

**Waste Isolation Pilot Plant**

**Compliance Certification Application**

**Reference 340**

Jones, C.L. 1981.

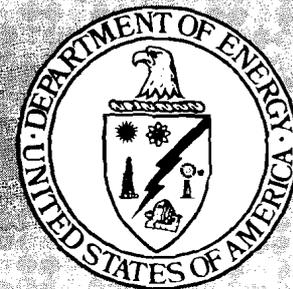
Geologic Data for Borehole ERDA-6, Eddy County, New Mexico. Open-File Report 81-468. U.S. Geological Survey, Denver, CO.



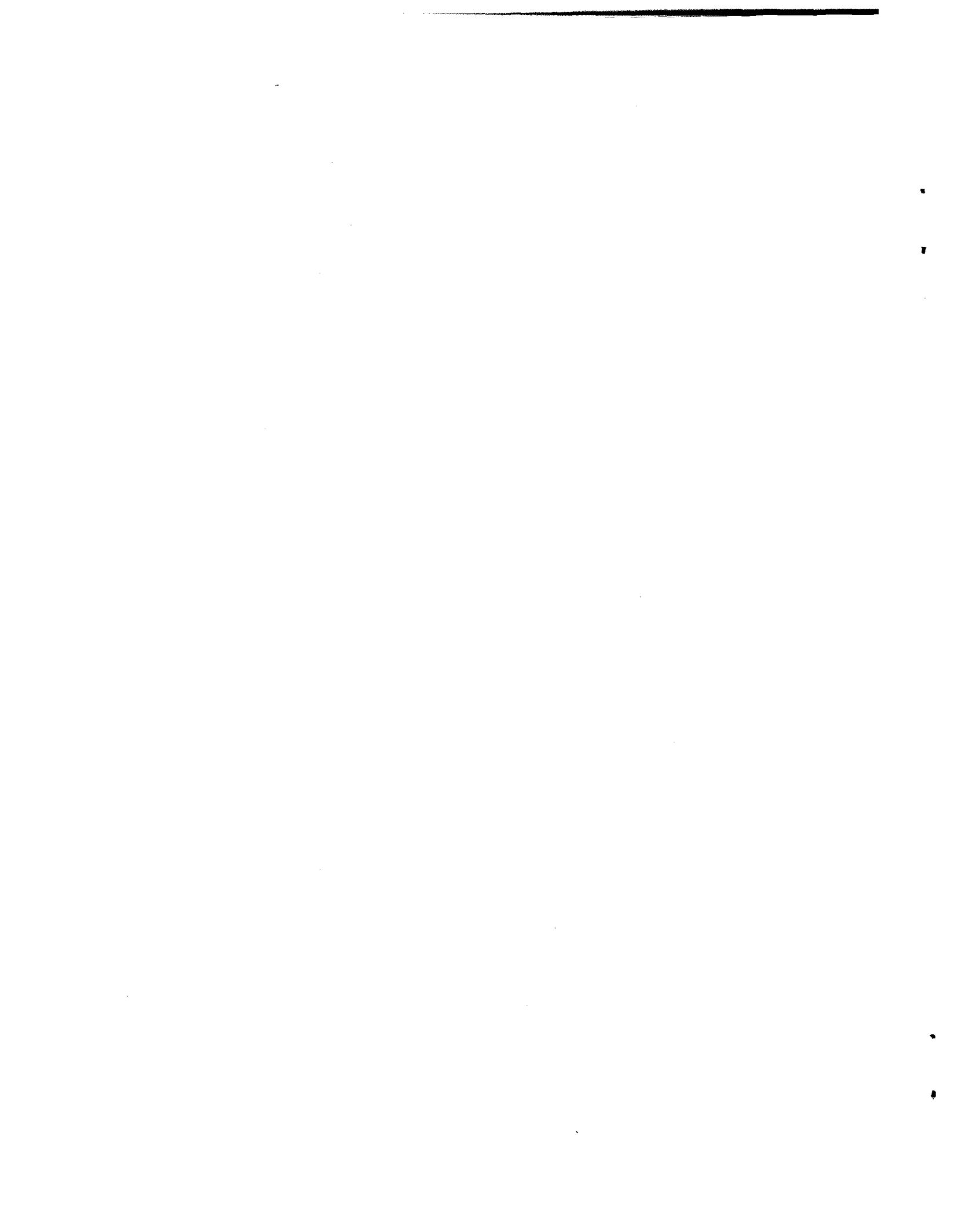
USGS-OFR-81-468



# A Facsimile Report



Reproduced by  
**UNITED STATES  
DEPARTMENT OF ENERGY**  
Office of Scientific and Technical Information  
Post Office Box 62  
Oak Ridge, Tennessee 37831



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

GEOLOGIC DATA FOR BOREHOLE ERDA-6, EDDY COUNTY, NEW MEXICO

By

C. L. Jones

DISCLAIMER

This book was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

66

## CONTENTS

	Page
ABSTRACT-----	1
INTRODUCTION-----	1
DESCRIPTION OF ERDA-6-----	1
GEOLOGIC DATA-----	9
Stratigraphy and Structure-----	9
Rock Deformation-----	18
Potash Resources-----	18
Geologic Constraints-----	18
Lithology-----	18
SELECTED REFERENCES-----	58

## ILLUSTRATIONS

	Page
Figure 1.--Map showing location of ERDA-6, candidate waste repository site, and present WIPP site-----	2
2.--Lithologic and geophysical logs of borehole ERDA-6-----	56

## TABLES

	Page
Table 1. Abridged history of borehole ERDA-6-----	3
2. Stratigraphic summary for borehole ERDA-6-----	10
3. Evaporite minerals identified in core from ERDA-6-----	14
4. Analysis of gas from geopressured brine at 2,708-2,711 feet in ERDA-6-----	16
5. Chemical analyses of geopressured brine from 2,708-2,711 feet in ERDA-6-----	17
6. Mineralogical and chemical analyses of core samples from ERDA-6-----	19
7. Calculated mode and potash distribution by mineral-----	20
8. Lithologic description of drill cuttings and cores, ERDA-6-----	21

Table 1.--Abridged history of borehole ERDA-6--Continued

Core No.	Depth interval Feet	RPM	Weight on bit (lbs)	Interval		Percent recovered
				Feet cored	Feet recovered	
11	946.5- 956.5	NA	NA	10.0	10.1	101
12	956.5- 966.7	NA	NA	10.2	10.0	98
13	966.7- 976.5	NA	NA	9.8	10.0	102
14	976.5- 986.7	NA	NA	10.2	10.0	98
15	986.7- 997.5	NA	NA	10.8	9.8	90
16	997.5-1,006.5	NA	NA	9.0	8.9	99
17	1,006.5-1,016.5	NA	NA	10.0	10.2	102
18	1,016.5-1,026.6	NA	NA	10.2	10.2	100
19	1,026.6-1,036.5	NA	NA	9.9	10.0	101
20	1,036.5-1,046.5	NA	NA	10.0	10.0	100
21	1,046.5-1,056.7	NA	NA	10.2	10.2	100
22	1,056.7-1,066.5	NA	NA	9.9	9.1	92
23	1,066.5-1,076.5	NA	NA	10.0	10.1	101
24	1,076.5-1,086.9	NA	NA	10.2	9.0	88
25	1,086.9-1,096.5	NA	NA	9.6	9.5	99
26	1,096.5-1,106.8	NA	NA	10.3	10.1	98
27	1,106.8-1,116.7	NA	NA	9.9	10.2	103
28	1,116.7-1,126.5	NA	NA	9.8	9.9	101
29	1,126.5-1,136.5	150	3,000	10.1	10.2	101
30	1,136.5-1,146.3	150	3,000	9.7	10.0	103
31	1,146.3-1,156.5	150	3,000	10.2	9.8	96
32	1,156.5-1,166.6	150	3,000	10.1	10.1	100
33	1,166.6-1,176.7	150	3,000	10.1	10.2	101
34	1,176.7-1,186.5	150	3,000	9.8	9.8	100
35	1,186.5-1,196.5	150	3,000	10.0	10.1	101
36	1,196.5-1,206.5	150	3,000	10.0	10.0	100
37	1,206.5-1,216.5	150	3,000	10.0	10.1	101
38	1,216.5-1,226.5	150	3,000	10.0	10.0	100
39	1,226.5-1,236.5	150	3,000	10.0	9.9	99
40	1,236.5-1,246.5	150	3,000	10.0	10.1	101
41	1,246.5-1,256.5	150	3,000	10.0	10.0	100
42	1,256.5-1,266.7	150	3,000	10.2	10.2	100
43	1,266.7-1,276.5	150	3,000	9.8	10.0	102
44	1,276.5-1,286.5	150	3,000	10.0	10.0	100
45	1,286.5-1,296.7	150	3,000	10.2	10.1	99
46	1,296.7-1,306.5	150	3,000	9.8	10.1	103
47	1,306.5-1,316.5	150	3,000	10.1	10.0	100
48	1,316.5-1,326.6	150	3,000	10.1	10.2	101
49	1,326.6-1,336.5	150	3,000	9.9	9.9	100
50	1,336.5-1,346.7	NA	NA	10.2	10.1	99

Table 1.--Abridged history of borehole ERDA-6

LOCATION: Sec. 35, T. 21 S., R. 31 E.  
 2,152 feet from south line  
 910 feet from east line

ALTITUDE: Land surface 3,540.2 feet. Datum for all depth measurements.

DESCRIPTIVE LITHOLOGIC LOG BY: C. L. Jones  
 June 14 to September 18, 1975

GEOPHYSICAL LOGS BY: Welex - June 20 and July 11, 1975  
 Birdwell - June 27, 1975

DRILLING CONTRACTORS: Boyles Bros. Drilling Co. - June 11 to August 15, 1975  
 Pan Am Drilling Corp. - August 21 to September 23, 1975

DRILLING RECORDS: Commenced drilling on June 13, 1975, and completed on September 18, 1975,  
 at 2,775 feet below land surface.

Augered 17 3/4-inch hole to 30 feet; set 13 3/8-inch casing at 30 feet and cemented annulus to surface.

Drilled 8 3/4-inch hole from 30 to 835 feet. Hit brine at 683 feet; fluid rose 155 feet in well bore.

Cored 7 13/16-inch hole from 835 to 883 feet.

Opened hole to 12 1/4 inches from 30 to 883 feet; set 8 5/8-inch casing at 880 feet and cemented annulus to surface.

Drilled 7 5/8-inch hole from 883 to 901.5 feet; set 4 1/2-inch casing with external packer on bottom of casing at 855 feet.

Cored 3 15/16-inch hole from 901.5-2,711.5 feet. Hit air pockets at 1,841-1,851, 1,871-1,881, and 2,011-2,021 feet. Hole unloaded sour gas and brine to surface in about 12 minutes from depth of 2,708-2,711 feet.

Coring operations suspended from July 30 to September 12, 1975, for change over of drilling contractors and equipment to facilitate testing of brine reservoir at 2,708-2,711 feet.

Opened hole to 7 7/8 inches from 880 to 2,718 feet. Hole deepened 6.5 feet.

Cored 7 13/16-inch hole from 2,718 to 2,775 feet; conducted drill-stem test of brine reservoir.

Set cement plug from 2,560 to 2,775 feet.

On completion of cementing, hole filled to surface with brine, and then capped for temporary abandonment pending decision on further work.

Core No.	Depth interval		RPM	Weight on bit (lbs)	Interval		Percent recovered
	Feet				Feet cored	Feet recovered	
1	166.0-	171.0	40	800	5.0	0.0	0
2	212.0-	217.0	60	4,000	5.0	5.0	100
3	499.0-	504.0	45-55	5,000	5.0	5.0	100
4	693.0-	695.0	NA	NA	2.0	1.5	75
5	835.0-	883.0	70	7,000-8,000	48.0	33.7	70
6	901.5-	907.8	NA	NA	6.3	6.3	100
7	907.8-	916.5	NA	NA	8.7	8.7	100
8	916.5-	926.5	NA	NA	10.1	10.1	100
9	926.5-	936.5	NA	NA	10.0	6.5	65
10	936.5-	946.5	NA	NA	10.0	9.9	99

# GEOLOGIC DATA FOR BOREHOLE ERDA-6, EDDY COUNTY, NEW MEXICO

By

C. L. Jones

## ABSTRACT

ERDA-6 is an exploratory test hole drilled in eastern Eddy County, New Mexico, to evaluate a candidate site for a nuclear waste repository which was subsequently rejected on the basis of geologic data. The rocks penetrated include surficial deposits of Quaternary age; the Santa Rosa Sandstone of Triassic age; and the Dewey Lake Red Beds, the Rustler Formation, the Salado Formation, and part of the Castile Formation, all of Permian age. The pre-Quaternary rocks are sharply deformed into an anticline that has a faulted core of salt and anhydrite containing a reservoir of geopressured brine carrying H<sub>2</sub>S, CO<sub>2</sub>, and CH<sub>4</sub> in solution. The structure of the rocks and the geopressured brine are severe geologic impediments to the design, construction, and operation of a nuclear waste repository at the candidate site.

## INTRODUCTION

ERDA-6 is an exploratory test hole drilled in eastern Eddy County, N. Mex., about 2 miles northeast of the WIPP (Waste Isolation Pilot Plant) site (fig. 1). The test hole was designed to evaluate a candidate site for a nuclear waste repository, and data obtained resulted in the rejection of that site and the selection of the present site.

The drilling of ERDA-6 was done between mid-June and mid-September 1975, on behalf of the U.S. Department of Energy (formerly the U.S. Energy Research and Development Administration). Technical direction for the exploratory drilling was provided by Sandia Laboratories; the drilling operations were supervised by Fenix & Scisson, Inc. The examination of drill cuttings and cores was the responsibility of the U.S. Geological Survey.

Data and interpretations concerning the geologic results of ERDA-6 are presented herein. The presentation includes physical details of the location and drilling of ERDA-6; stratigraphic details of the geologic section; and lithologic and structural features of the rocks and mineral deposits.

All measurements related to ERDA-6 are reported in inch-pound units. These units are used to facilitate the comparison of original measurements and observations by surveyors in establishing the geographic coordinates of the borehole, by drillers in reporting sample and core depth, and by geophysical loggers in recording inhole variations in rock properties with depth. If metric equivalents of the inch-pound units are desired, the following conversion factors are provided:

<u>Multiply inch-pound unit</u>	<u>By</u>	<u>To obtain metric unit</u>
foot (ft)	0.3048	meter (m)
inch (in.)	25.4	millimeter (mm)
inch (in.)	2.54	centimeter (cm)
pound (lb)	0.4536	kilogram (kg)
pound per square inch (lb/in <sup>2</sup> )	0.006895	megapascal (MPa)

## DESCRIPTION OF ERDA-6

ERDA-6 is located in eastern Eddy Co., N. Mex., in the NE 1/4 SE 1/4, sec. 35, T. 21 S., R. 31 E. The well was drilled between June 13 and September 18, 1975, to a depth of 2,775 feet measured from a land-surface altitude of 3,540.2 feet above mean sea level. Table 1 gives additional details concerning the drilling of ERDA-6.

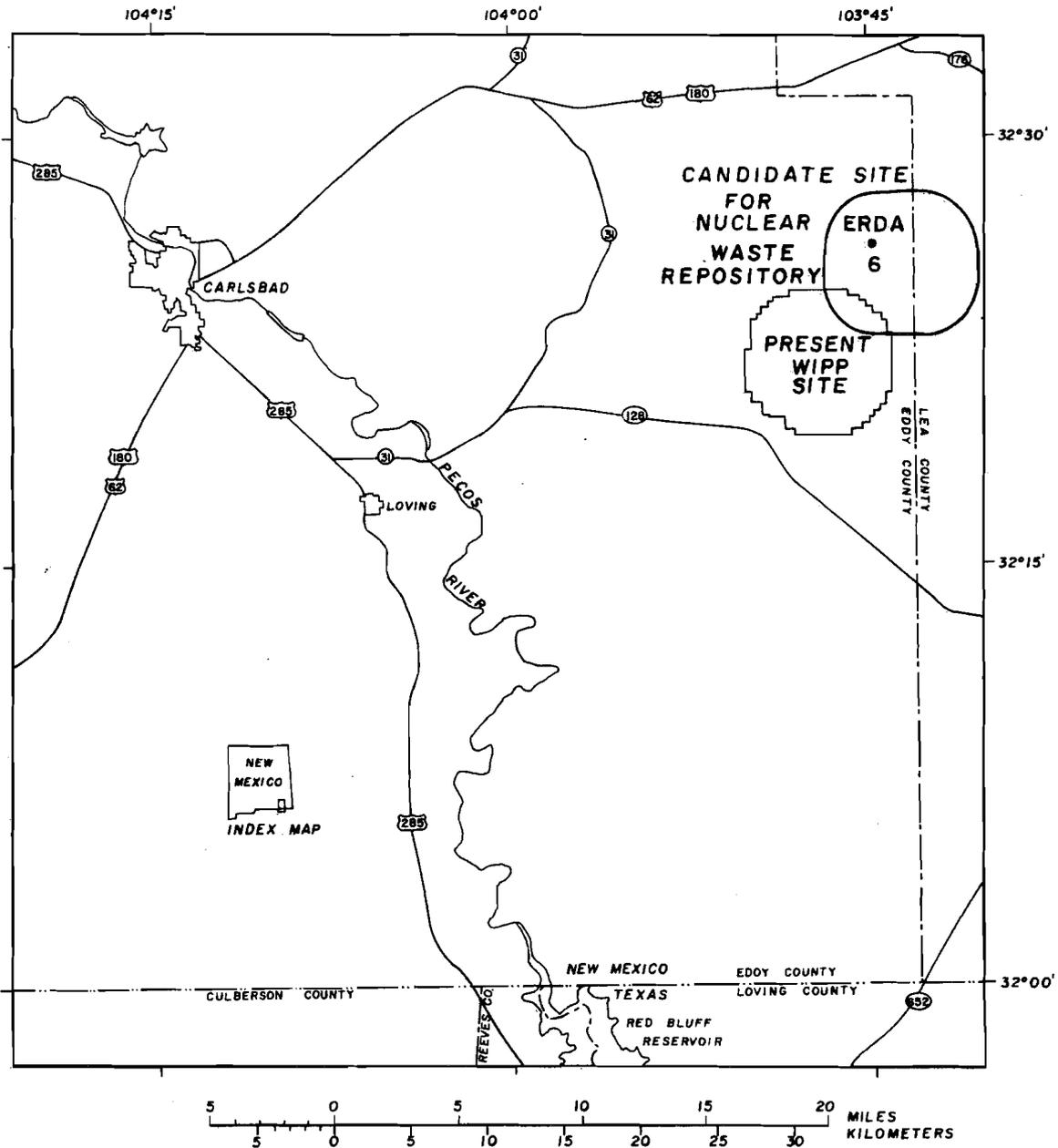


Figure 1.--Map showing location of ERDA-6, candidate waste repository site, and present WIPP site.

Table 1.--Abridged history of borehole ERDA-6--Continued

Core No.	Depth interval Feet	RPM	Weight on bit (lbs)	Interval		Percent recovered
				Feet cored	Feet recovered	
51	1,346.7-1,356.7	NA	NA	10.0	10.2	102
52	1,356.7-1,366.5	NA	NA	9.8	9.9	101
53	1,366.5-1,376.6	NA	NA	10.1	10.3	102
54	1,376.6-1,386.9	NA	NA	10.3	10.0	97
55	1,386.9-1,392.6	NA	NA	5.7	5.9	104
56	1,392.6-1,402.8	NA	NA	10.2	10.2	100
57	1,402.8-1,411.5	NA	NA	8.7	8.8	101
58	1,411.5-1,421.6	NA	NA	10.1	10.1	100
59	1,421.6-1,431.6	NA	NA	10.0	10.0	100
60	1,431.6-1,441.5	NA	NA	9.9	9.0	91
61	1,441.5-1,451.5	NA	NA	10.0	9.9	99
62	1,451.5-1,461.5	NA	NA	10.0	10.2	102
63	1,461.5-1,471.5	NA	NA	10.0	10.1	101
64	1,471.5-1,481.5	NA	NA	10.0	9.8	98
65	1,481.5-1,491.5	NA	NA	10.0	10.1	101
66	1,491.5-1,501.5	NA	NA	10.0	10.1	101
67	1,501.5-1,511.5	NA	NA	10.0	10.0	100
68	1,511.5-1,521.5	NA	NA	10.0	10.0	100
69	1,521.5-1,531.5	NA	NA	10.0	10.0	100
70	1,531.5-1,541.5	NA	NA	10.0	10.0	100
71	1,541.5-1,551.5	NA	NA	10.0	10.0	100
72	1,551.5-1,561.5	NA	NA	10.0	10.0	100
73	1,561.5-1,571.5	NA	NA	10.0	10.0	100
74	1,571.5-1,581.5	NA	NA	10.0	10.0	100
75	1,581.5-1,591.5	NA	NA	10.0	10.0	100
76	1,591.5-1,601.5	NA	NA	10.0	10.0	100
77	1,601.5-1,611.5	NA	NA	10.0	10.0	100
78	1,611.5-1,621.5	NA	NA	10.0	10.0	100
79	1,621.5-1,631.5	NA	NA	10.0	10.0	100
80	1,631.5-1,641.5	NA	NA	10.0	10.0	100
81	1,641.5-1,651.5	NA	NA	10.0	9.8	98
82	1,651.5-1,661.5	NA	NA	10.0	10.2	102
83	1,661.5-1,671.5	NA	NA	10.0	10.0	100
84	1,671.5-1,681.5	NA	NA	10.0	9.9	99
85	1,681.5-1,691.5	NA	NA	10.0	10.1	101
86	1,691.5-1,701.5	NA	NA	10.0	10.0	100
87	1,701.5-1,711.5	NA	NA	10.0	10.0	100
88	1,711.5-1,721.5	NA	NA	10.0	10.0	100
89	1,721.5-1,731.5	NA	NA	10.0	10.0	100
90	1,731.5-1,741.5	NA	NA	10.0	10.0	100

Table 1.--Abridged history of borehole ERDA-6--Continued

Core No.	Depth interval Feet	RPM	Weight on bit (lbs)	Feet cored	Interval Feet recovered	Percent recovered
91	1,741.5-1,751.5	NA	NA	10.0	10.0	100
92	1,751.5-1,761.5	NA	NA	10.0	10.0	100
93	1,761.5-1,771.5	NA	NA	10.0	10.0	100
94	1,771.5-1,781.5	NA	NA	10.0	10.0	100
95	1,781.5-1,791.5	NA	NA	10.0	10.0	100
96	1,791.5-1,801.5	NA	NA	10.0	10.0	100
97	1,801.5-1,811.5	NA	NA	10.0	10.0	100
98	1,811.5-1,821.5	NA	NA	10.0	10.0	100
99	1,821.5-1,831.5	NA	NA	10.0	10.0	100
100	1,831.5-1,841.5	NA	NA	10.0	9.9	99
101	1,841.5-1,851.5	NA	NA	10.0	10.1	101
102	1,851.5-1,861.5	NA	NA	10.0	10.0	100
103	1,861.5-1,871.5	NA	NA	10.0	10.0	100
104	1,871.5-1,881.5	NA	NA	10.0	10.0	100
105	1,881.5-1,891.5	NA	NA	10.0	10.0	100
106	1,891.5-1,901.5	NA	NA	10.0	10.0	100
107	1,901.5-1,911.5	NA	NA	10.0	10.0	100
108	1,911.5-1,921.5	NA	NA	10.0	10.0	100
109	1,921.5-1,931.5	NA	NA	10.0	10.0	100
110	1,931.5-1,941.5	NA	NA	10.0	9.9	99
111	1,941.5-1,951.5	NA	NA	10.0	10.1	101
112	1,951.5-1,961.5	NA	NA	10.0	10.0	100
113	1,961.5-1,971.5	NA	NA	10.0	10.0	100
114	1,971.5-1,981.5	NA	NA	10.0	9.9	99
115	1,981.5-1,991.5	NA	NA	10.0	10.1	101
116	1,991.5-2,001.5	NA	NA	10.0	10.0	100
117	2,001.5-2,011.5	NA	NA	10.0	10.0	100
118	2,011.5-2,021.5	NA	NA	10.0	10.0	100
119	2,021.5-2,031.5	NA	NA	10.0	10.0	100
120	2,031.5-2,041.5	NA	NA	10.0	10.0	100
121	2,041.5-2,051.5	NA	NA	10.1	10.0	100
122	2,151.5-2,061.5	NA	NA	10.0	10.0	100
123	2,061.5-2,071.5	NA	NA	10.0	10.0	100
124	2,071.5-2,081.5	NA	NA	10.0	10.0	100
125	2,081.5-2,091.5	NA	NA	10.0	10.0	100
126	2,091.5-2,101.5	NA	NA	10.0	10.0	100
127	2,101.5-2,111.5	NA	NA	11.0	10.0	100
128	2,111.5-2,121.5	NA	NA	10.0	9.7	100
129	2,121.5-2,131.5	NA	NA	10.0	10.1	101
130	2,131.5-2,141.5	NA	NA	10.0	10.0	100

Table 1.--Abridged history of borehole ERDA-6--Continued

Core No.	Depth interval Feet	RPM	Weight on bit (lbs)	Feet cored	Interval Feet recovered	Percent recovered
131	2,141.5-2,151.5	NA	NA	10.1	10.1	101
132	2,151.5-2,161.5	NA	NA	10.0	10.0	100
133	2,161.5-2,171.5	NA	NA	10.0	10.2	102
134	2,171.5-2,181.5	NA	NA	10.0	10.0	100
135	2,181.5-2,191.5	NA	NA	10.0	10.0	100
136	2,191.5-2,201.5	NA	NA	10.0	10.0	100
137	2,201.5-2,211.5	NA	NA	10.0	10.0	100
138	2,211.5-2,221.5	NA	NA	10.0	9.9	99
139	2,221.5-2,231.5	NA	NA	10.0	10.1	101
140	2,231.5-2,241.5	NA	NA	10.0	10.0	100
141	2,241.5-2,251.5	NA	NA	10.0	10.0	100
142	2,251.5-2,261.5	NA	NA	10.0	10.0	100
143	2,261.5-2,271.5	NA	NA	10.0	10.0	100
144	2,271.5-2,281.5	NA	NA	10.0	9.9	99
145	2,281.5-2,291.5	NA	NA	10.0	10.1	101
146	2,291.5-2,301.5	NA	NA	10.0	9.9	99
147	2,301.5-2,311.5	NA	NA	10.0	10.1	101
148	2,311.5-2,321.5	NA	NA	10.0	10.0	100
149	2,321.5-2,331.5	NA	NA	10.0	10.0	100
150	2,331.5-2,341.5	NA	NA	10.0	10.0	100
151	2,341.5-2,351.5	NA	NA	10.0	10.0	100
152	2,351.5-2,361.5	NA	NA	10.0	10.0	100
153	2,361.5-2,371.5	NA	NA	10.0	10.0	100
154	2,371.5-2,381.5	NA	NA	10.0	9.8	98
155	2,381.5-2,391.5	NA	NA	10.0	10.0	100
156	2,391.5-2,401.5	NA	NA	10.0	10.2	102
157	2,401.5-2,411.5	NA	NA	10.0	10.0	100
158	2,411.5-2,421.5	NA	NA	10.0	10.0	100
159	2,421.5-2,431.5	NA	NA	10.0	9.9	99
160	2,431.5-2,441.5	NA	NA	10.0	10.0	100
161	2,441.5-2,442.5	NA	NA	1.0	1.0	100
Depth correction by driller from 2,442.5 to 2,443.0 feet						
162	2,443.0-2,451.5	200	3,500	8.5	8.5	100
163	2,451.5-2,461.5	200	3,500	10.0	9.5	95
164	2,461.5-2,471.5	200	3,500	10.0	10.0	100
165	2,471.5-2,481.5	200	3,500	10.0	10.2	102
166	2,481.5-2,491.5	200	3,500	10.0	9.6	96
167	2,491.5-2,501.5	200	3,500	10.0	10.1	101
168	2,501.5-2,511.5	200	3,500	10.0	9.8	98
169	2,511.5-2,521.5	150-200	3,500-4,000	10.0	10.0	100

Table 1.--Abridged history of borehole ERDA-6--Continued

Core No.	Depth interval Feet	RPM	Weight on bit (lbs)	Interval Feet cored	Feet recovered	Percent recovered
170	2,521.5-2,531.5	150-200	3,500-4,000	10.0	10.0	100
171	2,531.5-2,541.5	150-200	3,500-4,000	10.0	10.1	101
172	2,541.5-2,551.5	150-200	3,500-4,000	10.0	9.9	99
173	2,551.5-2,561.5	150-200	3,500-4,000	10.0	10.2	102
174	2,561.5-2,571.5	NA	NA	10.0	9.8	98
175	2,571.5-2,581.5	NA	NA	10.0	10.1	101
176	2,581.5-2,591.5	NA	NA	10.0	10.1	101
177	2,591.5-2,601.5	180	5,000	10.0	10.0	100
178	2,601.5-2,611.5	180	5,000	10.0	10.0	100
179	2,611.5-2,621.5	180	5,000	10.0	10.0	100
180	2,621.5-2,631.5	180	5,000	10.0	10.0	100
181	2,631.5-2,641.5	160	5,000-6,000	10.0	10.0	100
182	2,641.5-2,651.5	160	5,000-6,000	10.0	10.0	100
183	2,651.5-2,661.5	160	5,000-6,000	10.0	10.0	100
184	2,661.5-2,671.5	160	5,000-6,000	10.0	10.0	100
185	2,671.5-2,681.5	180	4,000-8,000	10.0	10.0	100
186	2,681.5-2,691.5	180	4,000-8,000	10.0	10.0	100
187	2,691.5-2,701.5	180	4,000-8,000	10.0	10.0	100
188	2,701.5-2,711.5	180	6,000	10.0	9.5	95
			Drilled 2,711.5-2,718.0 feet			
189	2,718.0-2,775.0	80	15,000-20,000	57.0	56.9	99

Conventional rotary drilling procedures with air, air mist, and foam were used to reach a depth of 835 feet. Between land surface and 835 feet, cuttings were collected at 5-foot intervals, and four cores were cut at 166-177, 212-217, 499-504, and 693-695 feet for determination of porosity, permeability, and fluid content. Below 835 feet, rotary coring and drilling procedures were used to cut core from 835 to 883 feet, and deepen the well to 901.5 feet. Wireline coring procedures were then started and consecutive cores were cut to 2,711.5 feet. At this depth an inflow of brine containing  $H_2S$ ,  $CO_2$ , and  $CH_4$  forced suspension of operations for a time before the well was deepened by drilling and coring to 2,775 feet. The drilling fluid used between 835 and 2,775 feet was salt-base mud in the depth intervals of 835-1,296.7, 2,111.5-2,146.5, 2,281.5-2,381.5, and 2,443.0-2,775.0 feet and oil-base mud in the intervening intervals.

On reaching the depth of 883 feet, a suite of wireline geophysical logs was run under open-hole, fluid-filled conditions. The logging was done to facilitate the recognition and correlation of rock units, to assure identification of major lithologies (dolomite, anhydrite, and other rocks), and to provide depth determinations independent of that indicated by drill-pipe measurements. The geophysical logs include: (1) a gamma-ray curve that recorded variations in the distribution of radioactive elements, (2) a neutron curve that essentially recorded variations in the distribution of hydrogen, and (3) a gamma-gamma curve that recorded variations in rock density. Below 883 feet no geophysical logging was done.

Owing to the extensive use of air and air mist in drilling to 835 feet, the bulk of the drill cuttings from ERDA-6 is a mass of rock dust poorly suited to the determination of lithologic details. Nevertheless, they were examined through a binocular microscope (initially dry as received from the driller and subsequently after washing). A lithologic description of the cuttings was prepared; it has been used in conjunction with the wireline geophysical logs to prepare an interpretative lithologic log of the drill hole through the depth intervals from which cuttings were obtained.

The ERDA-6 cores, upon removal from the borehole, were cleaned to dislodge a coating of drilling fluid, marked according to the depth reported by the driller, examined for geologic detail, and then transported to the warehouse for photographing and storage. At the warehouse, core intervals containing potash minerals of possible economic interest were sampled for analysis by the U.S. Geological Survey.

## GEOLOGIC DATA

### Stratigraphy and Structure

The geologic section in ERDA-6 includes continental sediments of Quaternary and Triassic age and marine red beds and evaporites of Permian age. The rock units are summarized in table 2, and their stratigraphy and structure are briefly described in descending order.

The Quaternary sediments consist of unconsolidated dune sand of Holocene age and a well-lithified calcareous soil, known locally as the Mescalero caliche of Pleistocene age. The sand is fine to medium grained and brown; whereas the caliche is a white, sandy limestone with a porous to chalky texture. The two units account for the upper 17 feet of section in ERDA-6.

Table 2.--Stratigraphic summary for borehole ERDA-6  
 [MB, marker bed; NR, not recognized; NP, not present; Sy, sylvite; Ka, kainite;  
 La, langbeinite; Bl, bloedite; Lo, loewite]

Rock unit	Depth interval <sup>1</sup> Feet	Thickness Feet	Remarks
Quaternary rocks			
Holocene deposits <sup>2</sup>	0- 9	9	
Mescalero caliche	9- 17	8	
Triassic rocks			
Santa Rosa Sandstone	17- 72	55	
Permian rocks			
Dewey Lake Red Beds	72- 538	466	
Rustler Formation	538- 811	273	
Dissolution residue	570- 581	11	
Magenta Dolomite Member	598- 623	25	
Dissolution residue	696- 707	11	
Culebra Dolomite Member	713- 739	26	
Dissolution residue	742- 762	20	
Salado Formation	811-2,396.5	1,585.5	
Upper unit	811-1,276.6	465.6	
MB 100	NR		
MB 101	923.5- 929.9	6.4	
MB 102	956.8- 958.2	1.4	
MB 103	970.3- 984.3	14.0	
MB 104	992.1-992.4	.3	
MB 105	NR	---	
MB 106	NR	---	
MB 107	1,060.0-1,060.9	.9	
MB 108	1,069.1-1,069.9	.8	
MB 109	1,090.9-1,113.5	22.6	
MB 110	NP		
MB 111	1,161.5-1,161.8	.3	
MB 112	1,178.9-1,180.2	1.3	
MB 113	NP		
MB 114	1,224.9-1,226.9	2.0	
MB 115	1,256.1-1,257.2	1.1	
MB 116	1,268.7-1,271.4	2.7	
McNutt potash unit <sup>3</sup>	1,276.6-1,612.9	336.3	
Vaca Triste Sandstone Member <sup>4</sup>	1,276.6-1,287.3	10.7	
11th ore zone <sup>5</sup>	1,324.7-1,329.8	5.1	Contains Sy, Ka, and La. (See tables 4 and 5 for details.)

Table 2.--Stratigraphic summary for borehole ERDA-6--Continued

Rock unit	Depth interval <sup>1</sup> Feet	Thickness Feet	Remarks
MB 117	1,340.7-1,342.7 1,346-1,349.0	2.0	Mineralized salt bed contains Ka, Sy, Le
MB 118	1,359.0-1,366.2	7.2	
MB 119	1,378.4-1,379.4	1.0	
10th ore zone <sup>5</sup>	1,386.1-1,395.5	9.4	Few crystals of Sy at 1,392.1-1,392.6 feet
MB 120	1,401.0-1,402.3	1.3	
9th ore zone <sup>5</sup>	1,403.2-1,410.3	7.1	Few crystals of Sy at 1,404.0-1,404.8 feet
MB 121	1,413.3-1,415.5	2.2	
MB 122	1,422.3-1,424.3	2.0	
8th ore zone <sup>5</sup>	1,424.9-1,437.0	12.1	Barren of potassium ore minerals
Union anhydrite <sup>3</sup>	1,444.6-1,453.8	9.2	
7th ore zone <sup>5</sup>	1,464.0-1,468.5	4.5	Barren of potassium ore minerals
6th ore zone <sup>5</sup>	1,479.7-1,482.2	2.5	Barren of potassium ore minerals
5th ore zone <sup>5</sup>	1,487.8-1,494.9	7.1	Barren of potassium ore minerals
MB 123	1,517.7-1,524.9	7.2	
MB 124	1,529.4-1,537.5	8.1	
4th ore zone <sup>5</sup>	1,541.9-1,549.1	7.2	Barren of potassium ore minerals
	1,549.7-1,553.0		Mineralized salt bed contains La, Bl, Ka, Sy
3rd ore zone <sup>5</sup>	1,555.5-1,567.2	11.7	Contains La, Ka, Bl, and Lo. (See tables 4,5 for details.)
2nd ore zone <sup>5</sup>	1,571.0-1,574.3	3.3	Barren of potassium ore minerals
MB 125	NP		
1st ore zone <sup>5</sup>	1,587.0-1,603.3	16.0	Barren of potassium ore minerals
MB 126	NP		
Lower unit	1,612.9-2,396.5	783.6	
MB 127	1,635.0-1,635.7	.7	
MB 128	1,647.7-1,648.5	.8	
MB 129	1,670.0-1,671.5	1.5	
MB 130	NP		
MB 131	1,743.0-1,743.7	.7	
MB 132	1,770.6-1,771.4	.8	
MB 133	1,785.6-1,789.2	3.6	
MB 134	1,833.2-1,843.4	10.2	
MB 135	1,860.4-1,861.5	1.1	

Table 2.--Stratigraphic summary for borehole ERDA-6--Continued

Rock unit	Depth interval <sup>1</sup> Feet	Thickness Feet	Remarks
MB 136	1,900.5-1,910.5	10.0	
MB 137	NP		
MB 138	1,967.5-1,967.7	.2	
MB 139	2,019.5-2,022.4	2.9	
MB 140	2,060.4-2,075.6	15.2	
MB 141	2,124.5-2,126.6	2.1	
MB 142	2,163.8-2,169.5	5.7	
MB 143	2,212.7-2,215.6	2.4	
MB 144	2,237.0-2,237.7	.7	
Cowden anhydrite member <sup>6</sup>	2,269.5-2,291.0	21.5	
	2,396.5-2,400.5	4.0	Fault zone
Castile Formation	2,400.5-2,775.0	374.5	
Halite II <sup>7</sup>	2,400.5-2,555.1	154.6	
Anhydrite II <sup>7</sup>	2,555.1-2,732.5	177.4	
	2,732.5		Fault or rupture plane
Halite I <sup>7</sup>	2,732.5-2,775.0	42.5	

<sup>1</sup>Determined from gamma-ray logs run by Birdwell on June 27, 1975, and Welx on July 27, 1975, through the depth interval of 0-877 feet and from core records through the depth interval of 877-2,775 feet.

<sup>2</sup>Includes artificial fill for drill pad.

<sup>3</sup>Informal unit of Salado Formation.

<sup>4</sup>Of Adams, 1944.

<sup>5</sup>Beds of argillaceous halite that locally contain deposits of potassium and magnesium minerals of possible economic interest.

<sup>6</sup>Of Giesey, and Fulk, 1941.

<sup>7</sup>Of Anderson and others, 1972.

Underlying the Mescalero caliche at a depth of 17-72 feet is the Santa Rosa Sandstone of Triassic age. This formation consists of fine- to medium-grained sandstone. The rock is somewhat silty and ranges in color from light gray and yellowish gray through light brown to reddish brown. Its thickness amounts to only 55 feet, but the Santa Rosa is 100-148 feet thick in other wells drilled within 2 or 3 miles of ERDA-6.

At 72 feet below land surface, the Santa Rosa Sandstone gives way downward to the Dewey Lake Red Beds of Permian age. The Dewey Lake is 466 feet of chiefly reddish-brown siltstone and mudstone with thin interbeds of fine- to medium-grained sandstone. Much of the reddish-brown rock is irregularly bleached greenish-gray in spotty and lenticular masses. Platy fragments of fibrous white selenite, presumably derived from selenite veinlets, are common in the lower 300 feet of the unit. Their presence attests to absence of circulating ground water since the introduction of selenite by vein-forming processes.

Extending from 538 to 811 feet below land surface is the Rustler Formation of Permian age. The Rustler is 273 feet of chiefly anhydrite (or gypsum) and siltstone with interbeds of dolomite and clayey silt. The bulk of the gypsum occurs immediately above and below beds of dolomite and clayey silt where it forms a thick rind along the upper and lower sides of anhydrite beds. The clayey silt is structureless, essentially unconsolidated, and free of cement; it is considered to be dissolution residue derived from clayey and silty halite. The formation is thinner (by about 40-60 percent) and poorer in anhydrite than in areas northeast and southeast of ERDA-6 where it contains thick beds of halite and clayey halite and is free of gypsum. Formation thinness in conjunction with the absence of halite and the presence of gypsum is related to the removal by dissolution of soluble constituents [ $\text{NaCl}$ ,  $\text{CaSO}_4$ , and possibly  $\text{CaMg}(\text{CO}_3)_2$ ] by circulating ground water. The reduction in formation thickness has triggered subsidence of rocks above the Rustler in an amount crudely proportional to the thickness of lost soluble constituents. The correlation, however, is not exact; the thickness reduction is offset somewhat by a thickness increase related to the conversion of anhydrite to gypsum.

Beginning at 811 feet and extending to 2,396.5 feet below land surface is the Salado Formation of Permian age. The Salado contains the rock salt of main interest in the construction of a nuclear waste repository in the vicinity of ERDA-6; it is 1,585.5 feet of predominantly rock salt with minor interbeds of anhydrite, polyhalite, siltstone, and sparse potash deposits. The rock salt shows a cyclical alternation of halite and argillaceous halite in layers ranging from a few inches to several feet in thickness. The layers of argillaceous halite are commonly truncated along their upper surfaces by partings or thin seams of mudstone. Many of the mudstone seams contain nodules of anhydrite or polyhalite, and some give way upward to beds of anhydrite or polyhalite. Sylvite, langbeinite, and other uncommon potassium and magnesium minerals (table 3) form potash deposits in some salt beds near the middle of the formation (table 2). Other constituents of the Salado include small pockets or cavities containing nitrogen-rich(?) gases under slight to moderate pressure sufficient to displace the drilling fluid in the wellbore from depths of 1,800-2,000 feet. The formation is free of dissolution residue related to removal of soluble constituents by circulating ground water; but its rocks have been subjected to recrystallization and replacement processes involving an interaction of solutions containing potassium and magnesium with anhydrite, halite, and other rocks. Relict structures include pseudomorphs after gypsum of halite, polyhalite, or anhydrite, mud (desiccation) cracks and cavities filled with argillaceous halite, and corroded remnants of primary halite crystals showing well-developed growth lines.

Table 3.--Evaporite minerals identified in core from ERDA-6  
 [Leaders (---), indicate not present]

Mineral	Formula	K <sub>2</sub> O weight percent	H <sub>2</sub> O weight percent	Specific gravity	
Potassium ore minerals	Sylvite	KCl	63.2	---	1.98
	Langbeinite	(MgK) <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	22.7	---	2.83
Other evaporite minerals	Leonite	K <sub>2</sub> Mg(SO <sub>4</sub> ) <sub>2</sub> 4H <sub>2</sub> O	25.7	19.7	2.2
	Kainite	(KMgClSO <sub>4</sub> ) <sub>2</sub> 11H <sub>2</sub> O	19.3	20.3	2.1
	Polyhalite	K <sub>2</sub> Ca <sub>2</sub> Mg(SO <sub>4</sub> ) <sub>4</sub> 2H <sub>2</sub> O	15.6	5.98	2.8
	Bloedite	Na <sub>2</sub> Mg(SO <sub>4</sub> ) <sub>2</sub> 4H <sub>2</sub> O	---	21.5	2.2
	Kieserite	MgSO <sub>4</sub> H <sub>2</sub> O	---	13.0	2.6
	Loewite	Na <sub>12</sub> Mg <sub>7</sub> (SO <sub>4</sub> ) <sub>13</sub> 15H <sub>2</sub> O	---	13.8	2.4
	Halite	NaCl	---	---	2.1
	Anhydrite	CaSO <sub>4</sub>	---	---	2.9
Glauberite	Na <sub>2</sub> Ca(SO <sub>4</sub> ) <sub>2</sub>	---	---	2.8	

Sharply separating the Salado Formation from the underlying Castile Formation, also of Permian age, is a fault or shear zone, which occupies most, if not all, of the depth interval of 2,396.5-2,400.5 feet in ERDA-6. The zone lacks a well-defined fracture or plane of rupture, but it marks a structural discontinuity along which the lower part of the Salado and the middle part of the Castile have been brought opposite one another. The amount of displacement is speculative. However, reconstruction of the geologic section suggests that approximately 300 feet of the Salado and about 400 feet of the Castile are missing, so that the stratigraphic displacement may amount to 700 feet.

Below the fault zone, the lower 374.5 feet of rock between 2,400.5 and 2,775 feet are assigned on the basis of lithology and stratigraphic details to the middle part of the Castile Formation. It includes an upper and lower interval of rock salt (2,400.5-2,555.1 and 2,732.5-2,775.0 ft) separated by an interval of banded anhydrite (2,555.1-2,732.5 ft). The rock salt in both the upper and lower intervals is complexly deformed anhydritic halite showing a rhythmic interlayering of anhydrite in bands as much as 0.3 foot thick. Much of the halite is sheared and schistose, and there is considerable repetition of individual halite and anhydrite layers by folding. Some anhydrite layers are a shattered mass of angular fragments tightly imbedded in halite; others are complexly twisted into tight folds.

The interval of banded anhydrite between the two salt units is an evaporite laminite showing a regular rhythmic alternation of gray anhydrite and darker gray to black organic-rich calcite in laminae 1/16-1/8 inch thick. The regularity of bedding in the laminite is disrupted here and there by intrastratal folds and slump breccias which are bounded above and below by parallel undisturbed lamination. Short intervals of rock in the upper and lower 30-50 feet of the banded anhydrite are fractured and locally brecciated and vuggy. The fractures dip about 60° and cut the bedding at a steep angle. Some fractures carry halite veins, as much as 0.1 foot thick; others contain vuggy veins of white anhydrite and calcite. The brecciated rock consists of coarse, angular fragments of laminite tightly cemented in a vuggy, crystalline matrix of white anhydrite and calcite, and it includes laminite fragments showing both parallel undisturbed laminations and well-formed slump breccias. The vugs in both the fractures and the brecciated rock are lined with glassy, well-formed crystals of anhydrite and calcite.

Near the base of the banded anhydrite unit, at 2,708-2,711 feet, an influx of geopressured brine displaced the 2,710±-foot column of salt-base drilling fluid (weight=10.2 lbs/gal) from the wellbore in about 12 minutes, and the discharge of brine at the wellhead was accomplished with much bubbling and evolution of H<sub>2</sub>S, CO<sub>2</sub>, and other gases (table 4). The brine was derived from a 3-foot section (2,708-2,711 feet) of fractured, brecciated reservoir rock. The rock contains lenses of glassy halite and white anhydrite showing much vuggy and intergranular porosity, and it is capped by a 1.2-foot seam of featureless, massive gray anhydrite free of fractures, laminations, and bedding structures. The brine from this reservoir rock is a concentrated solution of sodium, potassium, and magnesium chlorides and sulfates, and carries boron, bromine, and lithium in appreciable amounts (table 5). The brine chemistry attests to an origin involving evaporation and to equilibrium between brine and reservoir rock. The brine is considered to be indigenous to the Castile and may be a remnant of a formerly more pervasive formation fluid that contributed to the formation of the anhydrite-calcite matrix in the brecciated laminite and the halite, and anhydrite-calcite veins filling cross-cutting fractures in overlying rocks. Geochemical studies and analyses reported by Lambert (1977, 1978) show the brine to be chemically and isotopically distinct from formation fluids in rocks above and below the Castile Formation.

Table 4.--Analysis of gas from geopressured brine at 2,708-2,711 feet in ERDA-6  
[Analyzed by United Chemical Corporation, Hobbs, N. Mex.]

	Mol percent
Carbon dioxide	55.133
Nitrogen	5.189
Hydrogen sulfide	32.425
Methane	6.906
Ethane	.236
Propane	.073
Iso-Butane	.021
N-Butane	.017
Pentanes	trace

Table 5.--Chemical analyses of geopressured brine from 2,708-2,711 feet in ERDA-6  
[Leaders (---) indicate no data]

Analysis	1		2		3		4	
	mg/l	meq/l	mg/l	meq/l	mg/l	meq/l	mg/l	meq/l
Fe	0.01	---	---	---	1.4	---	0.9	---
Ca	600	29.940	130	6.487	248	12.375	650	32.435
Mg	4,400	361.842	350	28.783	365	30.016	388	31.908
Na (calculated)	---	---	---	---	135,087	5,874.114	---	---
Na (determined)	120,000	5,218.072	112,000	4,870.200	---	---	120,000	5,218.072
K	4,500	115.101	5,100	130.448	5,200	133.006	3,360	85.942
Sr	---	---	---	---	11	.251	---	---
Li	190	27.377	160	23.055	140	20.173	157	22.622
Total cations		<u>5,752.332</u>		<u>5,058.973</u>		<u>6,069.935</u>		<u>5,390.979</u>
HCO <sub>3</sub>	2,600	42.610	1,310	21.469	2,025	33.187	---	---
CO <sub>3</sub>	0	0	---	---	---	---	---	---
SO <sub>4</sub>	16,000	333.125	16,000	333.125	14,183	295.295	15,500	322.715
CL	180,000	5,076.572	186,100	5,248.611	198,143	5,588.262	188,270	5,309.812
F	.05	.003	---	---	0.0	0.0	---	---
Br	460	5.756	240	3.003	237	2.966	---	---
I	17	0.134	---	---	12.5	.098	---	---
B	3,000	---	120	---	1,600	---	---	---
H <sub>2</sub> S	(28 percent)	---	---	---	17	---	---	---
Total anions		<u>5,458.200</u>		<u>5,606.208</u>		<u>5,919.808</u>		<u>5,632.527</u>
Total dissolved solids	330,000		321,000		350,051		326,370	
Residue at 180°C	337,000							
pH (when sampled)	6.0		---	---	---	---	---	---
pH (at laboratory)	---		7.3		7.3		---	---
Specific gravity	---				1.2137		1.204	

- 1 Analyzed by U.S. Geological Survey, Central Laboratory, Salt Lake City, Utah; 4,400 mg/l of Mg considered to be misprint of decimal point.  
2 Analyzed by Sandia Laboratories, Albuquerque, N. Mex. (Lambert, 1978, p. 34); reported B0<sub>3</sub> converted to B.  
3 Analyzed by Martin Water Laboratories, Inc.; Monahans, Tex.  
4 Analyzed by New Mexico Institute of Mining and Technology, Socorro, N. Mex.

About 21 feet below the brine reservoir, at 2,732.5 feet, the banded anhydrite is terminated abruptly downward by a sharp, jagged fault that cuts the anhydrite-calcite laminae in the banded anhydrite at a steep angle. The fault is tight and free of gouge, and the banded anhydrite of the hanging wall is strongly welded to the rock salt of the footwall. The amount of displacement across the fault is unknown, but it is notable that the banded anhydrite unit is about 50-65 percent thinner than in other exploratory wells drilled in the vicinity of ERDA-6.

#### Rock Deformation

Complex deformation of rock salt and anhydrite at ERDA-6 is documented by the irregular stratigraphic section caused by faulting, the schistosity and shear folds in rock salt, and the breccia and vein-filled fractures in banded anhydrite. These features also provide guides to the identification of the nature, magnitude, and timing of that deformation. Structurally, all the rocks at ERDA-6 are higher in elevation than anticipated at the start of drilling, and their elevated position is attributed to the emplacement of Castile salt and anhydrite in the Salado Formation at a height of several hundred feet above their normal stratigraphic level. The emplacement has involved salt movement and accumulation in a swell or mound sufficiently thick at ERDA-6 to uplift in a pronounced arch or anticline at least 2,400 feet of strata ranging from Permian through Triassic in age. The stratigraphic relationship of the Castile and Salado to this anticline indicates episodic salt movement during Permian time, and it is inferred that the movement was due to updip sediment loading before dewatering of Castile salt was completed. Evidence to the upper limit of salt movement is lacking at ERDA-6. Elsewhere, on the ERDA-6 structure, however, the uplift and arching of Triassic rocks by salt movement was completed before deposition of the Ogallala Formation of Pliocene age. The Ogallala along the crest of the structure is flat-lying and undeformed but truncates uplifted and eroded Triassic rocks.

#### Potash Resources

Interest in potash resources centers around two possible products; sylvite and langbeinite. Both are present in ERDA-6, and both occur with a variety of evaporite minerals to form mineralogically complex deposits at 1,325-1,330, 1,346-1,349, 1,549-1,553, and 1,556-1,561 feet below land surface. Chemical analyses of the deposits are reported in table 6; and the modal mineral content of the deposits is listed in table 7. The analytical results show that the deposits at 1,325-1,330, 1,549-1,553, and 1,556-1,561 feet meet the minimum standards of thickness (4 ft) and quality (10 percent  $K_2O$  as sylvite or 4 percent  $K_2O$  as langbeinite) used by the U.S. Geological Survey for delineation of lands valuable for potash resources.

#### Geologic Constraints

The geologic constraints for a repository site revealed by ERDA-6 include a complex structure involving uplift and faulting of salt beds and associated anhydrite and the presence of a reservoir of geopressured brine containing entrapped  $H_2S$  and  $CH_4$ . The complexity of the structure would place severe geologic constraints on the design and construction of any mine or underground storage facility; whereas, the brine and entrapped gases could pose a threat to the safety and health of workers building and operating an underground facility, as well as make the integrity of the facility questionable.

#### Lithology

Lithologic descriptions of drill cuttings and cores from ERDA-6 are tabulated herein (table 8). The descriptions for the depth intervals from which only drill cuttings were obtained have been interpreted and correlated with available geophysical logs to graphically portray the lithology of individual units shown on figure 2.

Table 6.--Mineralogical and chemical analyses of core samples from ERDA-6

[oz, ore zone; MB, marker bed; tr, trace; Bl, bloedite; Ha, halite; Ka, kainite; Ki, kieserite; La, langbeinite; Le, leonite; Lo loewite; Po, polyhalite; Sy, sylvite]

Rock unit	Depth interval Feet	Thickness Feet	Mineralogy <sup>1</sup> X-ray diffraction analysis <sup>2</sup>	Chemical analysis (weight percent) <sup>3</sup>								
				Ca	Mg	K	Na	Cl	SO <sub>4</sub>	LOI <sup>4</sup>	Water insoluble	Σ
11th oz	1,324.67-1,325.30	0.63	>8 Ha; 1 Sy; <1 Po	0.4	0.23	1.89	36.50	58.88	0.30	5.28	0.69	104.18
	1,325.30-1,326.00	.70	>6 Ha; 3 Sy; <1 Ka	.19	.88	12.60	27.15	54.00	1.53	1.97	.9	99.22
	1,326.00-1,326.50	.50	7 Ha; 1 La; 2 Sy	.10	2.83	16.27	20.55	44.38	9.17	.39	.12	93.81
	1,326.50-1,326.90	.40	>7 Ha; 2 Sy; <1 La; Po; tr Ki	.04	1.12	14.86	25.37	54.00	3.51	.62	.24	99.76
	1,326.90-1,327.15	.25	>6 Sy; 2 Ha; 1 Ki; <1 Ka	.04	3.05	28.06	11.42	41.75	8.54	2.86	.94	96.66
	1,327.15-1,327.45	.30	>7 Ha; 1 Ka, Sy; tr Ki	.36	4.37	10.13	20.18	43.25	12.02	9.14	1.14	100.59
	1,327.45-1,327.80	.35	>4 Ha, Ka; <1 Ki, Sy	.06	8.86	10.29	9.49	28.88	18.91	17.4	3.21	97.10
	1,327.80-1,328.30	.50	>8 Ha; 1 Ka; <1 Sy; tr Ki	.04	4.81	10.54	18.77	40.13	11.39	9.39	1.95	97.02
	1,328.30-1,328.90	.60	>4 Ha, Sy; <1 Ka	.32	2.38	19.84	17.66	48.25	3.89	2.98	3.95	99.27
	1,328.90-1,329.80	.90	>9 Ha; <1 Sy	.16	2.41	2.22	31.75	53.88	.93	2.98	8.38	102.71
	Salt bed between MB 117 and MB 118	1,346.16-1,346.80	.64	>9 Ha; tr Sy, Po	.31	.21	1.63	36.72	58.88	.66	.43	1.25
1,346.80-1,347.45		.65	>9 Ha; <1 Sy	.13	.71	2.36	35.31	57.50	.54	.73	2.58	99.86
1,347.45-1,348.00		.55	5 Ha; 3 Ka; 1 Sy, Le	.03	4.70	10.46	16.47	33.50	16.84	10.8	1.71	94.51
1,348.00-1,349.00		1.00	>8 Ha; 1 Ka; tr Sy, Le	.39	3.68	5.16	25.30	44.25	10.46	5.82	5.17	100.23
1,349.00-1,349.24		.24	>9 Ha; tr Po, Sy	.56	1.65	1.16	32.94	48.75	1.98	1.37	4.65	93.06
19 Salt bed between 4th and 3rd oz	1,548.75-1,549.15	.40	>9 Ha; 1 Bl; tr Ka, Po, Sy	.28	1.17	1.14	33.98	54.63	4.64	2.11	2.75	100.70
	1,549.15-1,549.70	.55	>9 Ha; <1 Po	.21	.45	.62	37.17	59.25	.87	.48	.32	99.37
	1,549.70-1,530.00	.30	4 Bl; 3 Ha; 2 Ka; 1 La	.14	5.52	5.90	17.58	26.50	26.37	11.1	.32	93.43
	1,550.00-1,551.46	1.46	5 La; >4 Ha; <1 Sy; tr Po	.17	6.45	10.37	16.91	26.13	30.26	.77	.21	91.27
	1,551.46-1,552.60	1.14	>9 Ha; 1 Bl; tr Po, Sy	.64	1.71	1.98	31.23	49.13	10.28	3.96	1.17	99.00
	1,552.60-1,553.05	.45	>9 Ha; tr Ka, Sy	.29	3.06	2.51	29.68	49.63	1.74	3.52	8.20	98.63
3rd oz	1,555.50-1,556.50	1.00	>9 Ha; tr Bl, Po, Sy	.10	.81	.34	36.28	56.50	3.96	1.20	1.96	101.15
	1,556.50-1,556.95	.45	>8 Ha; <1 Bl, Po; tr Ka, Sy	.44	1.78	1.66	31.16	48.50	11.50	4.40	1.50	100.94
	1,556.95-1,557.45	.50	>9 Ha; <1 Ka; tr La	.04	2.02	2.20	32.05	52.63	2.52	3.11	1.66	96.23
	1,557.45-1,558.30	.85	>5 Ha; 4 La; tr Bl, Ka	.04	6.39	9.55	17.73	28.25	29.39	2.23	.33	93.91
	1,558.30-1,559.10	.80	7 La; 3 Ha	.06	8.20	12.86	11.72	19.38	23.31	.23	.31	76.07
	1,559.10-1,559.40	.30	7 Lo; 2 Ha; 1 La	.13	6.51	3.56	18.69	19.75	22.05	7.82	.11	78.62
	1,559.40-1,560.00	.60	8 Ha; 2 Lo; tr La, Po	.07	2.11	.22	32.49	46.88	6.62	3.06	.61	92.06
	1,560.00-1,560.60	.60	7 Ha; 2 Lo; <1 La, Po	.11	1.62	.31	34.42	49.63	5.39	2.29	.61	94.38
	1,560.60-1,561.13	.53	>9 Ha; <1 Po; tr Lo, La, Sy	.19	1.11	.52	36.87	59.25	.75	.94	.62	100.25

<sup>1</sup>Analyst: B. M. Madsen, USGS, Denver, Colo.

<sup>2</sup>Estimate of amount reported on a scale of 0-10.

<sup>3</sup>Analysts: W. Mountjoy, V. E. Shaw, T. L. Yager, I. C. Frost, E. Engleman, and V. Smith, USGS, Denver, Colo.

<sup>4</sup>Loss on ignition 0-350° C.

Table 7.--Calculated mode (mineral content) and potash (K<sub>2</sub>O) distribution by mineral

[oz, ore zone; MB, marker bed; B1, bloedite; Ha, halite; Ka, kainite; Ki, kieserite; La, langbeinite; Le, leonite; Lo, loeweite; Po, polyhalite; Sy, sylvite; leaders (---), not present]

Rock unit	Depth interval Feet	Thickness Feet	Mode (weight percent)													K <sub>2</sub> O distribution (weight percent)				
			Sy	La	Ka	Le	B1	Lo	Ki	Po	Ha	Insol- uble	H <sub>2</sub> O	Σ	Sy	La	Ka	Le	Po	Σ
11th oz	1,324.67-1,325.30	0.63	3.5	---	---	---	---	---	---	0.5	94.3	0.7	5.6	104.6	2.2	---	---	---	0.1	2.3
	1,325.30-1,326.00	.70	23.2	---	1.6	---	---	---	---	1.4	70.4	.9	.3	97.8	14.7	---	0.3	---	.2	15.2
	1,326.00-1,326.50	.50	26.3	12.5	---	---	---	---	---	.7	52.5	.1	.3	92.4	16.6	2.8	---	---	.1	19.5
	1,326.50-1,326.90	.40	26.9	3.8	---	---	---	---	1.0	.3	67.9	.2	.5	100.6	17.0	.9	---	---	<.1	17.9
	1,326.90-1,327.15	.25	50.4	---	9.9	---	---	---	6.5	.2	26.9	.9	---	94.8	31.8	---	1.9	---	<.1	33.8
	1,327.15-1,327.45	.30	11.0	---	27.2	---	---	---	1.7	.2	56.2	1.1	3.4	100.8	6.9	---	5.2	---	<.1	12.2
	1,327.45-1,327.80	.35	6.9	---	41.5	---	---	---	3.4	.8	32.3	3.2	8.6	96.7	4.4	---	8.0	---	<.1	12.4
	1,327.80-1,328.30	.50	13.5	---	21.4	---	---	---	4.0	.7	50.5	1.9	4.5	96.6	8.5	---	4.1	---	.1	12.7
	1,328.30-1,328.90	.60	35.4	---	6.0	---	---	---	---	2.4	50.3	4.0	1.6	99.7	22.4	---	1.2	---	.3	23.9
1,328.90-1,329.80	.90	3.9	---	---	---	---	---	---	2.4	85.7	8.4	2.9	103.3	2.4	---	---	---	.3	2.7	
Salt bed between MB 117 and MB 118	1,346.16-1,346.80	.64	2.8	---	---	---	---	---	---	1.0	94.8	1.3	.4	100.3	1.8	---	---	---	.2	2.0
	1,346.80-1,347.45	.65	4.3	---	---	---	---	---	---	1.0	91.4	2.6	.5	99.8	2.7	---	---	---	.2	2.9
	1,347.45-1,348.00	.55	6.9	---	33.9	6.5	---	---	---	.2	41.7	1.7	2.6	93.5	4.4	---	6.5	1.7	<.1	12.6
	1,348.00-1,349.00	1.00	2.4	---	20.7	.9	---	---	---	2.9	66.0	5.2	1.3	99.4	1.5	---	4.0	.2	.5	6.2
1,349.00-1,349.24	.24	1.5	---	---	---	---	---	---	3.1	83.8	4.7	1.2	94.3	.9	---	---	---	.5	1.4	
Salt bed between 4th and 3d oz	1,548.75-1,549.15	.40	.4	---	2.3	---	2.2	---	---	2.5	89.0	2.8	.8	100.5	.3	---	.5	---	.4	1.2
	1,549.15-1,549.70	.55	.9	---	---	---	---	---	---	1.3	96.8	.3	.4	99.7	.6	---	---	---	.2	.8
	1,549.70-1,550.00	.30	---	22.5	9.5	---	11.0	---	---	1.1	41.4	.3	6.7	92.5	---	5.1	1.8	---	.2	7.1
	1,550.00-1,551.46	1.46	4.2	42.4	---	---	---	---	---	1.3	43.0	.2	.7	91.8	2.6	9.6	---	---	.2	12.4
	1,551.46-1,552.60	1.14	2.3	---	1.1	---	11.9	---	---	4.8	78.9	.1	.9	100.0	1.5	---	.2	---	.7	2.4
1,552.60-1,553.05	.45	4.0	---	1.0	---	---	---	---	2.1	78.5	8.2	3.2	97.0	2.5	---	.2	---	.3	3.0	
3d oz	1,555.50-1,556.50	1.00	.5	---	---	---	6.0	---	---	.7	92.8	2.0	---	102.0	.3	---	---	---	.1	.4
	1,556.50-1,556.95	.45	.3	---	6.8	---	11.6	---	---	3.3	78.1	1.5	.3	101.9	.2	---	1.3	---	.5	2.0
	1,556.95-1,557.45	.50	---	---	13.5	---	---	---	---	.3	85.3	1.7	.3	101.2	---	---	2.6	---	<.1	2.6
	1,557.45-1,558.30	.85	---	41.9	10.0	---	---	---	---	.3	44.2	.3	.2	96.9	---	9.5	1.9	---	.1	11.4
	1,558.30-1,559.10	.80	---	68.0	---	---	---	---	---	.4	31.9	.3	.2	100.8	---	15.4	---	---	.1	15.5
	1,559.10-1,559.40	.30	---	18.2	---	---	---	41.9	---	1.0	32.6	.1	2.0	95.8	---	4.1	---	---	.2	4.3
	1,559.40-1,560.00	.60	---	.8	---	---	---	9.0	---	.5	79.4	.6	1.8	92.1	---	.2	---	---	<.1	.2
	1,560.00-1,560.60	.60	---	1.0	---	---	---	6.5	---	.8	85.2	.6	1.3	95.4	---	.2	---	---	.1	.3
1,560.60-1,561.13	.53	.5	.5	---	---	---	3.0	---	1.4	93.7	.6	.6	100.1	.3	.1	---	---	.2	.6	

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6  
 [Color designations are from the Rock-Color Chart (Goddard and others, 1948)  
 depth interval refers to depth reported by driller. No sample designates  
 interval where drill cuttings or core were not recovered during drilling  
 operations]

Lithologic description	Depth interval Feet
Sand, light-brown (5 YR 5/6) to moderate-yellowish-brown (10 YR 5/4), fine- to medium-grained, unconsolidated-----	0- 10.0
Caliche, white (N9) to very light gray (N8), finely crystalline, porous, chalky, sandy-----	10.0- 20.0
Sandstone, yellowish-gray (5Y 7/2) to light-brown (5YR 5/6), fine- to medium-grained; impregnated with white, chalky caliche-----	20.0- 55.0
Sandstone, dark-reddish-brown (10R 3/4), very fine grained, silty-----	55.0- 70.0
Sandstone, moderate-reddish-brown (10R 4/6), medium-grained, friable-----	70.0- 75.0
Siltstone, dark-reddish-brown (10R 3/4)-----	75.0- 95.0
Siltstone, dark- to moderate-reddish-brown (10R 3/4-10R 4/6); contains greenish-gray (5GY 6/1) reduction spots-----	95.0-135.0
Sandstone, moderate-reddish-brown (10R 4/6), very fine to medium-grained-----	135.0-140.0
Sandstone (50 percent), same as above; siltstone (50 percent), moderate-reddish-brown (10R 4/6), contains greenish-gray (5GY 6/1) reduction spots-----	140.0-145.0
Siltstone, moderate-reddish-brown (10R 4/6), clayey-----	145.0-160.0
Sandstone, pale- to moderate-reddish-brown (10R 5/4-10R 4/6), fine- to medium-grained; contains abundant coarse, well-rounded, frosted grains of quartz-----	160.0-165.0
Siltstone, moderate-reddish-brown (10R 4/6), contains greenish-gray (5GY 6/1) reduction spots-----	165.0-175.0
Siltstone, same as above; mudstone, moderate-reddish-brown (10R 4/6), contains greenish-gray (5GY 6/1) reduction spots-----	175.0-185.0
Mudstone, moderate-reddish-brown (10R 4/6), contains greenish-gray (5GY 6/1) reduction spots-----	185.0-195.0
Siltstone and mudstone, moderate-reddish-brown (10R 4/6), contains greenish-gray (5GY 6/1) reduction spots; platy fragment of white (N9), fibrous selenite at 200-205 feet-----	195.0-235.0
Siltstone, moderate-reddish-brown (10R 4/6), contains greenish-gray (5GY 6/1) reduction spots; platy fragments of white (N9), fibrous selenite throughout interval-----	235.0-270.0
Mudstone and siltstone, moderate-reddish-brown (10R 4/6), contains greenish-gray (5GY 6/1) reduction spots-----	270.0-280.0
Siltstone, moderate-reddish-brown (10R 4/6), contains greenish-gray (5GY 6/1) reduction spots, platy fragments of white (N9), fibrous selenite-----	280.0-300.0

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Siltstone and mudstone, moderate-reddish-brown (10R 4/6), contains greenish-gray (5GY 6/1) reduction spots-----	300.0-335.0
Siltstone, moderate-reddish-brown (10R 4/6), contains greenish-gray (5GY 6/1) reduction spots; platy fragments of white (N9), fibrous selenite-----	335.0-340.0
Mudstone and siltstone, moderate-reddish-brown (10R 4/6), contains greenish-gray (5GY 6/1) reduction spots; platy fragments of white (N9) fibrous selenite-----	340.0-345.0
Siltstone, moderate-reddish-brown (10R 4/6); mudstone, pale-reddish-brown (10R 5/4)-----	345.0-350.0
Mudstone, pale-reddish-brown (10R 5/4), contains greenish-gray (5GY 6/1) reduction spots; platy fragments of white (N9) fibrous selenite-----	350.0-385.0
Siltstone, pale-reddish-brown (10R 5/4), contains greenish-gray (5GY 6/1) reduction spots; platy fragments of white (N9), fibrous selenite-----	385.0-390.0
Mudstone, pale-reddish-brown (10R 5/4), contains greenish-gray (5GY 6/1) reduction spots; platy fragments of white (N9), fibrous selenite-----	390.0-410.0
Siltstone, pale-reddish-brown (10R 5/4), contains greenish-gray (5GY 6/1) reduction spots; platy fragments of white (N9) fibrous selenite-----	410.0-425.0
Mudstone, pale-reddish-brown (10R 5/4), contains greenish-gray (5GY 6/1) reduction spots; platy fragments of white (N9) fibrous selenite-----	425.0-445.0
Siltstone, pale- to moderate-reddish-brown (10R 5/4-10R 4/6), contains greenish-gray (5GY 6/1) reduction spots; platy fragments of white (N9) fibrous selenite-----	445.0-455.0
Mudstone, pale- to moderate-reddish-brown (10R 5/4-10R 4/6), contains greenish-gray (5GY 6/1) reduction spots; platy fragments of white (N9) fibrous selenite-----	455.0-460.0
Mudstone and siltstone, moderate-reddish-brown (10R 4/6), contains greenish-gray (5GY 6/1) reduction spots; platy fragments of white (N9) fibrous selenite-----	460.0-475.0
Siltstone, pale- to moderate-reddish-brown (10R 5/4-10R 4/6), contains greenish-gray (5GY 6/1) reduction spots; platy fragments of white (N9) fibrous selenite-----	475.0-500.0
Siltstone, moderate-reddish-brown (10R 4/6), contains greenish-gray (5GY 6/1) reduction spots; platy fragments of white (N9) fibrous selenite-----	500.0-540.0
Anhydrite, very light to light-gray (N8-N7), finely crystalline, irregularly gypsiferous; gypsum, white to light-gray (N9-N7)-----	540.0-565.0

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Gypsum, white to light-gray (N9-N7), finely crystalline; mudstone, moderate-reddish-brown (10R 4/6), silty-----	565.0-570.0
Mudstone, pale- to moderate-reddish-brown (10R 5/4-10R 4/6), silty; contains light-gray (N7), finely crystalline gypsum at 575.0-580.0 feet-----	570.0-580.0
Gypsum, same as unit at 575.0-580.0 feet; dolomite, light- to medium-gray (N7-N6)-----	580.0-595.0
Gypsum, same as unit at 575.0-580.0 feet; dolomite, light- to medium-gray (N7-N6) mottled grayish-black (N2), finely crystalline, silty-----	595.0-600.0
Dolomite, light- to medium-gray (N7-N6), mottled grayish-black (N2), finely crystalline and fine-grained with a granular texture like a sandstone-----	600.0-620.0
Dolomite, same as above; gypsum, light- to medium-gray (N7-N6), finely crystalline-----	620.0-635.0
Gypsum, white to light-gray (N9-N7), finely crystalline; anhydrite, light- to medium-gray (N7-N6), finely crystalline -----	635.0-640.0
Anhydrite, light-gray (N7), finely crystalline-----	640.0-655.0
Anhydrite, same as above; white to light-gray (N9-N7), finely crystalline gypsum-----	655.0-660.0
No sample-----	660.0-680.0
Gypsum, white to light-gray (N9-N7), finely crystalline; abundant tabular crystals of glassy selenite-----	680.0-690.0
Gypsum, light- to medium-gray (N7-N5) finely crystalline; mudstone, medium-gray to grayish-red (N5-5R 4/2)-----	690.0-695.0
No sample-----	695.0-700.0
Gypsum, white and moderate-orange-pink (N9 and 10R 7/4), medium-crystalline; mudstone, pale-reddish-brown to pale-yellowish-brown (10R 5/4-10YR 6/2), silty; abundant tabular crystals of glassy selenite-----	700.0-705.0
No sample-----	705.0-710.0
Gypsum, white (N9), finely crystalline; abundant tabular crystals of glassy selenite-----	710.0-715.0
Gypsum, white (N9) and light- to medium-gray (N7-N5), finely crystalline; dolomite, very light to light-gray (N7-N5), finely crystalline, pitted-----	715.0-720.0
Dolomite, very light to light-gray (N7-N5), finely crystalline, pitted; cavities partially filled with glassy selenite at 735.0-740.0 feet; trace medium-light-gray mudstone at 735.0-740.0 feet-----	720.0-740.0
No sample-----	740.0-745.0
Anhydrite, white to light-gray (N9-N7), finely crystalline, gypsiferous; minor siltstone, pale-yellowish-brown to moderate-olive-brown (10YR 6/2-5Y 4/4), essentially unconsolidated-----	745.0-750.0

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Siltstone, moderate-brown to dark-yellowish-brown (5 <sub>YR</sub> 4/4-10 <sub>YR</sub> 4/2)-----	750.0-755.0
Siltstone, moderate- to dark-reddish-brown (10 <sub>R</sub> 4/6-10 <sub>R</sub> 3/4)-----	755.0-815.0
Halite, colorless, argillaceous; siltstone, same as above-----	815.0-835.0
Change from rock bit to diamond core bit	
Top of core-----	835.0
Halite, pale-pink (5 <sub>RP</sub> 8/2) to orange banded light-brown (5 <sub>YR</sub> 6/4) in seams about 0.2-0.3 foot thick, medium-crystalline, slightly argillaceous-----	835.0-836.2
Siltstone, light- to moderate-brown (5 <sub>YR</sub> 5/6-5 <sub>YR</sub> 4/4), strongly halitic at 836.2-841.4 feet-----	836.2-846.6
Halite, light-brown (5 <sub>YR</sub> 5/6), medium-crystalline, argillaceous and silty-----	846.6-852.4
Halite, white (N <sub>9</sub> ), medium-crystalline, slightly anhydritic-----	852.4-855.4
Halite, light-brown (5 <sub>YR</sub> 5/6), medium-crystalline, slightly to moderately argillaceous at short irregular intervals-----	855.4-862.5
Halite, light-gray to white (N <sub>7</sub> -N <sub>9</sub> ), medium-crystalline, very slightly anhydritic and argillaceous-----	862.5-868.7
No sample-----	868.7-901.5
Halite, brownish-gray (5 <sub>YR</sub> 4/1), medium-crystalline, argillaceous with abundant inclusions of dark-reddish-brown (10 <sub>R</sub> 3/4) clay-----	901.5-902.8
Mudstone, dark-reddish-brown (10 <sub>R</sub> 3/4); contains grayish-green (5 <sub>G</sub> 5/2) reduction spots, halitic-----	902.8-903.1
Halite, brownish-gray to pale-reddish-brown (5 <sub>YR</sub> 4/1-10 <sub>R</sub> 5/4), medium- crystalline, slightly argillaceous and anhydritic; brown clay parting at 905.7 feet-----	903.1-908.0
Polyhalite, dark-red (5 <sub>R</sub> 4/6-5 <sub>R</sub> 2/6), very finely crystalline, slightly halitic-----	908.0-908.3
Halite, brownish-gray (5 <sub>YR</sub> 4/1), medium-crystalline, argillaceous with clay content decreasing downward through unit-----	908.3-911.6
Halite, reddish-orange, medium-crystalline, slightly polyhalitic; 0.1-foot-thick layer of red polyhalite at 912.5 feet-----	911.6-912.7
Halite, brown, finely to medium-crystalline, argillaceous-----	912.7-913.1
Siltstone, moderate-brown (5 <sub>YR</sub> 3/4) and grayish-green (10 <sub>GY</sub> 5/2) halitic-----	913.1-919.9
Mudstone, moderate-brown (5 <sub>YR</sub> 3/4), halitic-----	919.9-921.0
Halite, red, medium-crystalline, slightly polyhalitic-----	921.0-923.5
Polyhalite, red, very finely crystalline, halitic-----	923.5-924.2
Halite, red, polyhalitic, medium-crystalline-----	924.2-925.0
Polyhalite, red, very finely crystalline-----	925.0-925.5

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, red, medium-crystalline, polyhalitic-----	925.5-926.7
Polyhalite, red, very finely crystalline, halitic-----	926.7-928.0
Halite, pale-orange, medium-crystalline, slightly polyhalitic-----	928.0-929.7
Polyhalite, red, very finely crystalline-----	929.7-929.9
Halite, brownish-gray to light-gray (5YR 4/1-N7), argillaceous with clay content decreasing downward through unit-----	929.9-933.0
No sample-----	933.0-936.5
Halite, light-orange, medium-crystalline, slightly polyhalitic-----	936.5-938.3
Halite, brownish-gray (5YR 4/1), medium-crystalline, argillaceous, clay parting at 938.3 feet-----	938.3-938.8
Halite, light-orange, medium-crystalline, slightly polyhalitic-----	938.8-940.8
Mudstone, grayish-green (10GY 5/2) and moderate- to dark-reddish-brown (10YR 4/6-10R 3/4), halitic and intruded by narrow halite veins-----	940.8-942.5
Halite, brownish-gray (5YR 4/1), medium-crystalline, argillaceous, slightly polyhalitic at 947.4-947.6 feet-----	942.5-947.6
Halite, light-orange, medium-crystalline, polyhalitic; few small remnants of primary halite crystals showing growth lines-----	947.6-956.8
Polyhalite, red, very finely crystalline, halitic-----	956.8-958.2
Mudstone, greenish-gray (5G 6/1); contains nodules of red polyhalite-----	958.2-958.4
Halite, light-orange and light-brownish-gray (5YR 6/1), medium- crystalline, very slightly polyhalitic throughout and slightly argillaceous-----	958.4-962.3
Halite, pale-brown to brownish-gray (5YR 5/2-5YR 4/1), medium-crystalline, argillaceous and contains clay partings at 962.5, 962.9, 964.1, and 964.6 feet; polyhalitic at 967.2-968.5 feet-----	962.3-968.5
Halite, pale-pink (5RP 8/2), medium-crystalline, very slightly polyhalitic---	968.5-970.3
Anhydrite, light- to medium-gray (N6-N5), very finely crystalline, essentially totally replaced by polyhalite at 970.3-970.8 feet; carries well-formed halite pseudomorphs after gypsum at 970.8-977.1 feet, and poorly formed laminae of magnesite at 977.1-982.1 feet-----	970.3-982.1
Magnesite, light-brownish-gray (5YR 6/1), very finely crystalline, anhydritic-----	982.1-983.0
Anhydrite, light- to medium-gray (N6-N5), slightly magnesitic, capped by halite lens 0.1 foot thick-----	983.0-984.3
Mudstone, dark-reddish-brown and grayish-green (10R 3/4-10GY 5/2)-----	984.3-985.0
Halite, brownish-gray (5YR 4/1), medium-crystalline, argillaceous with clay content decreasing downward through unit-----	985.0-988.2
Halite, pale-red (10R 6/2), medium- to coarse-crystalline, polyhalitic, seamlets of pale-red (10R 6/2) polyhalite at 990.4, 990.7, and 991.3 feet, and a 0.3-foot-thick seam of pale-red (10R 6/2) polyhalite at 992.4 feet-----	988.2-996.4

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
No sample-----	996.4-997.4
Halite, light-brownish-gray (5YR 6/1), medium-crystalline, very slightly argillaceous and polyhalitic-----	997.4-998.6
Halite, light-orange, medium-crystalline, slightly polyhalitic-----	998.6-1,000.3
Halite, brownish-gray (5YR 4/1), medium-crystalline, argillaceous, clay partings at top and base of unit-----	1,000.3-1,001.2
Halite, red, medium-crystalline, polyhalitic, slightly argillaceous at 1,001.2-1,001.6 feet-----	1,001.2-1,002.8
Halite, brownish-gray (5YR 4/1), medium-crystalline, argillaceous and slightly polyhalitic-----	1,002.8-1,004.0
Halite, light-brownish-gray (5YR 6/1), medium-crystalline, slightly polyhalitic and argillaceous-----	1,004.0-1,005.0
Halite, brownish-gray (5YR 4/1), medium-crystalline, argillaceous with clay content decreasing downward through unit; clay partings at 1,005.0 and 1,005.2 feet-----	1,005.0-1,006.8
Halite, light-brownish-gray (5YR 6/1) to pale-reddish-orange, medium- crystalline, slightly polyhalitic, very slightly argillaceous at top and base of unit-----	1,006.8-1,008.0
Halite, grayish-brown to brownish-gray (5YR 3/2-5YR 4/1), finely to medium-crystalline, argillaceous with clay content decreasing downward through unit, clay partings at 1,008.0, 1,008.3, and 1,008.7 feet-----	1,008.0-1,011.4
Halite, reddish-brown to pale-orange, medium-crystalline, polyhalitic throughout and slightly argillaceous at 1,011.4-1,012.3 feet, 0.1-foot- thick seam of light-orange polyhalite at 1,013.2 feet-----	1,011.4-1,014.5
Halite, light-brownish-gray (5YR 6/1), medium-crystalline, slightly argillaceous-----	1,014.5-1,015.3
Halite, reddish-orange, medium-crystalline, polyhalitic; isolated lenses of transparent halite up to 0.2 foot in diameter scattered irregularly through unit-----	1,015.3-1,020.5
Halite, grayish-green (5G 5/2) and orange, finely to medium-crystalline, slightly argillaceous and polyhalitic-----	1,020.5-1,021.4
Halite, orange, medium-crystalline, polyhalitic; 0.1-foot-thick seam of orange polyhalite underlain by clay parting at 1,025.2 feet-----	1,021.4-1,025.7
Halite, medium-gray and brownish-gray (N5-5YR 4/1), argillaceous; clay parting at 1,025.8 feet-----	1,025.7-1,025.9
Halite, red, medium-crystalline, polyhalitic; clay parting at 1,029.7 feet, 0.1-foot-thick seam of polyhalite at 1,030.0 feet-----	1,025.9-1,030.5

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, brown, greenish-gray (5G 6/1), and brownish-gray (5yr 4/1), finely to medium-crystalline, argillaceous with clay content decreasing downward through unit; clay partings at 1,030.5 and 1,031.6 feet-----	1,030.5-1,032.3
Halite, reddish-orange, medium-crystalline, slightly polyhalitic, clay parting at 1,034.1 feet-----	1,032.3-1,039.3
Halite, brownish-gray (5YR 4/1), medium-crystalline, argillaceous; 0.1-foot-thick seam of brown clay at 1,042.8 feet-----	1,039.3-1,042.8
Halite, orange, medium-crystalline, polyhalitic-----	1,042.8-1,046.5
Polyhalite, orange, very finely crystalline-----	1,046.5-1,046.7
Halite, pale-red, medium- to coarsely crystalline, slightly polyhalitic-----	1,046.7-1,049.9
Halite, brown, finely to medium-crystalline, strongly argillaceous; clay seams 0.1 foot thick at 1,050.6 and 1,051.1 feet-----	1,049.9-1,051.8
Halite, medium-gray and brownish-gray (N5-5YR 4/1), medium- to coarsely crystalline, argillaceous; clay parting at 1,052.8 feet-----	1,051.8-1,055.1
Halite, orange, finely and medium-crystalline, slightly polyhalitic and very slightly argillaceous-----	1,055.1-1,055.9
Halite, light-brownish-gray (5YR 6/1), medium-crystalline, very slightly argillaceous and polyhalitic-----	1,055.9-1,059.2
Halite, pale-orange, medium-crystalline, polyhalitic-----	1,059.2-1,060.0
Polyhalite, pale-red, very finely crystalline, halitic-----	1,060.0-1,060.9
Halite, pale-orange, medium-crystalline, polyhalitic-----	1,060.9-1,061.9
Halite, brownish-gray (5YR 4/1), medium-crystalline, slightly argillaceous---	1,061.9-1,062.9
Halite, light-orange, medium-crystalline, slightly polyhalitic-----	1,062.9-1,065.7
No sample-----	1,065.7-1,066.5
Halite, same as unit at 1,062.9-1,065.7 feet-----	1,066.5-1,069.1
Polyhalite, orange, very finely crystalline, halitic, few corroded remnants of light-gray (N7) anhydrite-----	1,069.1-1,069.9
Mudstone, grayish-green (5G 5/2), contains small nodules of orange polyhalite-----	1,069.9-1,070.2
Halite, brownish-gray (5YR 4/1), medium-crystalline, very slightly argillaceous-----	1,070.2-1,071.2
Halite, brownish-gray (5 YR 4/1) and brown, medium-crystalline, argillaceous-----	1,071.2-1,076.5
Halite, light-gray and white (N7 and N9), medium-crystalline, slightly argillaceous at 1,076.5-1,078.5 and 1,081.1-1,082.6 feet-----	1,076.5-1,082.6
Halite, white (N9), medium-crystalline, slightly polyhalitic-----	1,082.6-1,085.9
No sample-----	1,085.9-1,086.9
Halite, light-gray to white (N7-N9), medium-crystalline-----	1,086.9-1,088.2
Mudstone, moderate-brown (5YR 3/4), halitic, contains nodules of grayish-white anhydrite-----	1,088.2-1,088.7
Halite, brownish-gray (5YR 4/1), medium-crystalline, argillaceous-----	1,088.7-1,090.7
Mudstone, medium-bluish-gray (5B 5/1)-----	1,090.7-1,090.9

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Anhydrite, light- to medium-gray (N7-N6), very finely crystalline, contains well-formed halite pseudomorphs after gypsum in narrow layers, nodules of red polyhalite cut both anhydrite and halite pseudomorphs between 1,093.6 and 1,098.6 feet, crudely formed laminae of magnesite at 1,099.6-1,100.4 feet-----	1,090.9-1,100.4
Mudstone, medium-bluish-gray (5B 5/1)-----	1,100.4-1,100.8
Halite, pale-orange, medium-crystalline, polyhalitic; 0.1-foot-thick seam of medium-gray (N5) anhydrite at 1,101.2 and 1,101.4 feet-----	1,100.8-1,102.8
Polyhalite, red, very finely crystalline; 0.2-foot-thick base of halite capped by embayed remnants of medium-gray (N5) anhydrite at 1,103.4 feet-----	1,102.8-1,103.9
Halite, orange, medium-crystalline, polyhalitic-----	1,103.9-1,105.2
Polyhalite, orange, very fine grained-----	1,105.2-1,105.4
Halite, orange, medium-crystalline, polyhalitic-----	1,105.4-1,107.5
Polyhalite, orange, very finely crystalline; abundant embayed remnants of very light gray (N8) anhydrite-----	1,107.5-1,108.2
Halite, white (N9), medium-crystalline-----	1,108.2-1,109.6
Anhydrite, light-gray (N7), very finely crystalline, banded with layers of halite pseudomorphs after gypsum at 1,109.6-1,110.0 feet and laminae of light-gray (N7) clay at 1,110.5-1,110.9 feet-----	1,109.6-1,111.1
Polyhalite, red, very finely crystalline, many corroded remnants of light-gray (N7) anhydrite-----	1,111.1-1,113.5
Mudstone, light-gray (N7), small nodules of red polyhalite-----	1,113.5-1,113.6
Halite, reddish-orange, medium-crystalline, slightly polyhalitic-----	1,113.6-1,117.0
Halite, light-gray (N7), medium-crystalline, slightly argillaceous-----	1,117.0-1,117.7
Halite, reddish-orange, medium-crystalline, slightly polyhalitic; 0.1-foot-thick seam of red polyhalite at 1,121.0 feet-----	1,117.7-1,121.1
Halite, light-brown (5YR 6/4), medium-crystalline, slightly argillaceous; clay parting at 1,121.1 feet-----	1,121.1-1,121.4
Halite, light-brownish-gray (5YR 6/1), medium-crystalline, slightly polyhalitic-----	1,121.4-1,122.6
Halite, brownish-gray (5YR 4/1), medium-crystalline, argillaceous with clay content decreasing downward through unit-----	1,122.6-1,124.2
Halite, pale-orange, medium-crystalline, slightly polyhalitic-----	1,124.2-1,125.0
Halite, brown to brownish-gray (5YR 4/1), finely to medium-crystalline, argillaceous with clay content decreasing downward through unit-----	1,125.0-1,127.7
Halite, brown to brownish-gray (5YR 4/1), finely to medium-crystalline, argillaceous with clay content decreasing downward through unit-----	1,127.7-1,128.8
Halite, light-brownish-gray (5YR 6/1), finely and coarsely crystalline, slightly polyhalitic and argillaceous-----	1,128.8-1,131.4
Halite, brownish-gray (5YR 4/1), medium- to coarsely crystalline, argillaceous; clay parting at 1,132.6 feet-----	1,131.4-1,132.6
Halite, pale-red, medium- to coarsely crystalline, slightly polyhalitic-----	1,132.6-1,136.4

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, brownish-gray (5 <sub>YR</sub> 4/1), finely to coarsely crystalline, argillaceous; clay parting at 1,136.4 feet-----	1,136.4-1,137.6
Halite, light-orange to pale-red, coarsely crystalline, polyhalitic-----	1,137.6-1,142.2
Halite, white and light-gray (M9 and M7), finely to medium-crystalline, slightly argillaceous at 1,142.2-1,142.4 and 1,143.5-1,144.2 feet, clay parting at 1,142.4 feet; abundant nodules of red polyhalite at 1,144.7- 1,144.9 feet-----	1,142.2-1,145.2
Halite, brown, finely crystalline, argillaceous, clay parting at 1,145.2 feet-----	1,145.2-1,145.8
Mudstone, dark-reddish-brown (10 <sub>R</sub> 3/4)-----	1,145.8-1,146.1
Halite, brown, moderate- to coarsely crystalline, strongly argillaceous; 0.1-foot-thick seam of clay at 1,146.3 feet, sparse small nodules of red polyhalite-----	1,146.1-1,148.4
Halite, light-gray (M7) and orange, medium- and coarsely crystalline, slightly argillaceous and polyhalitic-----	1,148.4-1,152.4
Halite, light-orange, medium-crystalline, polyhalitic; seams of orange polyhalite 0.1 foot thick at 1,153.0 feet and 0.2 foot thick at 1,154.1 feet-----	1,152.4-1,155.1
Halite, brownish-gray (5 <sub>YR</sub> 4/1), finely to medium-crystalline, argillaceous-----	1,155.1-1,155.9
Halite, light-brownish-gray (5 <sub>YR</sub> 6/1), medium-crystalline, slightly polyhalitic but contains prominent nodules of orange polyhalite at 1,157.0-1,158.7 feet-----	1,155.9-1,161.5
Polyhalite, orange, very finely crystalline-----	1,161.5-1,161.8
Halite, light-brownish-gray (5 <sub>YR</sub> 6/1), medium-crystalline, very slightly polyhalitic-----	1,161.8-1,164.4
Halite, brownish-gray (5 <sub>YR</sub> 4/1), medium-crystalline, argillaceous-----	1,164.4-1,164.7
Halite, orange, medium-crystalline, polyhalitic-----	1,164.7-1,166.3
Halite, grayish-green and brownish-gray (5 <sub>G</sub> 5/2-5 <sub>YR</sub> 4/1), finely crystalline, strongly argillaceous; clay parting at 1,168.0 feet, slightly polyhalitic---	1,166.3-1,168.4
Halite, orange, medium-crystalline-----	1,168.4-1,169.0
Halite, brownish-gray (5 <sub>YR</sub> 4/1), medium-crystalline, argillaceous and slightly polyhalitic-----	1,169.0-1,170.1
Halite, light-brownish-gray (5 <sub>YR</sub> 6/1), medium-crystalline, slightly polyhalitic-----	1,170.1-1,172.5
Halite, brown to brownish-gray (5 <sub>YR</sub> 4/1), finely to medium-crystalline, argillaceous with clay content decreasing downward through unit; 0.1 foot-thick seam of clay at 1,172.5 feet-----	1,172.5-1,176.3
Halite, red, medium-crystalline, slightly polyhalitic but contains prominent nodules of red polyhalite at 1,176.9-1,177.1 feet-----	1,176.3-1,178.9
Polyhalite, red, very finely crystalline, underlain by 0.1-foot-thick seam of light-gray (M7) clay-----	1,178.9-1,180.2

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, light-gray and brownish-gray (N7-5YR 4/1), medium- to coarsely crystalline, argillaceous-----	1,180.2-1,184.5
Halite, orange, medium-crystalline, polyhalitic-----	1,184.5-1,187.5
Halite, light-gray and light-brownish-gray (N7-5YR 6/1), medium to coarsely crystalline, slightly polyhalitic and argillaceous; clay parting at 1,188.3 feet-----	1,187.5-1,189.7
Halite, white and orange (N9) medium- to coarsely crystalline, polyhalitic with prominent nodules of orange polyhalite at 1,191.2-1,191.6 feet; small lenses of transparent halite dotted through unit-----	1,189.7-1,192.2
Halite, brown, finely to medium-crystalline, strongly argillaceous, clay parting at 1,193.5 and 1,194.0 feet-----	1,192.2-1,194.0
Halite, light-brownish-gray (5YR 6/1), medium-crystalline, slightly polyhalitic-----	1,194.0-1,196.9
Polyhalite, pale-red (10R 6/2), very finely crystalline-----	1,196.9-1,197.1
Mudstone, greenish-gray (5GY 6/1)-----	1,197.1-1,197.2
Halite, light-gray (N7), medium-crystalline, very slightly argillaceous-----	1,197.2-1,198.7
Halite, light-brownish-gray (5YR 6/1), medium- to coarsely crystalline, very slightly polyhalitic-----	1,198.7-1,200.2
Halite, very light gray (N8), coarsely crystalline, very slightly argillaceous in 0.1-0.3-foot seams at intervals of 0.8-1.2 feet-----	1,200.2-1,207.8
Halite, very light gray and brownish-gray (N8 and 5YR 4/1), medium- to coarsely crystalline, argillaceous; clay partings at 1,207.8 and 1,208.1 feet-----	1,207.8-1,208.8
Halite, brownish-gray and very light gray (5YR 4/1 and N8), medium-crystalline and coarsely crystalline, argillaceous and polyhalitic; prominent nodules of argillaceous polyhalite at 1,210.3-1,210.5 feet-----	1,208.8-1,210.5
Halite, pale-orange, medium- to coarsely crystalline, polyhalitic-----	1,210.5-1,212.6
Halite, brownish-gray and light-brownish-gray (5YR 6/1-5YR 4/1), medium-crystalline, slightly argillaceous-----	1,212.6-1,214.2
Halite, orange, medium- and finely crystalline, polyhalitic, very slightly argillaceous at 1,215.2-1,216.5 feet-----	1,214.2-1,216.5
Halite, brownish-gray (5YR 4/1), finely and medium-crystalline, very slightly argillaceous, and polyhalitic-----	1,216.5-1,217.7
Halite, moderate-brown and light-gray (5YR 3/4- N7), finely crystalline, strongly argillaceous; clay partings at 1,217.7 and 1,219.3 feet, prominent nodules of orange polyhalite at 1,218.4-1,218.6 feet-----	1,217.7-1,219.4
Halite, brownish-gray (5YR 4/1), medium-crystalline, slightly argillaceous and polyhalitic-----	1,219.4-1,221.1
Halite, orange, medium-crystalline, slightly polyhalitic, very slightly argillaceous at 1,221.1-1,222.0 feet-----	1,221.1-1,224.9
Polyhalite, pale-orange, very finely crystalline-----	1,224.9-1,225.2
Halite, orange, medium-crystalline, slightly polyhalitic-----	1,225.2-1,225.6

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Polyhalite, red to orange, very finely crystalline, halitic-----	1,225.6-1,226.1
Halite, orange, medium-crystalline, slightly polyhalitic-----	1,226.1-1,226.3
Polyhalite, pale-red (10R 6/2), very finely crystalline, halitic-----	1,226.3-1,226.9
Halite, light-brownish-gray (5YR 6/1), medium-crystalline, very slightly polyhalitic-----	1,226.9-1,228.2
Halite, brownish-gray (5YR 6/1) and brown, finely to coarsely crystalline, argillaceous; clay partings at 1,228.2 and 1,228.6 feet-----	1,228.2-1,229.7
Halite, red, medium- and coarsely crystalline, slightly polyhalitic but contains a few prominent nodules of red polyhalite at 1,233.5-1,234.5 feet-----	1,229.7-1,234.5
Polyhalite, pale-orange, very finely crystalline-----	1,234.5-1,235.0
Halite, orange, medium-crystalline, slightly polyhalitic; 0.1-foot-thick seam of red polyhalite at 1,235.4 feet; very slightly argillaceous at 1,235.9-1,236.0 feet-----	1,235.0-1,236.4
Halite, brownish-gray (5YR 4/1), medium-crystalline, slightly argillaceous---	1,236.4-1,237.1
Halite, orange, medium-crystalline, slightly polyhalitic; lenses of trans- parent, very coarsely crystalline halite in lower half of unit-----	1,237.1-1,239.7
Polyhalite, moderate-orange-pink (10R 7/4), very finely crystalline, halitic-----	1,239.7-1,239.9
Halite, reddish-orange, medium-crystalline, slightly polyhalitic; lenses of transparent, very coarsely crystalline halite at 1,241.8-1,242.1 feet----	1,239.9-1,242.6
Halite, brownish-gray and light-brownish-gray (5YR 4/1-5YR 6/7), medium- crystalline, argillaceous; clay partings at 1,244.1 and 1,244.3 feet; prominent nodules of red polyhalite at 1,244.8-1,245.1 feet-----	1,242.6-1,246.2
Halite, reddish-orange, medium-crystalline, polyhalitic throughout but prominent nodules of red polyhalite at 1,246.2-1,246.5 and 1,247.0-1,247.5 feet-----	1,246.2-1,247.5
Halite, brownish-gray (5YR 4/1), finely and medium-crystalline, strongly argillaceous; clay parting at 1,247.5 feet-----	1,247.5-1,248.2
Halite, light-brownish-gray (5YR 6/1), medium- to coarsely crystalline, slightly argillaceous and polyhalitic-----	1,248.2-1,253.1
Halite, pale-pink and orange, coarsely and medium-crystalline, polyhalitic with prominent nodules of red polyhalite at 1,254.5-1,255.0 and 1,255.4- 1,255.7 feet-----	1,253.1-1,256.1
Polyhalite, red, very finely crystalline-----	1,256.1-1,256.3
Halite, orange, medium-crystalline, slightly polyhalitic-----	1,256.3-1,256.8
Polyhalite, red, very finely crystalline, halitic-----	1,256.8-1,257.2
Halite, light-brownish-gray (5YR 6/1), very light gray and grayish-green (M8 and 5GY 6/1), coarsely to finely crystalline, slightly argillic and polyhalitic; clay parting at 1,262.2 feet-----	1,257.2-1,262.4
Halite, reddish-orange, medium-crystalline, polyhalitic-----	1,262.4-1,268.7
Polyhalite, moderate-orange-pink (10R 7/4), very finely crystalline, halitic-----	1,268.7-1,269.6

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, orange, medium-crystalline, strongly polyhalitic-----	1,269.6-1,270.0
Polyhalite, moderate-orange-pink to pale-red (11R 7/4-10R 6/2), very finely crystalline, corroded remnants of light-gray (N7) anhydrite-----	1,270.0-1,270.6
Halite, orange, medium-crystalline, slightly polyhalitic-----	1,270.6-1,270.8
Polyhalite, moderate-orange-pink (11R 7/4), very finely crystalline; grayish-green (5C 5/2) clay parting at 1,271.4 feet-----	1,270.8-1,271.4
Halite, orange to pale-red (10R 6/2), medium-crystalline, slightly polyhalitic-----	1,271.4-1,276.6
Halite, brown, finely and medium-crystalline, slightly polyhalitic-----	1,276.6-1,278.1
Mudstone, brown, silty, halitic, cut by vein of fibrous orange and white (N9) halite, 0.4 foot thick, at 1,278.3 feet-----	1,278.1-1,280.0
Halite, brown, finely crystalline, strongly argillaceous; seams of brown silty clay 0.3 foot thick at 1,280.7 feet, 0.2 foot thick at 1,281.4 feet, and 0.2 foot thick at 1,283.6 feet-----	1,280.0-1,284.8
Siltstone, brown, argillaceous and halitic-----	1,284.8-1,285.6
Halite, orange, medium- and finely crystalline, slightly polyhalitic, cut by siltstone-filled channel-----	1,285.6-1,286.3
Siltstone, brown, argillaceous, fills channel cutting into underlying halite	1,286.3-1,287.3
Halite, orange, medium- and coarsely crystalline, slightly polyhalitic; many lenses of transparent, very coarsely crystalline halite; clay parting at 1,291.5 feet-----	1,287.3-1,291.8
Polyhalite, pale-orange, very finely crystalline, strongly halitic-----	1,291.8-1,292.0
Halite, orange, medium-crystalline, slightly polyhalitic-----	1,292.0-1,293.6
Halite, brownish-gray (5YR 4/1), medium- and coarsely crystalline, argillaceous; clay partings at 1,293.6 and 1,294.3 feet-----	1,293.6-1,294.3
Halite, orange, medium-crystalline, slightly polyhalitic-----	1,294.3-1,295.8
Halite, brownish-gray and light-gray (5YR 4/1-N7), finely to coarsely crystalline, strongly argillaceous-----	1,295.8-1,297.8
Halite, orange, medium-crystalline, slightly polyhalitic-----	1,297.8-1,302.1
Halite, brownish-gray (5YR 4/1), medium-crystalline, slightly argillaceous---	1,302.1-1,302.5
Halite, orange, medium-crystalline, slightly polyhalitic-----	1,302.5-1,307.6
Halite, brownish-gray (5YR 4/1), medium-crystalline, slightly argillaceous--	1,307.6-1,307.9
Halite, orange, medium-crystalline, slightly polyhalitic-----	1,307.9-1,308.1
Halite, brown, finely to medium-crystalline, strongly argillaceous-----	1,308.1-1,308.8
Halite, orange, medium-crystalline, slightly polyhalitic with prominent nodules of red polyhalite at 1,310.1-1,310.2 feet-----	1,308.8-1,313.6
Polyhalite, pale-red (10R 6/2), very finely crystalline-----	1,313.6-1,313.8
Halite, orange, medium-crystalline, slightly polyhalitic-----	1,313.8-1,316.1
Halite, light-gray (N2) and brown, finely crystalline, strongly argillaceous	1,316.1-1,317.5
Mudstone, gray and brown-----	1,317.5-1,317.8
Halite, brownish-gray (5YR 4/1), medium-crystalline, argillaceous-----	1,317.8-1,318.2

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, reddish-orange and greenish-gray (5G 6/1), medium-crystalline, very slightly polyhalitic and argillaceous-----	1,318.2-1,320.9
Halite, reddish-orange, medium-crystalline, slightly polyhalitic, sparse crystals of red-rimmed white sylvite-----	1,320.9-1,324.7
Halite, very light gray (N8), medium-crystalline, slightly argillaceous-----	1,324.7-1,324.9
Halite, pale-orange and grayish-green (5G 5/2), medium- to coarsely crystalline, argillaceous and slightly polyhalitic; abundant crystals of white and red-rimmed white sylvite, isolated crystals of langbeinite rimmed with kainite, small nodular masses of white kieserite-----	1,324.9-1,328.7
Halite, brown, finely and medium-crystalline, strongly argillaceous; clay partings at 1,328.7 and 1,331.5 feet, rare crystals of red sylvite-----	1,328.7-1,331.5
Halite, pale-red (10R 6/2) to pale-orange, medium-crystalline, slightly polyhalitic; rare crystals of sylvite-----	1,331.5-1,340.7
Polyhalite, red, very finely crystalline, strongly halitic top 0.2 foot; few prominent crystals of red-rimmed, white sylvite at 1,341.0-1,341.3 feet-----	1,340.7-1,342.7
Mudstone, medium-bluish-gray (5B 5/1)-----	1,342.7-1,342.9
Halite, very light gray (N8), medium-crystalline, slightly argillaceous-----	1,342.9-1,343.2
Halite, reddish-orange and grayish-green (5G 5/2), medium-cystalline, slightly polyhalitic, very slightly argillaceous at 1,345.5-1,346.0 feet; few crystals of sylvite-----	1,343.2-1,346.8
Halite, light-gray (N7) and reddish-orange, finely to medium-crystalline, argillaceous; clay parting at 1,348.4 feet; disseminated crystals of red and red-rimmed white sylvite and nodular masses of light-brown (5YR 6/4) kainite-----	1,346.8-1,349.1
Halite, brownish-gray (5YR 4/1), medium-crystalline, argillaceous, rare crystals of red sylvite-----	1,349.1-1,351.0
Halite, pale-red (10R 6/2), medium-crystalline, slightly polyhalitic, sparse crystals of red sylvite-----	1,351.0-1,352.5
Halite, brownish-gray (5YR 4/1), medium-crystalline, slightly argillaceous----	1,352.5-1,353.0
Halite, reddish-orange and pale-red (10R 6/2), medium-crystalline, slightly polyhalitic, few crystals of red sylvite-----	1,353.0-1,355.0
Halite, light-gray (N7), medium-crystalline, argillaceous-----	1,355.0-1,355.6
Halite, pale-red (10R 6/2) to pale-orange, medium-crystalline, slightly polyhalitic, few crystals of red sylvite-----	1,355.6-1,359.0
Polyhalite, very pale orange (10YR 8/2), very finely crystalline, halitic----	1,359.0-1,360.2
Halite, very light gray (N8), medium-crystalline, argillaceous, capped by clay parting-----	1,360.2-1,360.9

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, pale-red (10R 6/2) to pale-orange, medium-crystalline, slightly polyhalitic-----	1,360.9-1,364.0
Polyhalite, very pale orange to white (10YR 8/2-N9), very finely crystalline, slightly halitic-----	1,364.0-1,364.2
Halite, pale-orange, medium-crystalline, slightly polyhalitic, few crystals of pink sylvite-----	1,364.2-1,365.2
Polyhalite, moderate-orange-pink (10R 7/4), very finely crystalline, slightly halitic-----	1,365.2-1,366.2
Halite, pale-orange and very light gray (N8), finely and medium-crystalline, slightly polyhalitic, very slightly argillaceous-----	1,366.2-1,368.6
Halite, light-gray (N7) grading to brown, finely and medium-crystalline, strongly argillaceous with clay content decreasing downward through unit; clay partings at 1,369.6, 1,369.8, and 1,372.7 feet; 0.2-foot-thick clay seam at 1,371.3 feet-----	1,368.6-1,372.7
Halite, pale-orange to reddish-orange, finely and medium-crystalline, polyhalitic-----	1,372.7-1,378.4
Polyhalite, red, very finely crystalline-----	1,378.4-1,379.4
Halite, light-gray (N7), finely to medium-crystalline, argillaceous; clay parting at 1,379.4 feet-----	1,379.4-1,380.2
Halite, pale-orange to pale-pink, medium-crystalline, slightly polyhalitic----	1,380.2-1,382.8
Halite, brownish-gray (5YR 4/1), medium-crystalline, slightly argillaceous----	1,382.8-1,384.1
Halite, pale-orange, medium-crystalline, very slightly polyhalitic-----	1,384.1-1,386.1
Halite, light-brownish-gray (5YR 6/1), medium-crystalline, very slightly argillaceous-----	1,386.1-1,387.7
Halite, moderate-orange-pink to very pale orange (10R 7/4-10YR 8/2), medium-crystalline, polyhalitic, very slightly argillaceous at 1,391.5-1,391.8 feet-----	1,387.7-1,392.1
Halite, grayish-green (5G 5/2) and brown, finely crystalline, strongly argillaceous; clay partings at 1,392.1 and 1,395.5 feet, few crystals of red sylvite at 1,392.1-1,392.6 feet-----	1,392.1-1,395.5
Halite, light-orange, medium-crystalline, polyhalitic with prominent nodules of reddish-orange polyhalite at 1,397.1-1,397.3 feet, few crystals of pink sylvite-----	1,395.5-1,397.6
Halite, grayish-green (5G 5/2), medium-crystalline, very slightly argillaceous-----	1,397.6-1,398.8
Halite, light-orange and very light gray (N8), medium-crystalline, slightly polyhalitic, very slightly argillaceous at 1,399.3-1,401.0 feet, clay partings at 1,399.3 and 1,399.9 feet-----	1,398.8-1,401.0

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6-Continued

Lithologic description	Depth interval Feet
Polyhalite, moderate-orange-pink (10R 7/4), very finely crystalline, halitic--	1,401.0-1,402.3
Halite, light-orange, medium-crystalline, slightly polyhalitic-----	1,402.3-1,403.2
Halite, light-gray (N7), finely crystalline, strongly argillaceous; clay parting at 1,403.9 feet-----	1,403.2-1,404.0
Halite, pale-red (10R 6/2) to light-orange, medium-crystalline, slightly polyhalitic, few crystals of pink to red sylvite at 1,404.0-1,404.8 feet---	1,404.0-1,406.2
Halite, light-gray (N7), medium-crystalline, argillaceous, clay parting at 1,406.3 feet-----	1,406.2-1,406.4
Halite, reddish-orange, medium-crystalline, slightly polyhalitic-----	1,406.4-1,406.9
Halite, light-gray and brownish-gray (N7-5YR 4/1), finely and medium- crystalline, strongly argillaceous with clay content decreasing downward through unit, very slightly polyhalitic-----	1,406.9-1,410.3
Halite, very light pink to orange, medium-crystalline, slightly polyhalitic---	1,410.3-1,413.3
Polyhalite, orange and dark-red, very finely crystalline, slightly halitic---	1,413.3-1,415.5
Mudstone, light-bluish-gray (5B 7/1), halitic-----	1,415.5-1,415.8
Halite, very light gray (N8), medium-crystalline, slightly argillaceous and polyhalitic-----	1,415.8-1,416.7
Halite, light-orange to light-pink, medium-crystalline, polyhalitic with prominent nodules of pale-red polyhalite at 1,420.2-1,420.3, and 1,421.8 feet-----	1,416.7-1,422.3
Polyhalite, pale-red (10R 6/2), very finely crystalline, slightly halitic-----	1,422.3-1,422.7
Halite, orange, medium-crystalline, slightly polyhalitic-----	1,422.7-1,423.5
Polyhalite, red, very finely crystalline-----	1,423.5-1,423.7
Halite, orange, medium-crystalline, slightly polyhalitic-----	1,423.7-1,424.1
Polyhalite, red, very finely crystalline-----	1,424.1-1,424.3
Halite, orange, medium-crystalline, polyhalitic-----	1,424.3-1,424.9
Halite, light-gray to very light gray (N7-N8), finely to medium-crystalline, argillaceous with clay content decreasing downward through unit-----	1,424.9-1,426.3
Halite, very light pink, medium-crystalline, very slightly polyhalitic-----	1,426.3-1,427.1
Halite, light-gray (N7), medium- and finely crystalline, argillaceous-----	1,427.1-1,427.6
Halite, very light pink and light-gray (N7), medium-crystalline, very slightly argillaceous and polyhalitic-----	1,427.6-1,429.3
Halite, light-gray to very light gray (N7-N8), finely to medium-crystalline, strongly argillaceous with clay content decreasing downward through unit; clay partings at 1,429.3 and 1,429.7 feet-----	1,429.3-1,430.9
Halite, pale-orange to very light pink, medium-crystalline, slightly polyhalitic-----	1,430.9-1,433.7
Halite, light-gray (N7) grading to brown, finely crystalline, strongly argillaceous-----	1,433.7-1,437.0

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, brown to light-gray (N7), medium-crystalline, argillaceous-----	1,437.0-1,439.2
Halite, pale-orange and light-gray (N7), medium-crystalline, slightly polyhalitic and argillaceous-----	1,439.2-1,440.8
Halite, medium-gray (N5), medium-crystalline, argillaceous-----	1,440.8-1,442.2
Halite, light-brown (5YR 6/4), medium-crystalline, polyhalitic-----	1,442.2-1,444.6
Anhydrite, light-gray (N7), very finely crystalline, contains prominent nodules and seams of moderate-orange-pink (10R 7/4) polyhalite at 1,444.6-1,445.4 and 1,447.6-1,449.8 feet, halitic throughout and slightly magnesitic at 1,450.7-1,453.8 feet-----	1,444.6-1,453.8
Halite, very light gray (N8), medium-crystalline, slightly argillaceous; clay partings at 1,453.8 and 1,454.9 feet-----	1,453.8-1,454.9
Halite, pale-pink, medium-crystalline, very slightly polyhalitic-----	1,454.9-1,457.1
Halite, very light gray (N8), finely and medium-crystalline, argillaceous, clay parting at 1,457.1 feet-----	1,457.1-1,459.0
Halite, white (N9) and pale-orange, medium-crystalline, slightly polyhalitic with polyhalite content increasing downward through unit-----	1,459.0-1,464.0
Halite, light-gray (N7) grading to brown, finely crystalline, strongly argillaceous; clay parting at 1,465.3 feet-----	1,464.0-1,465.9
Halite, orange, medium-crystalline, polyhalitic-----	1,465.9-1,466.4
Halite, light-gray (N7) and brown, finely crystalline, strongly argilla- ceous; clay partings at 1,466.4 and 1,468.0 feet-----	1,466.4-1,468.5
Halite, orange, medium-crystalline, strongly polyhalitic-----	1,468.5-1,469.0
Halite, brown, finely crystalline, strongly argillaceous; clay partings at 1,469.0 and 1,470.0 feet-----	1,469.0-1,470.2
Halite, orange, medium-crystalline, slightly polyhalitic-----	1,470.2-1,471.0
Halite, brown, finely crystalline, strongly argillaceous-----	1,471.0-1,471.6
Halite, orange to very light pink, medium-crystalline, slightly polyhalitic---	1,471.6-1,472.7
Halite, brown to brownish-gray (5YR 4/1), finely to medium-crystalline, strongly argillaceous with clay content decreasing downward through unit; clay partings at 1,472.7 and 1,473.4 feet-----	1,472.7-1,475.6
Halite, light-reddish-orange, medium-crystalline, slightly polyhalitic, few crystals of pink sylvite at 1,479.0-1,479.7 feet-----	1,475.6-1,479.7
Halite, brownish-gray (5YR 4/1), finely and medium-crystalline, argillaceous-----	1,479.7-1,480.0
Halite, very light pink to very light gray (N8), medium-crystalline, slightly argillaceous at 1,481.5-1,482.2 feet-----	1,480.0-1,482.2
Halite, pale-orange and white (N9), medium-crystalline, very slightly polyhalitic-----	1,482.2-1,487.8
Halite, light-gray (N7) and orange, medium-crystalline, slightly argillaceous; clay parting at 1,487.8 feet, very slightly polyhalitic-----	1,487.8-1,488.3

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, brownish-gray (5 <sub>YR</sub> 4/1), finely crystalline, strongly argillaceous----	1,488.3-1,488.7
Halite, light-gray (N7) and orange, finely and medium-crystalline, slightly argillaceous-----	1,488.7-1,490.2
Halite, very light pink to reddish-orange, medium-crystalline, slightly polyhalitic-----	1,490.2-1,493.5
Halite, light-gray to brownish-gray (N7-5 <sub>YR</sub> 4/1), finely and medium- crystalline, argillaceous; clay partings at 1,493.5 and 1,494.4 feet-----	1,493.5-1,494.9
Halite, orange and brownish-gray (5 <sub>YR</sub> 4/1), medium-crystalline, very slightly argillaceous and polyhalitic-----	1,494.9-1,496.1
Halite, brown, finely crystalline, strongly argillaceous-----	1,496.1-1,496.3
Halite, orange and brownish-gray (5 <sub>YR</sub> 4/1), finely and medium-crystalline, slightly argillaceous and polyhalitic-----	1,496.3-1,497.8
Halite, brownish-gray to light-gray (5 <sub>YR</sub> 4/1-N7), finely and medium- crystalline, very slightly argillaceous-----	1,497.8-1,500.2
Halite, pale-orange and white (N9), medium-crystalline, slightly polyha- litic but contains prominent nodules of pinkish-orange polyhalite at 1,500.2-1,501.2 feet-----	1,500.2-1,505.1
Halite, brownish-gray (5 <sub>YR</sub> 4/1), finely crystalline, argillaceous; clay parting at 1,505.1 feet-----	1,505.1-1,505.4
Halite, pale-orange and white (N9), medium-crystalline; lens of trans- parent, very coarsely crystalline halite, 0.3 foot thick at 1,506.4 feet----	1,505.4-1,506.8
Halite, brown and brownish-gray (5 <sub>YR</sub> 4/1), finely and medium-crystalline, argillaceous with clay content decreasing downward, very slightly polyhalitic at 1,508.0-1,511.2 feet-----	1,506.8-1,511.2
Halite, orange and white (N9) to pinkish-orange, medium-crystalline, polyhalitic with prominent nodules of pinkish-orange to very pale orange polyhalite at 1,516.7-1,517.7 feet-----	1,511.2-1,517.7
Polyhalite, light-gray (N7), finely crystalline, prominent corroded and embayed remnants of gray anhydrite, strongly halitic at 1,518.2-1,518.7, 1,520.7-1,521.0, and 1,522.0-1,523.0 feet-----	1,517.7-1,523.7
Halite, white and moderate-orange-pink (N9-10R7/4), medium-crystalline, polyhalitic-----	1,523.7-1,524.4
Polyhalite, moderate-orange-pink (10R 7/4), finely crystalline, slightly halitic-----	1,524.4-1,524.9
Halite, white (N9) and very pale orange, medium-crystalline, slightly polyhalitic but banded with polyhalite seamlets at intervals of 0.4-0.8 foot-----	1,524.9-1,529.4

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Anhydrite, light-gray (N7), finely crystalline, abundant halite pseudomorphs after gypsum at 1,529.4-1,532.7 feet, laminae of magnesite alternate with laminae of anhydrite pseudomorphs after gypsum at 1,532.7-1,536.8 feet, prominent nodules of red polyhalite replace anhydrite through part of the laminated rock-----	1,529.4-1,536.8
Mudstone, light-brownish-gray (5YR 6/1), strongly impregnated by nodules of red polyhalite-----	1,536.8-1,537.5
Halite, reddish-orange, medium-crystalline, polyhalitic-----	1,537.5-1,541.9
Halite, light-gray and brownish-gray (N7-5YR 4/1), finely to medium-crystalline, strongly argillaceous with clay content decreasing downward through unit, slightly polyhalitic at 1,542.2-1,543.4 feet-----	1,541.9-1,543.4
Halite, very light pink to light-reddish-orange, medium-crystalline, slightly polyhalitic-----	1,543.4-1,546.6
Halite, light-gray (N7), finely crystalline, slightly argillaceous-----	1,546.6-1,547.2
Mudstone, brownish-gray (5YR 4/1), strongly halitic-----	1,547.2-1,547.5
Halite, orange, medium-crystalline, strongly polyhalitic-----	1,547.5-1,548.8
Halite, light-gray (N7), finely and medium-crystalline, strongly argillaceous-----	1,548.8-1,549.1
Halite, orange, medium-crystalline, slightly polyhalitic, prominent nodules and crystals of langbeinite, kainite, and bloedite-----	1,549.1-1,552.6
Halite, brown, finely crystalline, strongly argillaceous-----	1,552.6-1,553.2
Halite, light-reddish-orange, medium-crystalline, polyhalitic-----	1,553.2-1,555.5
Halite, brownish-gray (5YR 4/1), medium-crystalline, argillaceous, small nodules of bloedite and crystals of sylvite-----	1,555.5-1,556.4
Halite, orange, medium-crystalline, polyhalitic, prominent crystals and nodules of kainite and bloedite-----	1,556.4-1,556.9
Halite, brownish-gray (5YR 4/1), finely and medium-crystalline, argillaceous, prominent nodules of kainite-----	1,556.9-1,557.4
Halite, very pale orange to reddish-orange, medium-crystalline, slightly polyhalitic, many prominent crystals and nodules of langbeinite and loewite-----	1,557.4-1,560.0
Halite, light-gray (N7), medium-crystalline, slightly argillaceous and polyhalitic, few crystals of loewite-----	1,560.0-1,561.8
Halite, very pale orange to reddish-orange, medium-crystalline, slightly polyhalitic-----	1,561.8-1,566.0
Halite, light-gray (N7), medium-crystalline, argillaceous-----	1,566.0-1,567.2
Halite, very pale orange to reddish-orange, medium-crystalline, slightly polyhalitic-----	1,567.2-1,571.0

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, brownish-gray (5YR 4/1), medium-crystalline, slightly argillaceous----	1,571.0-1,571.4
Halite, reddish-orange, medium-crystalline, slightly polyhalitic, conspicuous lenses of transparent, very coarsely crystalline halite at top and base of unit-----	1,571.4-1,572.3
Halite, brown and light-gray (N7), finely and medium-crystalline, strongly argillaceous; clay partings at 1,572.3, 1,572.9, and 1,574.3 feet, few lenses of transparent very coarsely crystalline halite-----	1,572.3-1,574.3
Halite, reddish-orange and white (N9), medium-crystalline, slightly polyhalitic-----	1,574.3-1,584.1
Mudstone, moderate-brown (5YR 3/4)-----	1,584.1-1,584.3
Halite, brown, finely crystalline, strongly argillaceous-----	1,584.3-1,585.0
Halite, light-gray (N7), medium- to coarsely crystalline, very slightly argillaceous-----	1,585.0-1,586.0
Halite, brownish-gray (5YR 4/1), finely crystalline, strongly argillaceous; clay parting at 1,586.0 feet-----	1,586.0-1,586.3
Halite, light-gray (N7), medium-crystalline-----	1,586.3-1,587.0
Halite, brownish-gray (5YR 4/1), finely and medium-crystalline, argillaceous and very slightly polyhalitic-----	1,587.0-1,592.5
Halite, light-gray (N7) to very light pink, medium-crystalline, very slightly polyhalitic and argillaceous-----	1,592.5-1,597.0
Halite, light-gray (N7), medium-crystalline, argillaceous-----	1,597.0-1,598.0
Halite, orange, medium-crystalline, polyhalitic, prominent lens of transparent, very coarsely crystalline halite at 1,598.5-1,599.1 feet-----	1,598.0-1,599.1
Halite, light-gray (N7) medium- to coarsely crystalline, argillaceous with clay content decreasing downward through unit-----	1,599.1-1,600.0
Halite, light-gray and brownish-gray (N7-5YR 4/1), finely and medium-crystalline, slightly argillaceous; clay parting at 1,600.0 feet-----	1,600.0-1,603.3
Halite, brownish-gray (5YR 4/1), medium-crystalline, prominent nodules of orange polyhalite, very slightly argillaceous-----	1,603.3-1,604.9
Halite, light-gray (N7) and brown, finely and medium-crystalline, strongly argillaceous; 0.1-foot-thick seam of brown mudstone at 1,605.1 feet, clay decreases downward through unit-----	1,604.9-1,608.8
Halite, very light gray (N8) to reddish-orange, medium-crystalline, slightly polyhalitic but contains prominent nodules of orange polyhalite at 1,611.3-1,612.9 feet-----	1,608.8-1,612.9
Mudstone, brown-----	1,612.9-1,613.0
Halite, very light pink to moderate-orange-pink (10R 7/4), medium-crystalline, very slightly polyhalitic-----	1,613.0-1,614.6

Table 8--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, brownish-gray (5YR 4/1), finely and medium-crystalline, strongly argillaceous-----	1,614.6-1,615.8
Halite, brownish-gray and light-gray (5YR 4/1-N7), medium-crystalline, very slightly argillaceous and polyhalitic-----	1,615.8-1,618.9
Halite, brown to light-brownish-gray (5YR 4/1), finely and medium-crystalline, strongly argillaceous-----	1,618.9-1,622.0
Halite, very light pink, medium-crystalline, slightly polyhalitic-----	1,622.0-1,623.9
Halite, brownish-gray (5YR 4/1), finely and medium-crystalline, slightly argillaceous and polyhalitic-----	1,623.9-1,631.0
Halite, light-reddish-orange, medium-crystalline, polyhalitic; 0.1-foot-thick seam of orange polyhalite at 1,634.3 feet-----	1,631.0-1,635.0
Polyhalite, pale-reddish-orange, very finely crystalline, strongly halitic---	1,635.0-1,635.7
Halite, very light gray (N8), medium-crystalline, slightly argillaceous and polyhalitic-----	1,635.7-1,636.3
Halite, very light pink to reddish-orange, medium-crystalline, very slightly polyhalitic with prominent nodules of orange polyhalite at 1,637.8-1,638.2 feet-----	1,636.3-1,638.2
Halite, very light gray (N8), medium-crystalline, argillaceous, capped by clay parting at 1,638.2 feet-----	1,638.2-1,639.0
Halite, white (N9) and pale-orange, medium-crystalline, slightly polyhalitic but contains prominent nodules of pinkish-orange polyhalite at 1,639.0-1,640.3 feet-----	1,639.0-1,647.7
Polyhalite, pale-reddish-orange, very finely crystalline, few embayed remnants of gray anhydrite at 1,648.2-1,648.5 feet, halitic-----	1,647.7-1,648.5
Halite, light-gray (N7), medium-crystalline, slightly argillaceous-----	1,648.5-1,649.4
Halite, pale-reddish-orange, medium-crystalline, polyhalitic with prominent nodules of orange polyhalite at 1,650.3-1,650.5, 1,651.1-1,651.6, and 1,651.9-1,652.0 feet-----	1,649.4-1,652.0
Halite, light-gray (N7) and orange, medium-crystalline, very slightly argillaceous at 1,652.0-1,652.5 and 1,653.1-1,654.1 feet, slightly polyhalitic-----	1,652.0-1,654.7
Halite, light-gray (N7) and brown, medium-crystalline, strongly argillaceous; clay partings at 1,654.7, 1,655.5, 1,656.8, 1,658.3, 1,659.5, and 1,659.8 feet-----	1,654.7-1,660.7
Mudstone, brownish-gray (5YR 4/1)-----	1,660.7-1,660.9
Halite, brown, medium-crystalline, strongly argillaceous-----	1,660.9-1,661.9
Halite, reddish-orange, medium-crystalline, polyhalitic-----	1,661.9-1,663.2
Halite, brown, finely crystalline, very strongly argillaceous; clay partings at 1,663.2, 1,663.7, 1,664.9, and 1,665.0 feet-----	1,663.2-1,665.1

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, white (N9) and reddish-orange, medium-crystalline, slightly polyhalitic, prominent nodules of red polyhalite at 1,667.9-1,668.2 and 1,669.0-1,670.0 feet-----	1,665.1-1,670.0
Polyhalite, red, very finely crystalline, few embayed remnants of light-gray (N7) anhydrite-----	1,670.0-1,671.5
Halite, brown grading to light-gray (N7), finely to medium-crystalline, strongly argillaceous with clay content decreasing downward through unit; clay partings at 1,671.5, 1,671.7, 1,672.5, 1,673.8, and 1,674.8 feet; vein of fibrous halite, 0.1 foot thick, extends through unit from 1,671.8 to 1,672.7 feet-----	1,671.5-1,676.0
Halite, orange, medium-crystalline, slightly polyhalitic; concentration of red polyhalite nodules at 1,679.4-1,679.8 and 1,680.4-1,680.6 feet-----	1,676.0-1,680.8
Halite, light-gray (N7), medium-crystalline, slightly argillaceous-----	1,680.8-1,682.0
Halite, orange, medium-crystalline, slightly polyhalitic-----	1,682.0-1,682.5
Halite, light-gray (N7), medium-crystalline, argillaceous; clay partings at 1,683.1, 1,683.9, and 1,684.7 feet-----	1,682.5-1,684.7
Halite, reddish-orange to very light pink, medium-crystalline, slightly polyhalitic-----	1,684.7-1,687.5
Halite, light-gray (N7), medium-crystalline, very slightly argillaceous-----	1,687.5-1,688.0
Halite, reddish-orange, medium-crystalline, slightly polyhalitic-----	1,688.0-1,690.6
Halite, brown and light-gray (N7), finely and medium-crystalline, strongly argillaceous; clay partings at 1,690.6, 1,692.0, 1,692.5, and 1,693.0 feet-----	1,690.6-1,693.0
Halite, reddish-orange, white (N9), and very light pink, medium-crystalline, polyhalitic, very slightly argillaceous at 1,699.0-1,700.7 feet-----	1,693.0-1,700.7
Halite, brown to light-gray (N7), medium-crystalline, slightly argillaceous---	1,700.7-1,703.2
Halite, pale-orange, medium-crystalline, polyhalitic-----	1,703.2-1,709.6
Halite, brown and light-gray (N7), finely crystalline, strongly argillaceous; clay partings at 1,709.6, 1,710.3, and 1,711.5 feet-----	1,709.6-1,711.5
Halite, orange and brown, medium-crystalline, slightly polyhalitic and argillaceous-----	1,711.5-1,712.0
Halite, light-pink, medium-crystalline, polyhalitic, truncated at base by 2.0-foot-thick lens of transparent, very coarsely crystalline halite-----	1,712.0-1,716.0
Halite, brownish-gray (5YR 4/1) and brown, medium- and finely crystalline, strongly argillaceous; clay partings at 1,716.0 and 1,716.7 feet-----	1,716.0-1,717.0
Halite, reddish-orange, medium-crystalline, polyhalitic-----	1,717.0-1,717.5
Halite, brownish-gray (5YR 4/1), medium-crystalline, argillaceous with clay content decreasing downward through unit-----	1,717.5-1,718.8
Halite, pale-orange, medium-crystalline, polyhalitic-----	1,718.8-1,719.6

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, light-gray (N7) and brown, finely and medium-crystalline, argilla- ceous with clay content decreasing downward through unit-----	1,719.6-1,721.0
Halite, orange, medium-crystalline, strongly polyhalitic-----	1,721.0-1,727.0
Polyhalitic, reddish-orange, very finely crystalline-----	1,727.0-1,727.2
Halite, reddish-orange, medium-crystalline, slightly polyhalitic-----	1,727.2-1,727.5
Halite, light-gray to light-brownish-gray (N7-5YR 6/1), finely crystalline, strongly argillaceous with clay content decreasing downward through unit; clay partings at 1,727.5 and 1,728.1 feet-----	1,727.5-1,729.9
Halite, very light pink and orange, medium-crystalline, polyhalitic-----	1,729.9-1,731.5
Halite, brown, finely crystalline, argillaceous; clay partings at 1,731.5 and 1,732.0 feet-----	1,731.5-1,732.6
Halite, very light pink, medium-crystalline, very slightly polyhalitic-----	1,732.6-1,733.3
Halite, grayish-brown (5YR 3/2), medium-crystalline, slightly argillaceous----	1,733.3-1,733.8
Halite, very light pink and white (N9), medium-crystalline, slightly polyhalitic-----	1,733.8-1,734.8
Halite, light-gray (N7), finely crystalline, strongly argillaceous-----	1,734.8-1,735.3
Halite, orange, medium-crystalline, polyhalitic with slight concentrations of orange polyhalite nodules at 1,735.5-1,735.8, 1,736.5-1,737.2, and 1,738.7-1,740.0 feet; few lenses of transparent, very coarsely crystalline halite, a few remnants of primary halite crystals showing well-developed growth lines-----	1,735.3-1,743.0
Polyhalite, red, very finely crystalline, halitic-----	1,743.0-1,743.7
Halite, light-gray (N7), gray and brown to brownish-gray (5YR 4/1) finely to medium-crystalline, strongly argillaceous with clay content decreasing downward through unit; clay partings at 1,743.7 feet-----	1,743.7-1,748.0
Halite, very light pink to pinkish-orange, medium-crystalline, polyhalitic, prominent lenses of transparent, very coarsely crystalline halite-----	1,748.0-1,752.0
Halite, light-gray (N7), brown, and grayish-brown (5YR 3/2), finely and medium-crystalline, strongly argillaceous with clay content decreasing downward through unit; clay partings at 1,752.6 feet-----	1,752.0-1,753.8
Halite, orange, medium-crystalline, polyhalitic; contains desiccation crack filled by gray argillaceous halite extending downward from overlying unit-----	1,753.8-1,754.9
Halite, light-gray (N7) and orange in layers 0.2-0.3 foot thick, medium- crystalline, slightly polyhalitic-----	1,754.9-1,756.5
Halite, light-gray (N7) and brown, finely and medium-crystalline, argillaceous; clay partings at 1,756.8, 1,758.3, 1,760.5, 1,761.5, and 1,761.6 feet-----	1,756.5-1,762.6

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, grayish-brown (5YR 3/2), medium-crystalline, polyhalitic and slightly argillaceous-----	1,762.6-1,764.7
Halite, very light pink, medium-crystalline-----	1,764.7-1,765.5
Halite, brown, finely and medium-crystalline, strongly argillaceous-----	1,765.5-1,766.0
Halite, very light pink to very pale orange (10YR 8/2), medium-crystalline, slightly polyhalitic-----	1,766.0-1,770.6
Anhydrite, grayish-black (N2), very finely crystalline, halitic, weakly fetid-----	1,770.6-1,771.4
Mudstone, medium-gray (N5), impregnated by anhydrite nodules-----	1,771.4-1,771.7
Halite, light-gray and very pale orange (N7-10YR 8/2), medium-crystalline, argillaceous-----	1,771.7-1,774.8
Halite, reddish-orange to very light pink, medium-crystalline, slightly polyhalitic but banded with seamlets of pinkish-orange polyhalite at 1,781.9-1,784.8 feet-----	1,774.8-1,785.6
Polyhalite, pinkish-orange, very finely crystalline, slightly halitic-----	1,785.6-1,786.3
Halite, very light gray (N8), finely and medium-crystalline, slightly polyhalitic and anhydritic-----	1,786.3-1,788.0
Anhydrite, medium-bluish-gray (5B 5/1) to brownish-gray (5YR 4/1), very finely crystalline; contains halite pseudomorphs after gypsum at 1,788.4-1,788.8 feet-----	1,788.0-1,789.2
Mudstone, grayish-black (N2)-----	1,789.2-1,789.3
Halite, light-brown (5YR 5/6) to reddish-orange, finely and medium-crystalline, very slightly argillaceous at 1,789.3-1,789.6 feet, slightly polyhalite through remainder of unit-----	1,789.3-1,791.2
Halite, medium-gray (N5), finely and medium-crystalline, argillaceous-----	1,791.2-1,791.8
Halite, orange, medium-crystalline, slightly polyhalitic-----	1,791.8-1,792.2
Halite, medium-dark-gray to medium-gray (N4-N5), medium- and finely crystalline, argillaceous with clay content decreasing downward through unit, slightly polyhalitic at 1,792.9-1,793.1 feet-----	1,792.2-1,795.8
Halite, very light pink, medium-crystalline; slightly polyhalitic-----	1,795.8-1,800.2
Halite, medium-dark-gray (N4), medium-crystalline, slightly argillaceous, few nodules of polyhalite at 1,801.3-1,801.5 feet-----	1,800.2-1,801.9
Halite, very light pink, medium-crystalline, slightly polyhalitic-----	1,801.9-1,802.9
Halite, medium-dark-gray (N4), medium-crystalline, slightly argillaceous-----	1,802.9-1,804.1
Halite, very light pink and light-brown (5YR 5/6), medium-crystalline, slightly polyhalitic, very slightly argillaceous at 1,805.4-1,806.0 feet----	1,804.1-1,810.5
Halite, light-gray (N7), medium-crystalline, very slightly argillaceous and polyhalitic-----	1,810.5-1,811.2
Halite, orange, medium-crystalline, polyhalitic-----	1,811.2-1,816.0

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Polyhalite, pale-orange, very finely crystalline, halitic, underlain by clay partings-----	1,816.0-1,816.1
Halite, very light pink, medium-crystalline, slightly polyhalitic-----	1,816.1-1,816.3
Anhydrite, light-gray (N7), very finely crystalline, contains nodular seams of very pale orange polyhalite (10YR 8/2) at 1,816.8-1,817.3 feet-----	1,816.3-1,817.5
Halite, light-gray (N7), finely to medium-crystalline, very slightly argillaceous-----	1,817.5-1,817.7
Mudstone, medium-bluish-gray (5B 5/1), halitic-----	1,817.7-1,818.0
Halite, brown, finely crystalline, strongly argillaceous-----	1,818.0-1,818.7
Halite, pale-orange, medium-crystalline, slightly polyhalitic-----	1,818.7-1,820.0
Halite, light-gray (N7), medium-crystalline, argillaceous, very slightly polyhalitic at 1,820.5-1,821.1 feet-----	1,820.0-1,821.1
Halite, orange, medium-crystalline, polyhalitic-----	1,821.1-1,823.5
Halite, light-gray (N7), finely crystalline, argillaceous, capped by clay parting-----	1,823.5-1,823.7
Halite, white (N9) and pale-reddish-orange, medium-crystalline, slightly polyhalitic-----	1,823.7-1,833.2
Anhydrite, light-gray (N7), very finely crystalline, abundant halite pseudomorphs after gypsum at 1,833.2-1,840.6 feet, rhythmically inter- laminated with very light gray (N8) magnesite at 1,840.6-1,843.4 feet-----	1,833.2-1,843.4
Mudstone, light- to medium-gray (N7-N5)-----	1,843.4-1,843.9
Halite, light-gray (N7), finely and medium-crystalline, slightly argilla- ceous, very slightly polyhalitic-----	1,843.9-1,847.4
Halite, light-gray (N7), medium-crystalline, slightly schistose with noticeable grain elongation and orientation, slightly anhydritic-----	1,847.4-1,850.2
Halite, light-gray (N7), finely and medium-crystalline, slightly argilla- ceous, very slightly polyhalitic at 1,851.0-1,851.9 feet-----	1,850.2-1,851.9
Halite, light-gray (N7), finely and medium-crystalline, very strongly argillaceous-----	1,851.9-1,852.4
Halite, very light pink, medium-crystalline, very slightly polyhalitic-----	1,852.4-1,855.0
Halite, light-gray (N7), medium-crystalline, argillaceous-----	1,855.0-1,859.8
Halite, light-gray (N7), medium-crystalline, slightly polyhalitic-----	1,859.8-1,860.4
Polyhalite, very pale orange to light-gray (10YR 8/2-N7), very finely crystalline-----	1,860.4-1,860.8
Halite, light-gray (N7), medium-crystalline, polyhalitic, capped by clay parting-----	1,860.8-1,861.2
Polyhalite, very pale orange (10YR 8/2), very finely crystalline-----	1,861.2-1,861.5
Halite, light-gray (N7) and reddish-orange, medium- and finely crystalline, argillaceous, very slightly polyhalitic-----	1,861.5-1,862.6

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, light-gray and brownish-gray (N7-5 <sub>YR</sub> 3/4), medium-crystalline, slightly argillaceous-----	1,862.6-1,865.5
Halite, very light pink, medium-crystalline-----	1,865.5-1,866.3
Halite, brown and light-brown (5 <sub>YR</sub> 5/6), finely and medium-crystalline, argillaceous; clay partings at 1,866.3 and 1,869.9 feet; slightly polyhalitic at 1,866.3-1,869.0 and 1,870.4-1,871.0 feet-----	1,866.3-1,876.6
Halite, orange to very light pink, medium-crystalline, polyhalitic-----	1,876.6-1,878.2
Halite, brown, medium-crystalline, argillaceous, capped by clay parting-----	1,878.2-1,878.5
Halite, orange, medium-crystalline, polyhalitic-----	1,878.5-1,879.3
Halite, brown, medium-crystalline, slightly argillaceous-----	1,879.3-1,880.2
Halite, brownish-orange, medium-crystalline, polyhalitic, very slightly argillaceous; clay parting at 1,881.2 feet-----	1,880.2-1,882.0
Halite, brown, finely to medium-crystalline, strongly argillaceous with clay content decreasing downward through unit; clay parting at 1,884.0 feet-----	1,882.0-1,884.0
Halite, reddish-orange to very light pink, medium-crystalline, slightly polyhalitic-----	1,884.0-1,887.5
Halite, brown, finely and medium-crystalline, strongly argillaceous with clay content decreasing downward through unit-----	1,887.5-1,888.7
Halite, very light pink, medium-crystalline, very slightly polyhalitic-----	1,888.7-1,891.1
Halite, brown, finely crystalline, strongly argillaceous, capped by clay parting that is cut by near-vertical veinlet of fibrous halite-----	1,891.1-1,891.6
Halite, brown and light-brown (5 <sub>YR</sub> 6/4), medium-crystalline, very slightly polyhalitic-----	1,891.6-1,892.8
Halite, brownish-gray (5 <sub>YR</sub> 4/1), medium-crystalline, very slightly argillaceous and polyhalitic-----	1,892.8-1,895.5
Halite, dark-reddish-orange to red, medium-crystalline, polyhalitic with a concentration of red polyhalite nodules and veinlets at 1,898.5-1,900.5 feet-----	1,895.5-1,900.5
Anhydrite, light-gray (N7), very finely crystalline, almost totally replaced by red polyhalite at 1,900.9-1,902.7 feet, well-formed halite pseudomorphs after gypsum at 1,904.1-1,907.8 feet, rhythmically inter-laminated with light-gray (N7) magnesite at 1,907.8-1,910.5 feet-----	1,900.5-1,910.5
Mudstone, light- to medium-gray (N7-N5)-----	1,910.5-1,910.9
Halite, pale-red (10 <sub>R</sub> 6/2) to very light pink, medium-crystalline, very slightly polyhalitic-----	1,910.9-1,911.5
Halite, light-gray (N7), medium-crystalline, slightly argillaceous-----	1,911.5-1,912.0
Halite, red to very light pink, medium-crystalline, slightly polyhalitic-----	1,912.0-1,914.2
Halite, light-brownish-gray (5 <sub>YR</sub> 6/1), medium-crystalline, very slightly argillaceous and polyhalitic-----	1,914.2-1,917.0

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, dark-brownish-gray, finely and medium-crystalline, argillaceous-----	1,917.0-1,919.5
Halite, red, medium-crystalline, polyhalitic-----	1,919.5-1,926.5
Halite, grayish-brown (5YR 3/2), medium-crystalline, very slightly argillaceous-----	1,926.5-1,929.8
Halite, red, medium-crystalline, strongly polyhalitic-----	1,929.8-1,930.5
Halite, light-brown (5YR 5/6), medium-crystalline, very slightly argillaceous-----	1,930.5-1,935.5
Halite, brown and grayish-brown (5YR 3/2), finely and medium-crystalline, argillaceous at 1,936.2-1,936.9 and 1,937.3-1,938.9 feet; clay parting at 1,938.5 feet-----	1,935.5-1,940.2
Halite, light-brownish-gray (5YR 6/1), medium- and coarsely crystalline-----	1,940.2-1,941.3
Halite, very pale orange (10YR 8/2), medium-crystalline, very slightly polyhalitic-----	1,941.3-1,943.3
Halite, brown to brownish-gray (5YR 4/1), finely to medium-crystalline, strongly argillaceous with clay content decreasing downward through unit; clay parting at 1,943.3 feet-----	1,943.3-1,945.6
Halite, light-brownish-gray (5YR 6/1), medium-crystalline, very slightly polyhalitic-----	1,945.6-1,947.0
Halite, grayish-brown (5YR 3/2), medium-crystalline, argillaceous-----	1,947.0-1,951.9
Halite, light-brownish-gray (5YR 6/1), medium-crystalline, very slightly polyhalitic-----	1,951.9-1,953.4
Halite, brown and grayish-brown (5YR 3/2), finely and medium-crystalline, argillaceous, capped by clay parting-----	1,953.4-1,955.8
Mudstone, brown, halitic-----	1,955.8-1,956.0
Halite, grayish-brown (5YR 3/2) and brown, finely and medium-crystalline, argillaceous-----	1,956.0-1,957.4
Halite, light-brownish-gray (5YR 6/1), medium-crystalline, very slightly polyhalitic-----	1,957.4-1,959.0
Halite, brown and grayish-brown (5YR 3/2), finely and medium-crystalline, argillaceous; clay parting at 1,961.0 feet-----	1,959.0-1,961.0
Halite, light-brownish-gray (5YR 6/1), finely and medium-crystalline, equidimensional to schistose; slightly anhydritic, banded with seamlets of anhydrite at intervals of about 0.5 foot-----	1,961.0-1,967.5
Anhydrite, light-gray (N7), very finely crystalline-----	1,967.5-1,967.7
Mudstone, brown, cut by near-vertical veinlet of fibrous halite-----	1,967.7-1,967.8
Halite, brown, finely crystalline, argillaceous; clay parting at 1,969.2 feet-----	1,967.8-1,970.9
Halite, light-gray to light-brownish-gray (N7-5YR 6/1), medium-crystalline, very slightly polyhalitic-----	1,970.9-1,973.7

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, light-gray (N7) and brown, medium- and finely crystalline, argillaceous-----	1,973.7-1,974.1
Halite, light-brownish-gray (5YR 6/1), medium-crystalline, very slightly polyhalitic-----	1,974.1-1,974.7
Halite, light-gray (N7), medium-crystalline, argillaceous-----	1,974.7-1,975.6
Halite, light-brownish-gray to very pale orange (5YR 6/1-10YR 8/2), medium-crystalline, very slightly polyhalitic-----	1,975.6-1,979.5
Halite, brown and light-gray (N7), finely and medium-crystalline, argillaceous, capped by clay parting-----	1,979.5-1,979.7
Halite, light-brownish-gray and light-gray (5YR 6/1-N7), slightly polyhalitic-----	1,979.7-1,982.1
Halite, brown and brownish-gray (5YR 4/1), finely and medium-crystalline, argillaceous, few small nodules of red polyhalite-----	1,982.1-1,984.0
Halite, light-brownish-gray (5YR 6/1) to orange, medium-crystalline, polyhalitic with conspicuous concentrations of polyhalite seamlets at 1,988.3-1,988.5 feet; clay parting at 1,988.5 feet-----	1,984.0-1,988.9
Halite, brown to light-gray (N7), finely and medium-crystalline, argillaceous with clay content decreasing downward through unit, few small nodules of red polyhalite-----	1,988.9-1,990.8
Halite, white (N9) to pale-orange, medium-crystalline, slightly polyhalitic--	1,990.8-1,996.9
Halite, brown to brownish-gray (5YR 4/1), finely to medium-crystalline, argillaceous; clay parting at 1,996.9 feet, few small nodules of reddish-orange polyhalite-----	1,996.9-1,999.4
Halite, brown, brownish-gray (5YR 4/1), and light-gray (N7), medium-crystalline, argillaceous, few veinlets of reddish-orange polyhalite at 2,003.4-2,006.5 feet-----	1,999.4-2,006.5
Halite, reddish-orange, medium-crystalline, slightly polyhalitic-----	2,006.5-2,007.4
Halite, brownish-gray to light-gray (5YR 4/1-N7), medium-crystalline, slightly argillaceous; clay parting at 2,009.3 feet-----	2,007.4-2,009.8
Halite, light-brownish-gray (5YR 6/1), medium-crystalline, very slightly polyhalitic-----	2,009.8-2,011.5
Halite, brown and brownish-gray (5YR 4/1), finely to medium-crystalline, strongly argillaceous with clay content decreasing downward through unit; clay parting at 2,011.5 feet, few veinlets of light-brown polyhalite at 2,015.2-2,016.0 feet-----	2,011.5-2,016.0
Halite, reddish-orange, medium-crystalline, polyhalitic-----	2,016.0-2,019.5
Anhydrite, light-gray (N7), very finely crystalline, halitic at 2,020.5-2,021.6 feet, nodules of pinkish-orange polyhalite concentrated in crude seams at 2,219.6-2,019.8 and 2,020.7-2,020.9 feet-----	2,019.5-2,022.4

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, light-gray (N7), medium-crystalline, very argillaceous, capped by clay parting-----	2,022.4-2,022.7
Halite, reddish-orange, medium-crystalline, polyhalitic-----	2,022.7-2,026.5
Halite, light-gray (N7), medium-crystalline, argillaceous, few veinlets of reddish-orange polyhalite-----	2,026.5-2,028.6
Halite, reddish-orange, medium-crystalline, slightly polyhalitic-----	2,028.6-2,031.2
Halite, brown and reddish-orange, medium-crystalline, alternately argilla- ceous and polyhalitic in seams, 0.3-0.5-foot thick-----	2,031.2-2,035.4
Halite, very light pink to reddish-orange, medium-crystalline, polyhalitic, very slightly argillaceous at 2,035.4-2,036.0 feet-----	2,035.4-2,040.4
Halite, light-gray (N7), medium-crystalline, slightly argillaceous-----	2,040.4-2,041.0
Halite, reddish-orange to very light pink, medium-crystalline, slightly polyhalitic-----	2,041.0-2,041.8
Halite, brownish-gray (5YR 4/1), medium-crystalline, slightly argilla- ceous with clay content decreasing downward through unit-----	2,041.8-2,043.8
Halite, light-gray and light-brownish-gray (N7-5YR 6/1), medium- crystalline, very slightly polyhalitic and argillaceous-----	2,043.8-2,046.5
Halite, brownish-gray (5YR 4/1), medium-crystalline, argillaceous with clay content decreasing downward through unit, clay partings at 2,047.0 and 2,047.4 feet are cut by near-vertical veinlets of fibrous halite-----	2,046.5-2,048.9
Halite, light-brownish-gray (5YR 6/1), medium-crystalline, very slightly polyhalitic and argillaceous-----	2,048.9-2,050.0
Halite, light-gray (N7), medium-crystalline, argillaceous, capped by clay parting-----	2,050.0-2,051.2
Halite, light-gray (N7), medium- to coarsely crystalline, slightly argillaceous at 2,052.0-2,052.3 and 2,054.0-2,055.0 feet, prominent concentration of light-gray (N7) anhydrite veinlets at 2,054.0-2,055.0 feet-----	2,051.2-2,056.2
Halite, light-gray (N7), medium-crystalline, anhydritic, prominent nodular masses of anhydrite contain well-formed halite pseudomorphs after gypsum-----	2,056.2-2,060.4
Anhydrite, light-gray (N7), very finely crystalline, few small clusters of glauberite crystals at 2,061.0-2,061.4 feet; abundant polyhalite pseudomorphs after gypsum at 2,063.0-2,071.7 feet, abundant halite pseudomorphs after gypsum at 2,071.7-2,072.9 feet, magnesitic at 2,072.9-2,073.5 feet-----	2,060.4-2,073.5
Mudstone, medium-bluish-gray (5B 5/1)-----	2,073.5-2,074.0
Anhydrite, light-gray (N7), very finely crystalline, laminated-----	2,074.0-2,075.6

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Mudstone, medium-bluish-gray (5B 5/1), cut by near-vertical vein of fibrous halite-----	2,075.6-2,075.8
Halite, light-gray (N7), medium-crystalline, slightly argillaceous-----	2,075.8-2,077.0
Halite, white (N9), medium-crystalline, slightly anhydritic, contains remnants of primary halite crystals showing well-developed growth lines-----	2,077.0-2,080.2
Halite, light-gray (N7), medium-crystalline, argillaceous, capped by clay parting-----	2,080.2-2,083.5
Halite, white (N9), medium- and coarsely crystalline, very slightly anhydritic-----	2,083.5-2,085.4
Halite, light-gray (N7), finely crystalline, very argillaceous, cut by veinlets of fibrous halite-----	2,085.4-2,086.1
Halite, brown and light-gray (N7), finely and medium-crystalline, argillaceous-----	2,086.1-2,087.0
Halite, white and light-gray (N9-N7), finely and medium-crystalline, argillaceous at 2,087.0-2,089.0, 2,090.3-2,090.7, 2,091.7-2,092.2, and 2,093.2-2,093.5 feet, few small nodules of reddish-orange polyhalite----	2,087.0-2,093.5
Halite, light-gray (N7), medium-crystalline, very slightly anhydritic-----	2,093.5-2,094.7
Halite, reddish-orange, medium-crystalline, strongly polyhalitic-----	2,094.7-2,095.5
Halite, light-gray (N7), finely and medium-crystalline, argillaceous, interbeds of white (N9) halite at 2,090.6-2,097.3, 2,097.5-2,097.8, and 2,098.0-2,098.2 feet, few small veinlets of orange polyhalite at 2,095.7-2,096.0 feet, capped by clay parting-----	2,095.5-2,098.2
Halite, light-orange, medium-crystalline, slightly polyhalitic-----	2,098.2-2,099.3
Halite, brownish-gray (5YR 4/1), finely and medium-crystalline, argillaceous--	2,099.3-2,101.0
Halite, white (N9) and light-orange, slightly polyhalitic; interbedded with gray argillaceous halite at intervals of 0.2-0.4 feet-----	2,101.0-2,104.5
Halite, light-brownish-gray (5YR 6/1), medium-crystalline, very slightly argillaceous-----	2,104.5-2,106.2
Halite, white (N9), light-gray (N7), and brown, finely and medium-crystalline, slightly argillaceous-----	2,106.2-2,109.8
Halite, light-gray (N7), finely crystalline, argillaceous-----	2,109.8-2,112.0
Halite, brown and brownish-gray (5YR 4/1), finely and medium-crystalline, argillaceous-----	2,112.0-2,114.0
Halite, reddish-orange, finely and medium-crystalline, polyhalitic, rhythmically interbedded with brown argillaceous halite at intervals of 0.4-1.0 foot-----	2,114.0-2,120.5
Halite, brown and brownish-gray (5YR 4/1), finely and medium-crystalline, argillaceous-----	2,120.5-2,121.7

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, reddish-orange, medium-crystalline, polyhalitic with conspicuous concentrations of polyhalite veinlets at 2,121.7-2,123.0 and 2,123.8-2,124.5 feet-----	2,121.7-2,124.5
Polyhalite, red, very finely crystalline, prominent embayed remnants of light-gray (N7) anhydrite at 2,124.8-2,125.7 feet and at 2,126.5-2,126.6 feet-----	2,124.5-2,126.6
Mudstone, light-gray (N7), cut by near-vertical vein of fibrous halite-----	2,126.6-2,126.8
Halite, brown, finely and medium-crystalline, strongly argillaceous-----	2,126.8-2,129.3
Halite, very light pink to reddish-orange, finely and medium-crystalline, interbedded with gray argillaceous halite at 2,129.8-2,130.0 and 2,130.5-2,131.0 feet-----	2,129.3-2,131.5
Halite, brownish-gray (5 <sup>YR</sup> 4/1) and reddish-orange, medium-crystalline, polyhalitic and argillaceous-----	2,131.5-2,133.0
Halite, light-gray (N7), medium-crystalline, strongly argillaceous with clay content decreasing downward through unit-----	2,133.0-2,137.1
Halite, very light pink to light-reddish-orange, medium-crystalline, polyhalitic; interbeds of gray argillaceous halite at 2,137.1-2,138.1, 2,138.7-2,139.2, and 2,140.1-2,140.3 feet-----	2,137.1-2,140.9
Halite, light-gray (N7) and orange, finely and medium-crystalline, slightly argillaceous, few veinlets of orange polyhalite-----	2,140.9-2,142.0
Halite, light red (5 <sup>R</sup> 6/6) to pale-orange, medium-crystalline, slightly polyhalitic; interbeds of gray slightly argillaceous halite at 2,142.3-2,142.7, 2,143.0-2,144.0, 2,145.0-2,145.3, and 2,146.0-2,146.7 feet; clay parting at 2,146.0 feet-----	2,142.0-2,148.4
Halite, light-gray (N7) and light-orange, medium-crystalline, very slightly argillaceous and polyhalitic-----	2,148.4-2,150.2
Halite, light-gray (N7) and very light red to pink, finely and medium-crystalline; interbeds of light-gray (N7) argillaceous halite at 2,151.8-2,152.1, 2,152.5-2,153.0, 2,155.1-2,155.8, and 2,157.3-2,158.0 feet-----	2,150.2-2,158.2
Halite, light-gray to white (N7-N9), medium- to coarsely crystalline, very slightly anhydritic-----	2,158.2-2,162.4
Halite, light-gray (N7), medium-crystalline, strongly anhydritic-----	2,162.4-2,163.8
Polyhalite, light-gray and very pale orange (N7-10 <sup>YR</sup> 8/2), very finely crystalline, few embayed remnants of light-gray (N7) anhydrite, truncated at base by vein of fibrous halite 0.2 foot thick-----	2,163.8-2,165.2
Anhydrite, light-gray (N7), very finely crystalline, laminated, well-formed halite pseudomorphs after gypsum at 2,165.2-2,166.0 and 2,167.3-2,169.0 feet; narrow set of enechelon halite-filled fractures dip 70° at 2,168.4-2,169.1 feet-----	2,165.2-2,169.5

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Mudstone, medium-bluish-gray (5B 5/1)-----	2,169.5-2,169.8
Halite, light-gray (N7), finely and medium-crystalline, argillaceous-----	2,169.8-2,170.7
Halite, light-gray (N7), medium-crystalline, anhydritic-----	2,170.7-2,174.9
Halite, light-gray (N7) finely and medium-crystalline, very slightly argillaceous-----	2,174.9-2,175.9
Halite, light-gray to light red (N7-5R 6/6), finely and medium-crystalline, very slightly polyhalitic with bulk of polyhalite concentrated in crude seams 0.3-0.5 foot thick at intervals of 0.3-0.5 foot-----	2,175.9-2,184.0
Halite, light-gray and very light brownish gray (N7-5YR 6/1), finely and medium-crystalline, very slightly polyhalitic-----	2,184.0-2,189.8
Halite, very light pink, medium- and finely crystalline, slightly polyhalitic, interbedded with light-gray (N7) slightly argillaceous halite at short intervals-----	2,189.8-2,195.0
Halite, very light pink, medium- and finely crystalline, slightly poly- halitic, interbedded with light-gray (N7), slightly argillaceous halite at short intervals-----	2,195.0-2,199.0
Halite, light-gray (N7), medium- and finely crystalline, anhydritic; small remnants of primary halite crystals showing well-developed growth lines at 2,200.7-2,201.2 feet-----	2,199.0-2,202.7
Anhydrite, light-gray (N7), very finely crystalline-----	2,202.7-2,203.3
Halite, light-gray (N7), finely and medium-crystalline, very slightly argillaceous-----	2,203.3-2,206.1
Halite, light-gray to white (N7-N6), medium- to coarsely crystalline, very slightly anhydritic; small remnants of primary halite crystals showing well-developed growth lines at 2,208.0-2,209.0 feet-----	2,206.1-2,209.6
Anhydrite, light-gray (N7), very finely crystalline, halitic-----	2,209.6-2,210.0
Halite, light-gray (N7), finely and medium-crystalline, strongly argillaceous, capped by clay parting-----	2,210.0-2,210.5
Halite, light-gray (N7), finely and medium-crystalline, very slightly anhydritic, abundant small remnants of primary halite crystals showing well-developed growth lines-----	2,210.5-2,212.7
Anhydrite, light-gray (N7), very finely crystalline, laminated, halitic-----	2,212.7-2,215.6
Mudstone, medium-gray (N5), slightly fetid-----	2,215.6-2,215.8
Halite, light-gray (N7), finely and medium-crystalline, interbeds of medium-gray (N5) argillaceous halite at 2,215.8-2,216.5, 2,217.2-2,217.8, 2,218.7-2,219.5, and 2,219.9-2,220.4 feet; clay parting at 2,218.7 feet-----	2,215.8-2,220.5
Halite, light-gray (N7), finely and medium-crystalline, very slightly anhydritic-----	2,220.5-2,224.5
Anhydrite, light-gray (N7), very finely crystalline, well-formed halite pseudomorphs after gypsum-----	2,224.5-2,225.0
Halite, light-gray (N7), finely and medium-crystalline, interbeds of medium-gray, slightly argillaceous halite 0.5-1.0 foot thick; small remnants of primary halite crystals showing well-developed growth lines at 2,231.0-2,232.9 feet-----	2,225.0-2,232.9

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, white and very light gray (N9-N7), medium-crystalline, abundant small remnants of primary halite crystals showing well-developed growth lines-----	2,232.9-2,237.0
Anhydrite, light-gray (N7), very finely crystalline, halitic-----	2,237.0-2,237.7
Halite, light-gray (N7), finely and medium-crystalline, slightly anhydritic, interbeds of medium-gray (N5), slightly argillaceous halite 0.3-0.6 foot thick, at intervals 0.5 foot-----	2,237.7-2,245.0
Halite, white (N9), medium- and coarsely crystalline, slightly anhydritic, abundant small remnants of primary halite crystals showing well-developed growth lines-----	2,245.0-2,249.0
Anhydrite, light-gray (N7), very finely crystalline, underlain by clay parting-----	2,249.0-2,249.2
Halite, light-gray (N7), medium- and finely crystalline, slightly anhydritic; interbeds of medium-gray (N5) argillaceous halite, 0.6-1.0 foot thick, occur at intervals of about 1.0 foot-----	2,249.2-2,262.5
Halite, light-gray (N7), medium-crystalline, anhydritic-----	2,262.5-2,269.5
Anhydrite, light-gray to medium-gray (N7-N5), very finely crystalline; well-formed halite pseudomorphs after gypsum dotted through massive rock at 2,272.5-2,277.0 feet; laminated at 2,277.0-2,288.9 feet with laminae of anhydrite pseudomorphs after gypsum alternating with laminae of white (N9) magnesite; healed fracture with a 70° dip at 2,273.5 feet is bordered by breccia in hanging wall and footwall; 0.2-foot-thick halite vein at 2,282.5 feet cut bedding at right angles; lamination essentially obliterated by recrystallization of anhydrite at 2,283.5-2,284.8 feet; narrow gash veins of halite at 2,284.9-2,285.2 feet, cut bedding at right angle-----	2,269.5-2,288.9
Magnesite, very pale orange to white (10XR 8/2-N9), very finely crystalline, few well-formed anhydrite pseudomorphs after gypsum-----	2,288.9-2,289.8
Mudstone, very light to medium-light-gray (N8-N6), magnesian, fetid-----	2,289.8-2,291.0
Halite, light- and medium-gray (N7-N5), finely to medium-crystalline, very slightly argillaceous-----	2,291.0-2,294.2
Halite, very light gray (N8), medium- and finely crystalline, very slightly anhydritic, interbeds of medium-gray (N5), slightly argillaceous halite, 0.3-0.6 foot thick, at intervals of about 0.5 foot, slightly schistose with marked grain orientation and elongation-----	2,294.2-2,304.0
Halite, light- to medium-gray (N7-N5), finely and medium-crystalline, very slightly anhydritic, slightly schistose in places-----	2,304.0-2,308.7
Halite, very light gray (N8), finely and medium-crystalline, thin interbeds of medium-gray (N5) argillaceous halite at short intervals, slightly schistose-----	2,308.7-2,315.4

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Halite, very light gray (N8), medium-crystalline, thin interbeds of light-gray (N7) anhydritic halite at short intervals-----	2,315.4-2,323.5
Halite, white (N9), finely and medium-crystalline, very slightly anhydritic, small remnants of primary halite crystals showing well-developed growth lines at 2,323.5-2,324.2, 2,324.4-2,324.8, and 2,324.9-2,325.0 feet-----	2,323.5-2,325.0
Halite, very light gray (N8), medium-crystalline, slightly schistose in places, thin interbeds of medium-gray (N5) argillaceous halite at short intervals-----	2,325.0-2,337.1
Halite, white to very light gray (N9-N8), finely and medium-crystalline, slightly schistose in places-----	2,337.1-2,341.6
Halite, very light gray (N8), medium- and finely crystalline, slightly schistose in places, thin interbeds of medium-gray (N5) argillaceous halite at short intervals-----	2,341.6-2,358.5
Halite, very light gray (N8), medium-crystalline, thin interbeds of medium-gray (N5) anhydritic halite at short intervals, small remnants of primary halite crystals showing well-developed growth lines-----	2,358.5-2,361.2
Halite, light-gray (N7), finely and medium-crystalline, slightly argillaceous and anhydritic; 0.3-foot-thick lens of transparent, very coarsely crystalline halite at 2,362.1 feet-----	2,361.2-2,363.2
Halite, light-gray (N7), finely and medium-crystalline; slightly anhydritic---	2,363.2-2,364.5
Halite, very light gray (N8), medium-crystalline, slightly schistose, very slightly anhydritic; thin interbeds of medium-gray (N5) slightly argillaceous halite at short intervals-----	2,364.5-2,396.2
Anhydrite, light-gray (N7), very finely crystalline, laminated, terminated abruptly downward by clear-cut fracture that cuts lamination at a steep angle-----	2,396.2-2,396.5
Halite, light-gray and medium-gray (N7-N5), finely and medium-crystalline, schistose, very slightly argillaceous and anhydritic-----	2,396.5-2,400.5
Anhydrite, light-gray to white (N7-N9), very finely crystalline, banded; shattered with fragments tightly cemented by halite-----	2,400.5-2,400.8
Halite, white (N9), finely and medium-crystalline, equigranular to schistose, slightly anhydritic, thin interbeds of white (N9) halitic anhydrite, 0.1-0.3 foot thick, at intervals of 0.2-0.8 foot, some are shattered mass of fragments embedded in halite; others are twisted in tight folds with much repetition of section, fetid at 2,540.1-2,555.1 feet---	2,400.8-2,555.1

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Anhydrite, light- and medium-gray (N7-N5), very finely crystalline, cyclical lamination with about 0.1-foot-thick intervals of uniformly even and closely spaced laminae alternating with 0.1-foot-thick intervals of laminae-free rock, fetid, conspicuous halite-filled fractures at 2,558.8-2,559.5 feet---	2,555.1-2,565.5
Anhydrite-calcite, interlaminated medium-gray (N5) anhydrite and dark-gray (N3), organic-rich calcite, cyclical lamination with about 0.1-foot-thick interval of closely spaced laminae alternating 0.1-foot-thick intervals of laminae-free rock, well-developed slump breccia composed of short rectangular segments of dark-gray (N3) calcite laminae embedded in matrix of medium-gray (N5) anhydrite, fetid-----	2,565.5-2,569.8
Anhydrite-calcite, same as above; rock cut by well-defined fracture zone, about 0.1-foot-thick, sandwiched between breccia zones, about 0.3-foot-thick, white (N9) saccharoidal anhydrite and calcite fills the fracture zone and the interstices between breccia fragments; small, unfilled vugs lined with well-formed anhydrite crystals are scattered through the filled fracture and breccia matrix at 2,569.8-2,571.2, 2,572.2-2,572.4, and 2,572.9-2,573.5 feet; fracture zone dips 60°-70°-----	2,569.8-2,575.0
Anhydrite-calcite, same as above, but unfractured and free of breccia-----	2,575.0-2,576.8
Anhydrite-calcite, same as above, but fractured and brecciated with white (N9), saccharoidal anhydrite and calcite filling the interstices between breccia fragments; few vugs in matrix-----	2,576.8-2,578.4
Anhydrite-calcite, medium- and dark-gray (N5-N3), very finely crystalline, fetid, rhythmic lamination with a marked cyclicity of laminated rock alternating with laminae-free rock; healed fracture, dipping 70° at 2,586.9 feet, carries a veinlike filling of white (N9), saccharoidal anhydrite and calcite containing a few open vugs; short intervals of intrastratal folds at 2,598.2-2,598.6 and 2,599.8-2,600.0 feet-----	2,578.4-2,608.2
Anhydrite-calcite, light- and medium-gray (N7N6), very finely crystalline, fetid, well-developed rhythmic laminations-----	2,608.2-2,610.7
Anhydrite-calcite, same as above, but brecciated at 2,611.5-2,612.5, 2,615.6-2,615.9, and 2,616.1-2,617.0 feet with angular fragments tightly cemented in matrix of white (N9), saccharoidal anhydrite and calcite-----	2,610.7-2,617.0
Anhydrite-calcite, medium- and dark-gray (N5-N3), very finely crystalline, fetid, well-developed rhythmic lamination-----	2,617.0-2,623.0
Anhydrite, light- and medium-gray (N7-N6), very finely crystalline, fetid, rhythmic lamination with cyclic alteration of laminated and unlaminated rocks, calcite-free but fetid-----	2,623.0-2,626.2

Table 8.--Lithologic description of drill cuttings and cores, ERDA-6--Continued

Lithologic description	Depth interval Feet
Anhydrite-calcite, medium- and dark-gray (N5-N3), very finely crystalline, fetid, well-developed rhythmic lamination with irregular intervals of cyclic alteration of laminated and unlaminated rock at 2,661.8-2,668.6, 2,673.0-2,678.6, and 2,690.0-2,706.5 feet; contains slump breccia composed of short rectangular segments of dark-gray (N3) calcite laminae embedded in matrix of medium-gray (N5) anhydrite; small irregular vugs, sharply cutting lamination at 2,694.9-2,695.2 feet are lined with tabular glassy anhydrite crystals; walls of narrow fractures, dipping 60° at 2,701.5 feet, are lined with tabular glassy anhydrite crystals; irregular intrastratal folds at 2,681.0-2,681.5 feet-----	2,626.2-2,706.5
Anhydrite, medium- to medium-dark-gray (N6-N4), very finely crystalline; free of calcite lamination-----	2,706.5-2,708.7
Anhydrite, light-gray to white (N7-N9), finely crystalline, vuggy and porous; few halite-filled cavities; recrystallized anhydrite with total loss of lamination; possibly reservoir rock for geopressured brine-----	2,708.7-2,709.3
Anhydrite-calcite breccia, medium- and dark-gray (N5-N3), fragments of interlaminated anhydrite-calcite cemented in matrix of porous white (N9), saccharoidal anhydrite; terminated downward by clear-cut fracture dipping 45°-----	2,709.3-2,709.7
Halite, colorless, glassy and transparent, single crystal; contains minute glassy colorless anhydrite crystals; terminates sharply downward at fractures dipping 60°-----	2,709.7-2,710.7
Anhydrite-calcite, medium- and dark-gray (N5-N3), rhythmically interlaminated, very finely crystalline, fetid, vuggy-----	2,710.7-2,711.0
No sample-----	2,711.0-2,718.0
Anhydrite-calcite, medium-light-gray and brownish-black (N6-5YR 2/1) rhythmically interlaminated, very finely crystalline, fetid; lamination uneven and irregularly crenulated at 2,718.0-2,726.5 feet; narrow halite vein, dipping 55°, cuts bedding at angle of 60° at 2,728.8 feet; unit terminated abruptly downward by jagged fault (rupture plane) cutting bedding essentially at right angle, fault plane tight and free of gouge; hanging wall rock is strongly welded to footwall rock-----	2,178.0-2,732.5
Halite, white and very light gray (N9-N8), medium-crystalline with equigranular to schistose texture, rhythmically interlaminated with anhydritic seamlets, 1/4-1 inch thick, complexly twisted in tight folds-----	2,732.5-2,775.0
Total depth-----	2,775.0

#### SELECTED REFERENCES

- Adams, J. E., 1944, Upper Permian Ochoa Series of Delaware Basin, west Texas New Mexico: American Association of Petroleum Geologists Bulletin, v. 48, p. 1596-1625.
- Anderson, R. Y., Dean, W. E., Jr., Kirkland, D. W., and Snider, H. I., 1972, A thick, highly varved evaporite sequence, West Texas and New Mexico: Geological Society of America Bulletin, v. 82, no. 1, p. 59-86.
- Anderson, R. Y., and Powers, D. W., 1978, Salt anticlines in Castile-Salado evaporite sequence, northern Delaware Basin, New Mexico, in Geology and mineral deposits of Ochoan rocks in Delaware Basin and adjacent areas: New Mexico Bureau of Mines and Mineral Resources, Circular 159, p. 79-83.
- Geisey, S. C., and Fulk, F. F., 1941, North Cowden Field, Ector County, Texas: American Association of Petroleum Geologists Bulletin, v. 25, no. 4, p. 593-629.
- Goddard, E. N., chm., and others, 1948, Rock-Color Chart: Washington, National Research Council (reprinted by Geological Society of America, 1975).
- Jones, C. L., 1973, Salt deposits of Los Medanos area, Eddy and Lea Counties, New Mexico, with sections on Ground-water hydrology by M. E. Cooley, and Surficial geology by G. O. Bachman: U.S. Geological Survey Open-file report USGS-4339-7, 67 p.
- Lambert, S. J., 1977, The geochemistry of Delaware Basin groundwaters: Sandia Laboratories Report SAND77-0420, 13 p.
- \_\_\_\_\_, 1978, Geochemistry of Delaware Basin ground water: New Mexico Bureau of Mines and Mineral Resources, Circular 159, p. 33-38.