qualifications necessary for key management positions involved in radiation safety considerations (i.e. developing, conducting, approving, and auditing the program). These requirements are documented in Energy Fuels job description and are summarized below for each position.

Vice President of Operations:

Must have a B. S. degree in engineering or related physical science, or equivalent relevant experience. He must have demonstrated knowledge and competence in administration, personnel management, and business procedures, and an in-depth knowledge of uranium mining and milling operations. A minimum of ten (10) years of management experience is required.

Manager of Uranium Processing:

Must have a B. S. degree in engineering or related physical science, or equivalent relevant experience in uranium mill operations. He must have demonstrated experience in managing uranium processing operations, and production management, with at least five (5) years experience in these positions.

Resident Manager:

Must have a B. S. degree in a physical science or equivalent relevant experience in the uranium industry. He must have a demonstrated competence in the technical aspects of handling uranium ores, knowledge of administrative and management procedures, and a thorough knowledge of safety related aspects. A minimum of five (5) years management experience in uranium

operations is required.

Radiation Safety Officer:

Must have a B. S. degree in environmental or radiological science, or a related science, in radiation safety and contamination control at a nuclear facility. He must have demonstrated experience in the performance and/or management of radiation safety, environmental, and occupational health programs, with at least two(2) years experience in these positions.

Radiation Technician:

Must have a B. S. degree in environmental or radiological science, or equivalent. He must have demonstrated experience in the performance of radiation safety, environmental, and occupational health activities.

Chief Chemist:

Must have a B. S. degree in chemistry or chemical engineering, or equivalent analytical chemistry experience. In addition, he must have at least two (2) years experience as a chemist in mining or related industries.

Metallurgist and Radiation Technician:

Must have a B. S. degree in Metallurgical Engineering or equivalent metallurgical experience and demonstrated experience in radiation safety.

The following is the listing of individuals with the qualifications in the current organization of Energy Fuels Nuclear, Inc.

M. D. Vincelette - Vice President and General Manager of Operations:

Mr. Vincelette received his B. S. Degree in Civil Engineering from the University of Notre Dame in 1955. He was employed in 1961 until 1976 by Western Nuclear, Inc., a large uranium producing company in Wyoming and New Mexico.

During this time his responsibilities increased from that of Mine Engineer to General Manager and Vice President of Operations. From 1969 until 1976, his responsibilities included all mine and mill production, environmental planning, the company safety program, labor relations and personnel. Mr. Vincelette left Western Nuclear, Inc., in 1976, and joined Energy Fuels at his present capacity.

Roger B. Smith - Resident Manager

Mr. Smith received his B. S. Degree from the University of Texas in Geological Engineering and Extractive Metallurgy in 1968.

Since that time, Mr. Smith has been employed in mining and milling activities. During the last six (6) years he has been in the uranium industry. His responsibilities included mine production, industrial safety, environmental planning and radiation safety.

Donald K. Sparling - Manager of Uranium Processing:

Mr. Sparling attended Western State College in Gunnison, Colorado, in 1953 and 1954 before being employed by National Lead Company at the AEC owned mill in Monticello, Utah. Mr. Sparling was with National Lead Company until 1957, at which time he accepted a position with Western Nuclear, Inc., as a metallurgist. Since that time he held many positions, including Chief Metallurgist, Mill Superintendent and Resident Manager for the entire Jeffrey City Operations for the last 2½ years. Mr. Sparling left Western Nuclear, Inc., in July of 1977, to accept his present position with Energy Fuels.

David J. Markley - Radiation Safety Officer:

Mr. Markley received his B. S. Degree in Biology from Oral Roberts University, and a M. S. in Environmental Science, with a concentration in radiation health physics, from the University of Texas. He was employed from 1972 to 1976 with the U. S. EPA.

During this period he served as an Assistant Regional Representative for hazardous waste management and radiation and participated in numerous public health studies relating to radiation physics.

From 1976 through 1977, Mr. Markley was employed as the Corporate Safety Programs Coordinator for the Rocky Mountain Energy Company, in which capacity he was responsible for management of all environmental, radiation, and occupational health programs for their uranium and coal projects. He recently joined Energy Fuels.

Phillip Sabey - Chief Chemist:

Mr. Sabey graduated from Utah State University with a B. S. Degree in chemistry in 1970. From June of 1970 until 1976, Mr. Sabey was employed as a chemist for Kennecott Copper Corporation in Salt Lake City, Utah. Mr. Sabey left Kennecott Copper to accept his position with Energy Fuels Nuclear, Inc. in late 1976.

Perry Allen - Metallurgist and Radiation Technician:

Mr. Allen graduated from the University of Utah in Salt Lake City with a degree in Metallurgical Engineering in June of 1975. Since that time, Mr. Allen was employed by the Bunker Hill Base Metals Plant in Kellogg, Idaho, as a metallurgist. Mr. Allen resigned that position in October of 1977 to accept his present position with Energy Fuels.

5.3 Training

Each person, employed at the ore buying station has received and will continue to receive instruction in personnel safety, including radiological safety procedures. The instruction includes on-the-job demonstrations of proper safety precautions, and measures to be taken to minimize radiation exposure. These instructions and precautions are summarized

in Appendix A. Each employee is provided with a description of the radiation safety instructions for use of monitoring and safety equipment, such as respirators, and procedures for handling spills and maintaining clean working conditions.

In addition, a portion of each monthly safety meeting is devoted to discussion of radiation safety procedures. Annually, one of the monthly meetings will be set aside for reindoctrination of the staff in radiation safety. Each employee will be tested annually on his understanding of radiation protection as it is related to his job.

5.4 Security

The Blanding ore buying station is completely fenced with a 6 foot high chain link fence and posted with "Restricted Area" signs in accordance with 10 CFR 20.203. Exemption is requested from the requirements of Section 20.203(e)(2) and 20.203(f)(2), 10 CFR 20 for areas and containers within the ore buying station since the entrance to the property is conspicuously posted in accordance with Section 20.203(e)(2) and with the words "Any area or container within this ore buying station area may contain radioactive material". Refer to Plate 2.1-1 showing a plot plant of the ore buying station.

The plant is operated 5 or 6 days per week, eight to ten hours per day. The gate into the area is closed and locked at night and at all times when no one is in the area.

5.5 Radiation Safety

The radiation safety program at the Blanding Ore Buying Station consists of management controls, administrative procedures, and monitoring programs. Management controls and administrative procedures are designed to assure the existence of, and adherence to, an in-house program and the implementation of corrective measures if procedures or standards have been violated. Monitoring programs include monitoring personnel exposures, areas where sampling plant personnel work, as well

as the offsite environment. Monitoring of the offsite environment will demonstrate that man and biota are not being exposed to excessive radiation levels.

5.5.1 Personnel Monitoring Program

The purpose of the personnel monitoring program is to provide accurate and timely measurements of personnel exposures. This program provides a means of determining whether these exposures are within allowable limits and will permit action to be taken, if necessary, to bring exposure levels within guideline limits.

Film badges, obtained from R. S. Landauer, Jr. and Company; Glenwood, Illinois are utilized to determine individual radiation exposures.

Film badges are provided to new employees permanently assigned to the ore buying station within thirty (30) days of the date of hire. The cumulative occupational dose of these employees will be filed in accordance with 10 CFR 20.202(a). If total annual exposure exceeds 80% of the 10 CFR 20 limits, the personnel involved will be assigned to duties in areas of known lower radioactivity and the reasons for such exposure studied. Appropriate action will be taken to reduce the level of exposure to as low as it is reasonably achievable.

Identification of those employees participating in the film badge program is presented in Table 5.5-1.

The total cumulative exposure calculated for each employee in the film badge program is recorded on the employee's exposure card and reported in accordance with applicable federal requirements.

TABLE 5.5-1

PERSONNEL PARTICIPATION IN FILM BADGE PROGRAM

BLANDING ORE BUYING STATION

JOB STATUS	NO. OF EMPLOYEES
Scale Man - Moisture Sampler	1
Loader Operator	1
Sampling Plant Foreman	1
Sampling Plant Operator	1
Chemists	3
Metallurgist-Radiation Technician	1
Truck Driver	1
Bucking Room Operator	1
TOTAL	10

5.5.2 Internal Monitoring

5.5.2.1 Selection Criteria

The selection of the radiation monitoring locations was based on estimation of the areas in which personnel will be spending most of their working hours and in which high radiation could exist.

5.5.2.2 Ore Buying Station Monitoring Program

Radiation monitoring will be used throughout the ore buying station to protect plant personnel. This program will also assist in detecting abnormal operating conditions through measurements of anomalous radiation levels. Gamma radiation measurements at specified locations in the unrestricted area, radon daughter measurements, and analysis of the uranium content of airborne dust samples will be used to assess the concentrations of airborne radioactive material.

5.5.2.2.1 External Radiation Survey

Measurement of the levels of external radiation at representative locations will be made on a quarterly basis. A beta gamma device similar to the film badges used to determine individual exposure are placed at various locations throughout the plant and surrounding area. Data from the survey will be filed quarterly to comply with regulations 10 CFR 20.101 and 20.401.

Six (6) sites will be monitored for external radiation in the ore buying station. The various locations are described in Table 5.5-2 and shown on Plate 3.1-2.

5.5.2.2.2 Airborne Radionuclide Monitoring

Airborne radionuclide concentrations in dust in the area will be determined by analysis of three samples taken monthly

TABLE 5.5-2

EXTERNAL RADIATION MONITORING LOCATIONS-BETA GAMMA

BLANDING ORE BUYING STATION

IDENTIFICATION NUMBER	LOCATION DESCRIPTION
BR-1	Weigh Station Office-Scale Master Desk
BR-2	Coarse Ore Grizzly
BR-3	Coarse Ore Crusher
BR-4	Sampling Plant No. 1 Sampler
BR-5	Sampling Plant-Secondary Size Reduction Station
BR-6	Sampling Plant-Sample Prep Room

at the locations listed in Table 5.5-3 and also shown on Plate 3.1-2. An air sampler equivalent to Scientific Industries, Inc. No. 25004 with built-in air flow indicator is used to collect airborne dust samples. The sampler will be calibrated prior to each usage. These samples will be analyzed for natural uranium content either by a reliable outside laboratory or utilizing a fluorometric procedure in-house. Radon daughter determinations will be made at the same location and frequently as the airborne dust samples above using a MSA Model S Montaire Sampler (or equivalent) with built-in air flow indicator for calibration.

5.5.3 Radioactive Materials Intake Assessment

Assessment of an individuals radioactive materials intake during "routine" operations will be based on the quarterly average airborne radioactive particulate concentration in the work area and the length of time in the work area.

The materials intake for an employee in a work area containing a zone(s) of higher airborne activity concentration will be conservatively assumed to be the intake that the employee would have experienced if he (she) had spent the total work shift in that high activity area.

Individual exposures will be recorded and any worker whose intake was found to be in excess of 80% of the maximum permissible, i.e., 40 hours at maximum permissible concentration (air), would be required to undergo urinalysis and would be temporarily assigned to an area of lower activity concentration.

5.5.4 Contamination Control Program

Release of equipment or packages from the restricted area will be in accordance with ANNEX A, November, 1976.

TABLE 5.5-3

AIRBORNE RADIATION SAMPLE LOCATIONS

Blanding Ore Buying Station

IDENTIFICATION NUMBER	LOCATION DESCRIPTION
BA-1	Sampling Plant-Primary Jaw Crusher
BA-2	Sampling Plant-No. 2 Crusher
BA-3	Sampling Plant-No. 3 Crusher
BA-4	Sampling Plant-Final Sampler
BA-5	Bucking Room

5.5.5 Environmental Surveillance Program and Effluent Monitoring Program

An environmental monitoring program, designed to assess the effect of the sampling plant on the unrestricted environment, is performed on a regular basis, around the area.

Table 5.5-4 summarizes the program and presents sampling locations, sampling frequency, analyses to be performed and analytical sensitivities. Sampling points are shown in Appendix B, Area Map. A direct comparison with the background levels of the analyzed radionuclides will be possible, because the preoperational sampling program encompasses the same locations and utilizes the same instrumentation and collection procedures.

TABLE 5.5-4
OPERATIONAL MONITORING PROGRAM
BLANDING ORE BUYING STATION

Monitoring/Sampling Location	Frequency	Radiometric Analysis	Sensitivity*
A. Airborne Effluents	Continuously collected one week per month	Unat Th-230 Ra-226 Pb-210 Rn-222	0.2×10^{-5} pCi/l
1. At 4 locations: a) Upwind, northeast corner of site b) Downwind near site boundary at point of probable maximum concentration-south c) Downwind in direction of nearest resident d) West side of property			
B. Soil			
1. At air sampling locations	Annually	Unat Th-230 Ra-226 Pb-210	0.5 pCi/g 0.5 pCi/g 0.2 pCi/g 0.5 pCi/g
C. Vegetation			
1. At 3 downwind grazing locations within 3 Km of the project site	Annually	Unat Th-230 Ra-226 Pb-210	0.1 pCi/g 0.5 pCi/g 0.2 pCi/g 0.5 pCi/g
D. Terrestrial Mammals			
1. At 2 locations in the general environs of the site	Annually	Unat Th-230 Ra-226 Pb-210	0.1 pCi/g 0.5 pCi/g 0.2 pCi/g 0.5 pCi/g

*Sensitivities will be improved in conjunction with the state-of-the-art for these analyses.

6.0 ENVIRONMENTAL REPORT (APPENDIX)

Most of the information required in this section has been previously submitted to the Nuclear Regulatory Commission on February 8, 1978, as Docket Number 40-8681, Environmental Report - White Mesa Uranium Project, San Juan County, Utah For Energy Fuels Nuclear, Inc. As appropriate, sections of the Environmental Report document concerning the Blanding Ore Buying Station (OBS) are referenced below to satisfy the ore buying station license requirements.

6.1 The Site

(Refer to Section 1.0, Pages 1-1 through 1-3).

6.1.1 Site Location and Layout

(Refer to Section 2.1, Pages 2-1 through 2-5 and also to Plate 2.1-1 of this Application).

6.1.2 Regional Demography and Land Uses

(Refer to Sections 2.2.1 and 2.2.2, Pages 2-6 through 2-57).

6.1.3 Ecology

(Refer to Section 2.8, Pages 2-222 through 2-269).

6.1.4 Background Radiological Characteristics

(Refer to Section 2.9.1,Pages 2-292 through 2-298) Additional information will be supplied in the supplemental report Docket Number 40-8681 provided through Dames and Moore's ongoing radiological work.

6.1.5 Other Environmental Features

(Additional information which may be of interest is included in Sections 2.3 through 2.7, Pages 2-75 through 2-219 and Section 2.10, Pages 2-305 through 2-321).

6.2 The Ore Buying Station

(Refer to Section 3.6, Pages 3-22, 3-25, and 3-30 through 3-32).

6.2.1 External Appearance of the OBS

(Refer to Plate 3.1-1, Page 3-2; Section 3.6.1, Page 3-22 and also to Plates 2.1-1 and 3.1-2 of this application).

6.2.2 Plant Circuit

(Refer to Section 3.6.4, Pages 3-30 through 3-32 and Sections 3.0 and 4.0 of this application).

6.2.3 Scurces of OBS Wastes and Effluents

Using the 1976 Environmental Protection Agency's model, emissions of up to 0.5 lbs/ton of ore stockpiled are projected. Approximately 250,000 tons of ore will be stockpiled at Blanding, and therefore, a maximum emission of 62.5 tons/year is possible. Watering or other mitigating measures will reduce this emission by up to 50-90%. (Refer to Section 3.6.4, Pages 3-30 through 3-32 and to Section 4.0 of this application).

6.2.4 Controls of OBS Wastes and Effluents

(Refer to Section 3.6.4, Pages 3-30 through 3-32 and Section 4.0 of this application).

6.2.5 Sanitary and Other OBS Waste Systems

All applicable State of Utah, Division of Health Standards have been met in the design and operation of the sanitary facility. (Refer to Section 3.5, Pages 3-20 through 3-22).

6.2.6 Mining Activities

Independent mine operators within a radius of about 125 miles of Blanding, mine and sell their ore to the applicant. Energy Fuels Nuclear, Inc., has no control or responsibility for the ore until such time as it is delivered to the ore buying station. (Refer to Section 3.6, Page 3-22 and Plate 3.6.3,Page 3-26).

Some production from Company owned mines is planned in the future.

6.2.7 Reclamation and Restoration

(Refer to Sections 9.1.1, Page 9-1, 9.4, Pages 9-17 through 9-19, and 9.5, Pages 9-21 through 9-23).

6.3 Environmental Effects of Site Preparation and OBS Construction

While the general conclusions reached in the Environmental Report are certainly applicable to the ore buying station, only 50 acres, or about 16% of the area mentioned in the Environmental Report will be affected by the OBS activities. (Refer to Section 4.0, Pages 4-1 through 4-26).

6.4 Environmental Effects of Operations of OBS and Source Mines

The anticipated environmental effects of the OBS will be a small fraction of the total enumerated in the Environmental Report. (Refer to Section 5.1, Pages 5-1 through 5-39).

6.4.1 Radiological Impact on Biota Other Than Man

(Refer to Section 5.1, Pages 5-1 through 5-6).

6.4.2 Radiological Impact on Man

(Refer to Section 5.2, Pages 5-6 through 5-18).

6.4.2.1 Exposure Pathways

(Refer to Section 5.0, Pages 5-1 through 5-18).

6.4.2.2 Airborne Effluents

(Refer to Section 5.0, Pages 5-1 through 5-18).

6.4.2.3 Liquid Releases

No liquid releases are planned.

6.4.2.4 Direct Radiation

(Refer to Section 5.2, Pages 5-6 through 5-18).

6.4.2.5 Population Doses

(Refer to Section 5.2.5, Pages 5-12 through 5-18)

6.4.3 Effects of Sanitary and Other Waste Discharges

(Refer to Section 5.4, Page 5-20).

6.4.4 Resources Committed

(Refer to Section 5.6, Pages 5-38 and 5-39).

6.5 Effluent and Environmental Measurements and Monitoring Programs

6.5.1

6.5.1.1 Due to the OBS existing prior to the branch position taken by the NRC,Preoperational Monitoring Programs were not performed. Therefore, Sections 6.5.1 through 6.5.1.5 are difficult to assess although all these topics are covered in Section 6.1, Pages 6-1 through 6-30.

6.5.1.2

6.5.1.3

6.5.1.4

6.5.1.5

6.5.2 Applicant's Proposed Operational Environmental Radiological Monitoring Program

(Refer to Section 5.0 of this application)

6.6 Environmental Effects of Accidents

6.6.1 Any environmental effects associated with accidents are expected to be minimal both for transporation and OBS-type accidents, Furthermore, no transporation related accidents are reasonable for Blanding since all ore will be directly conveyed to the adjoining mill.

6.6.2

6.6.3

Accidents are fully covered in the Environmental Report, although the significance of any OBS Accidents would be negligible. (Refer to Section 7.0, Pages 7-1 through 7-10).

6.7 Alternatives to the Proposed Action.

Denial of License Application

Denial of the license application would result in the cessation of buying station activities. Ore presently stockpiled would probably be transported to other buying stations or mills in the region. Such transportation would increase the risk of accident and not result in any demunition in effects on the environment. Additional a denial would result in the loss of jobs for buying station personnel and would result in the closing of some of the independent and company mines, which now deliver ore to the buying station.

Reduction Amounts of Material Processed.

Restricting the tonnage would not materially reduce the already minimal impact on the surrounding environment.

6.8 Environmental Approvals and Consultations

(Refer to Section 12.0, Page 12-1).

6.9 References

(Refer to Section 13.1, Pages 13-1 through 13-12).

APPENDIX A

RADIATION SAFETY INSTRUCTIONS

Radiation Protection

Uranium is a radioactive element and the handling of uranium ore presents certain health problems which are not encountered in other industries.

Radiation is nothing new. Man has been exposed to radiation since the beginning of time. We receive radiation in fairly constant small amounts from the atmosphere and from the earth.

It is known, however, that excessive exposure to radiation may cause illness or even death. Our goal, then, is to maintain levels of radiation exposure below levels set by the Nuclear Regulatory Commission to protect health and safety. These standards are set forth in Title 10, Code of Federal Regulations, Part 20 - "Standards For Protection Against Radiation". By law, Energy Fuels is required to keep copies of this regulation, a copy of the NRC license, and a copy of operating procedures which protect the employee against radiation, available for the employee's examination at his request.

These regulations include:

1. Maximum Permissible Doses and Exposure.
2. Precautionary Procedures.
3. Waste Disposal Regulations.
4. Regulations for keeping records, reporting exposures, and notifying employees of exposure histories and over exposure.

A continuing surveillance of radiation levels and radiation exposure is maintained by the use of film badges on most employees, by using radiation counters to determine levels in certain areas and by analyzing dust samples to determine the content of radioactive elements in the air. The results of these surveys are reported for NRC review and, upon request, to an employee.

The primary consideration in the handling of uranium ores is prevention of radioactive material from entering the body. Radioactive material can enter the body by being inhaled through the nose and mouth, by being swallowed, or by coming in contact with an open wound and entering the blood stream.

The basic principles of radiation control are very similar to the basic principles of industrial hygiene and other safety and health practices.

Your company is required by law to protect you from radiation levels which may be harmful, and is required to notify you, as well as the Nuclear Regulatory Commission, in the case of any incidents of over exposure. As an individual, you have the responsibility of performing your work in such a manner as to minimize the possibility of increasing radiation levels. This is done by following all procedures stated in these instructions or published or posted elsewhere.

Safety Equipment and Clothing

I. Required Safety Equipment:

Tested and approved safety equipment is available at the Company's warehouse. Some equipment must be purchased and some is furnished by the company. An employee may elect to purchase safety equipment other than from the company. However, this equipment must be approved and the right to refuse to allow substandard equipment to be used is retained by the company.

A. Shoes with safety toes are mandatory. It is advised that shoes be constructed of materials which resist acids and caustics. Shoes are furnished by the employee.

B. Respirators are supplied for your protection. The following guide shall be considered as standard procedure for care and use of respirators.

1. Respirators should be used whenever dust is visible in the air. Particularly important are the areas of crushing, sample preparation, and jobs such as sandblasting and painting.

2. Respirators are designed to fit snugly over the mouth and nose. Proper adjustment of headgear will insure good fit.

3. Filters should be changed when dirty and as often as necessary to provide easy breathing. Change filter once per shift at a minimum.

4. Respirators shall not be stored or carried in such a manner that the inside becomes contaminated with dust.

5. Respirators shall not be interchanged between personnel without proper sterilization.

6. No respirator shall be used which is not in good repair. Parts are available through the warehouse.

7. Respirators are not effective unless the employee is clean shaven. All persons wearing respirators will be clean shaven.

Personal Hygiene

Personal cleanliness is not only a basic radiological health requirement, but is a fundamental of good health. Cleanliness and neatness are qualities which we should develop.

1. Hands and face must be washed prior to eating or smoking and after performing work around ores and equipment.

2. Work clothing should be changed and washed frequently. Clothing that has been impregnated with dust, etc., should be washed at the end of the shift.

3. Cuts or wounds shall be covered with clean dressings in accordance with good first aid principles.

4. Stored lunches should not be left in any area where dust may be present.

5. A clean shaven face is easier to keep clean and does not accumulate dirt and dust. A clean shaven face is required whenever respirators must be or may be worn.

Housekeeping

Take pride in your place of work. Good housekeeping is a habit and is the foundation of safety. Good housekeeping habits should be formed at the start of your employment and continued throughout your life. You, more than anyone, can make our plant a clean and pleasant place in which to work by observing the common rules of good housekeeping as set forth herein:

1. Cleanliness promotes a safe operation.

2. All spills are to be cleaned up immediately. Delay in clean up is a continuation of an existing hazard and only makes eventual clean up more difficult.

3. All yards, buildings, and equipment should be kept free of extraneous materials and clean, and all storage should be neat and orderly.

4. All waste shall be placed in metal containers and oily waste shall be kept separate.

5. Walk ways and platforms shall be kept clear and shall be properly maintained.

6. Worn, used, or damaged parts and equipment will be properly stored or disposed of immediately.

7. Stumbling hazards, protruding nails and sharp objects, broken glass, etc., shall be disposed of.

8. Rolling materials shall be properly blocked.

9. When washing down in plant, use care to keep water away from electrical circuits. If necessary to clean panel boards, use damp cloth or acceptable solvent.

10. Excessive dust shall not be allowed to accumulate. It shall be washed down wherever possible. Use compressed air only when necessary and use a respirator. Where not able to use water, a vacuum cleaner is effective.

11. If a mess isn't made, it doesn't have to be cleaned up. Use preventative techniques.

General Rules

1. Employees who report to work while under the influence of alcoholic beverages or controlled drug substances, or who are guilty of bringing the above mentioned products onto the operating properties of the Company are subject to immediate discharge and may be subject to criminal prosecution in accordance with state law.

2. Horseplay is not allowed. Proper conduct is essential to safety.

3. Employees will not operate equipment unless properly instructed and authorized.

4. Smoking is not permitted in the following areas:

A. In the bucking room.

B. When fueling vehicles or handling fuels, oils, or other inflammables.

C. While painting or within 10 feet of the spray painter.

D. Wherever no smoking signs exist.

5. Maintenance and repairs are not complete until guards and safety devices are in place and the litter is cleaned up.

6. Running is dangerous and should be discouraged except in extreme emergencies.

7. Climbing over, on, or under moving equipment and machinery is prohibited unless specifically authorized for emergency trouble shooting. When necessary, a second man must stand by to shut down machinery.

8. No one except the operator will ride on heavy equipment unless specifically authorized for trouble shooting purposes, or as a part of a training procedure - and then only by order of supervisor.

9. No person will work under any machinery and specifically under raised truck beds, fork lifts, front-end loaders unless properly and firmly blocked and braced.

10. Compressed air should not be used to clean dust from clothing. Compressed air shall be used cautiously and sparingly when used for any reason.

11. Equipment and machinery repairs will not be made while machinery is in motion.

12. Safety harness and life line will be used when work is performed at elevated levels on temporary staging or hazardous footing.

13. Know the location of all emergency safety equipment and devices.

14. Do not use worn or damaged tools. Repair or replace.

15. Stack all materials orderly and safely.

16. Working areas are to be kept clean and neat at all times. If there is a mess, do not wait for someone else to clean it up.

17. Operators removing guards or cover plates shall reinstall same after adjustments are made.

18. All power hand tools must have proper 3 prong grounding plug.

19. All extension cords must have 3 prong male and female plugs.

Special Rules

I. Ore Buying Station, Sampling Plant

A. Crushing Circuit

1. Care is required when working around grizzlies.

2. All guards will be on all machines and will be properly used.

3. Do not attempt to clean conveyor pulleys and idlers while they are in motion.

4. Conveyors and conveyor drives are hazardous because they run quietly. Use special care around these areas.

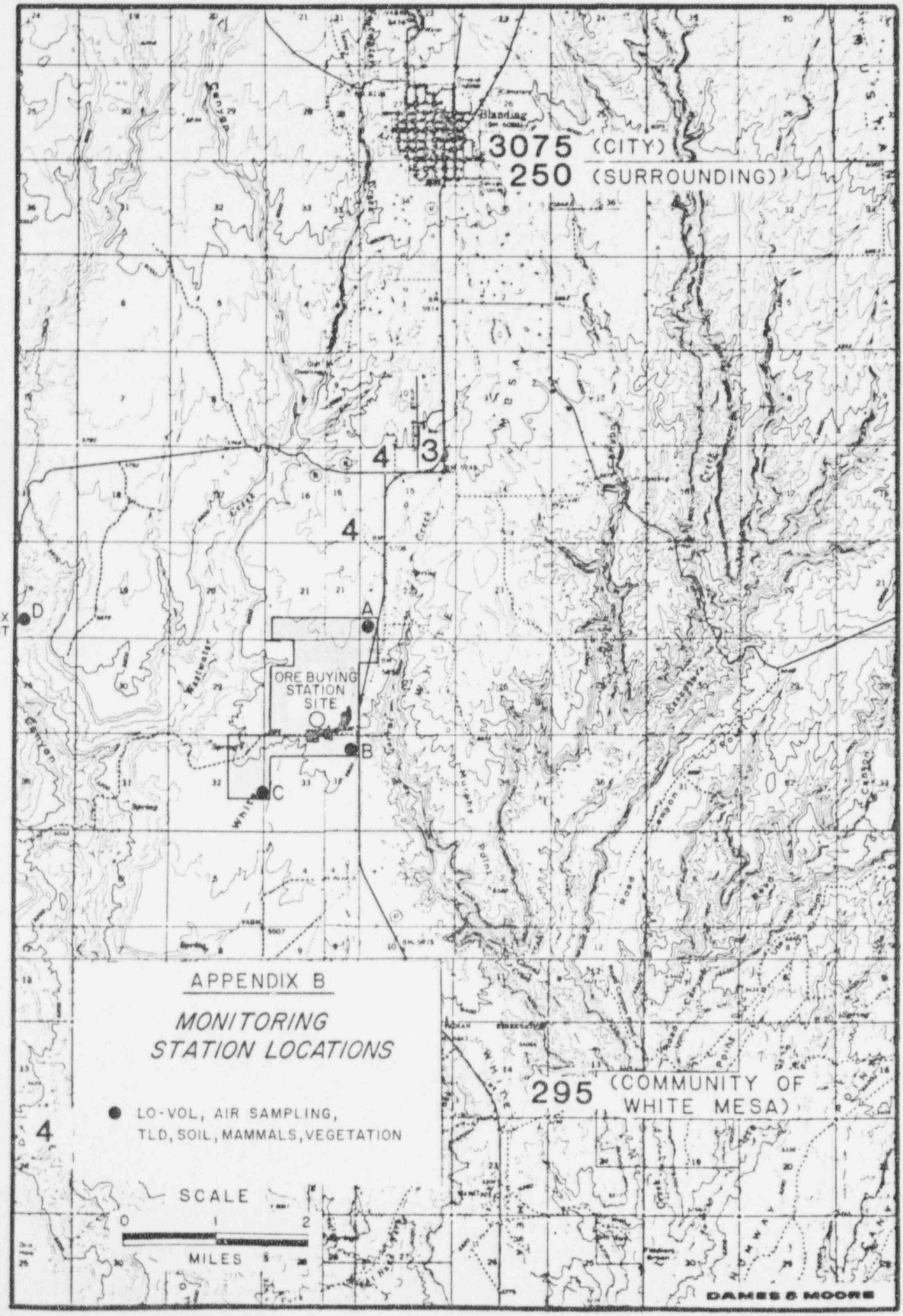
5. Always ground buckets and blades on heavy equipment and set the brakes prior to leaving the operators seat.

6. Never work on or around blades and buckets which are not grounded or adequately blocked.

7. No passengers are allowed on heavy equipment unless within the cab.

8. Crushing areas inside buildings and outside must be kept cleaned and orderly at all times.

9. Use care when climbing ladders and cat walks.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APPENDIX B
MONITORING STATION LOCATIONS
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FORM AEC-783 (5-74)

U.S. ATOMIC ENERGY COMMISSION

MATERIALS DATA INPUT S/SNM

4 - SOURCE AND SNM REFERENCE COPY

A. TYPE OF ACTION AND IDENTIFICATION CODES

1 ☐ NEW LICENSE ☒ AMENDMENT TO RENEW LICENSE ☐ AMENDMENT TO TERMINATE ☐ VOID

☐ NEW LICENSE AND NEW LICENSEE ☐ OTHER AMENDMENT ☐ CLERICAL CHANGE NO AMENDMENT

DOCKET NUMBER	MAIL CONTROL NUMBER	CHANGE NAME/ ADDRESS
040-08075	02894	☐

B. INDICATIVE INFORMATION:

INDIVIDUAL LICENSEES

NAME (LAST, FIRST, MIDDLE)	NAME (LAST, FIRST, MIDDLE)
NAME (LAST, FIRST, MIDDLE)	NAME (LAST, FIRST, MIDDLE)
NAME (LAST, FIRST, MIDDLE)	NAME (LAST, FIRST, MIDDLE)

ORGANIZATIONAL LICENSEES

ORGANIZATION NAME (ALPHABETIC SEQUENCE)

3 Energy Fuels Nuclear Inc.

DEPARTMENT OR BUREAU

ADDRESS

BUILDING, STREET	CITY	STATE	ZIP CODE
5 4239 Arapahoe 5 Suite 225, 3 Park Central	Denver	CO	80202

TYPE OF APPLICANT	DATE REQUEST RECEIVED	INSTITUTION CODE	PENDING PROG. CODE	ACTUAL PROG. CODE
☐ U.S. GOVERNMENT AGENCY ☐ INDIVIDUAL LICENSEE 6 ☒ ORGANIZATIONAL LICENSEE	03/21/78	17151		

SECONDARY PROGRAM CODES AS REQUIRED:

#1	#2	#3	#4	#5

LICENSE NUMBER	DATE LICENSE ISSUED OR ACTION COMPLETED	EXPIRATION DATE	
7 SUA-1324			

APPLICANT'S COMMUNICATION DATED	CLASSIFICATION	ASSIGNED TO:	RESULTING AMD. NO.
03/20/78	U		

ENCLOSURES:

UNCLASSIFIED DESCRIPTION:

application for Source Material License to replace interim License Number SUA-1324

DISTRIBUTION:

Reg File Cy
I&E (2)
PDR
J. Martin (ltr only)
L. Rouse (6)

OTHER REFERRALS

NAME	DATE	NAME	DATE