

LITHOLOGIC LOG B-206

THERMEX 777

NE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec 12 T25S R7W

Elevation: 5,880'

<u>Depth (m)</u>	<u>Description</u>
0 - 10.8	Mixed clay and limestone boulders of recent alluvial origin.
10.8 - 20	Greenish gray to gray clayey lake sediments.
20 - 22	Red fine-grained quartzite - Moenkopi Fm.
22 - 26	Gray limestone & calcareous shale.
26 - 27	Red very fine-grained quartzite.
27 - 45	Interbedded gray limestone and light gray calcareous shale.
45 - 93.5	Varigated red to pinkish shales with thin limestone layers.
93.5 - 100	Dark gray limestone, sandy textured, probably Kiabab limestone.


H. Dean Pilkington

HDP:mmo

cc: Art Lange
Cheryl Caywood
Mark Alldredge

LITHOLOGIC LOG B-207

THERMEX 777

NE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 18 T25S R6W

Elevation: 6,350'

<u>Depth (m)</u>	<u>Description</u>
0 - 5	Alluvium - mixed boulders of weathered Belknap volcanics and gravel made up of limestone and volcanic fragments in a matrix of fine sand and clay.
5 - 6	Dolomitic limestone of Oquirrh Fm.
5 - 30	White, fine-grained, dense, highly fractured quartzite. 1 meter red clay at base makes about 1 gpm water.
30 - 86	Strongly fractured dark gray dolomitic limestone.


H. Dean Pilkington.

HDP:mno

cc: Art Lange
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Mark Alldredge

LITHOLOGIC LOG B-208

THERMEX 777

SW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 19 T25S R6W

Elevation: 6,100'

Depth (m)

Description

0 - 29.9

Alluvium composed of limestone cobbles and boulders in a matrix of calcareous sand and clay. The matrix makes up 40-60 percent of the volume. Small flow of water, 1-3 gpm at contact with bedrock.

29.9 - 50

Gray limestone probably Kiabab Fm.

50 - 99

Red, weathered fine-grained volcanics of the Belknap Series in fault contact with the overlying limestone.



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HDP:mmo

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Mark Alldredge

LITHOLOGIC LOG B-209

THERMEX 777

NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 25 T25S R7W

Elevation: 5,950'

<u>Depth (m)</u>	<u>Description</u>
0 - 3.7	Soil, wind blown sand and soil mixed with cobbles of Belknap volcanics, limestones, and quartzites.
3.7 - 34.6	Reddish-brown siltstones with some interbedded layers of gravel made up of volcanic fragments.
34.6 - 45.7	Buff to red-brown siltstones with varying amounts of carbonate cement.
45.7 - 99	No returns - drilled as if it might be a fractured and perhaps solutioned limestone.



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HDP:mmo

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LITHOLOGIC LOG B-210

THERMEX 777

NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 32 T25S R6W

Elevation: 6,120'

Depth (m)

Description

0 - 16

Valley fill composed of sand, gravel and boulders. Rock fragments consist of limestone, quartzite, and Belknap volcanics.

16 - 99

Red, slightly weathered Belknap volcanics, a series of quartz latitic to rhyolitic flows, ash-flow tuffs, crystal tuffs.



H. Dean Pilkington

HDP:mno

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LITHOLOGIC LOG B-212

THERMEX 777

NW $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 14 T26S R7W

Elevation: 6,080'

<u>Depth (m)</u>	<u>Description</u>
0 - 10	Valley fill, mixture of soil and gravel, cobbles and boulders of basalt.
10 - 20	Vesicular basalt - red oxidized zones at top and bottom.
20 - 22	Red scoria or cinder zone with clay filling the voids.
22 - 27	Medium gray to black fine-grained dense basalt becomes oxidized and vesicular near base of flow.
27 - 39	No returns - probably an interflow cinder zone at top of internal and back into basalt flow.



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HDP:mno

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SE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 29 T25S R7W

Lithologic Log B-230

Thermex

Elevation: 5,780'

<u>Depth (m)</u>	<u>Description</u>
0 - 4.6	Soil mixed with varying amounts of lag gravels and sheet wash debris.
4.6 - 9.3	Gravel composed of fragments quartzite, limestone, basalt and Belknap volcanics.
9.3 - 26.0	Dark gray to black, fine-grained dense to slightly vesicular basalt.
26.0 - 62.0	Gravel made up of fragments of quartzite, limestone and Belknap volcanics set in a matrix of clay. Below 52m most of the fragments are red volcanics of the Belknap volcanics.

H. D. Pilkington
(M.D.)

H. D. Pilkington
October 26, 1976

HDP:mmo

cc: Art Lange
Cheryl Caywood
File Copy to Dean
Mark Alldredge

SE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec 24 T25S R8W

Lithologic Log B-231

Thermex

Elevation: 5,645'

Depth (m)

Description

0 - 3

Brown to buff clayey soil.

3 - 34

Dark gray to black, fine-grained dense basalt.
Iron stained interflow zones at 12m and 24 meters.

34 - 62

Brown clayey tuffaceous lake sediments.

H. D. Pilkington
(MC)

H. D. Pilkington
October 26, 1976

HDP:mno

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Mark Alldredge
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NW¼ SE¼ Sec 27 T25S R8W

Lithologic Log B-232

Thermax

Elevation: 5,635'

<u>Depth (m)</u>	<u>Description</u>
0 - 6.2	Brown to buff clayey soil with some lag gravel.
6.2 - 8.0	Gravel composed of quartzite, limestone, Belknap volcanics, andesites and minor basalt.
8.0 - 28	Medium brown to red brown clayey tuffaceous lake sediments.
28 - 31	Gravel with a large component to basalt fragments.
31 - 43	Dark gray to black, fine-grained slightly vesicular basalt.
43 - 62	No returns, drilled like basalt.

H. D. Pilkington
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H. D. Pilkington
October 26, 1976

HDP:mmo

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Cheryl Caywood
Mark Alldredge
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SE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 13 T25S R8W

Lithologic Log B-233

Thermax

Elevation: 5,760'

<u>Depth(m)</u>	<u>Description</u>
0 - 1	Soil, clayey with some lag gravels.
1 - 25	Buff to light brown Tuffaceous Lake sediments.
25 - 27	Gray, fine to medium-grained sand with some gravel layers. The fragments are mostly basalt.
27 - 31	Gravel with fragments of quartzite, limestone and basalt.
31 - 38.5	Medium-gray crystal tuff, probably of rhyolitic composition.
38.5 - 48.0	Gravel composed of fragments of quartzite, limestone and Belknap volcanics.
48.0 - 62.0	Red-brown clayey matrix in a gravel made up of quartzite, limestone and Belknap volcanics.

H. D. Pilkington
(M.C.)

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October 26, 1976

HDP:mno

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Mark Alldredge
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Lithologic Log B-236 (SWU-36) *Thumex*

SE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec 24 T24S R7W

Elevation: 5,360'

<u>Depth (m)</u>	<u>Description</u>
0 - 6.2	Gravel, composed of limestone fragments from sand size to boulders up to 12" diameter.
6.2 - 99	Limestone, probably pogonip, medium gray, somewhat oxidized along joints.

H. D. Pilkington
(M.C.)

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HDP:mno

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Lithologic Log B-237 (SWU-37) *Thames*

SE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec 17 T24S R6W

Elevation: 5,440'

<u>Depth (m)</u>	<u>Description</u>
0 - 3	Gravel
3 - 97	Medium gray, fine-grained, dense- iron- stained at depth, gravelly to argillaceous limestone of the pogonipls.

H. D. Pilkington
H. D. Pilkington (M.O.)

HDP:mno

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Cheryl Caywood
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Lithologic Log B-238 (SWU-38) *Thermax*

SE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec 5 T24S R6W

Elevation: 5,200'

<u>Depth (m)</u>	<u>Description</u>
0 - 31	White quartzite, well-rounded grains with 5:02 cement - either the tinctic quartzite or the Prospect Mtn. quartzite.
31 - 48	Pink to red-brown quartzite.
48 - 99	Buff to light pink quartzite.

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H. D. Pilkington (MC)

HDP:mno

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LITHOLOGIC LOG B-253

Thumex

NW $\frac{1}{4}$ SW $\frac{1}{4}$ Sec 19 T24S R6W

Elevation: 5,480'

Depth (m)

Description

0 - 4

Soil.

4 - 77

Limestones medium gray to reddish-gray, fine-grained dense limestone.

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HDP:mmo

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Mark Aildredge

cc: Hall
Lange
Deymonaz
Caywood

LITHOLOGIC LOG B-257 (777-2)

THERMEX PROJECT

SW $\frac{1}{4}$ SW $\frac{1}{4}$ Sec 31 T24S R6W

ELEVATION: 5,690'

DATE DRILLED: 4/5/77

Depth (m)	DESCRIPTION
0 - 32	<u>Alluvium</u> - White to yellow-brown silty with dark gray limestone pebbles and minor pebbles of altered andesite.
32 - 53	<u>Limestone</u> - Dark gray with small veins of calcite. Small fractures filled with red clay.
55	<u>Water</u> - less than 3 gpm.
53 - 59	<u>Limestone</u> - Dark gray, rexlized.
59 - 63	<u>Dolomite (?) Limestone</u> - dark gray.
63 - 67	<u>Limestone</u> - Recrystallized, fine-grained. Medium gray to brownish green. Heavy red Fe staining along fractures.

cc: Hall
Lange
Deymonaz
Caywood

LITHOLOGIC LOG B-261 (777-3)

THERMEX PROJECT

ELEVATION: 5,860'

DATE DRILLED: 4/8/77

NE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 6 T25S R6W

Depth(m)	DESCRIPTION
0 - 4	<u>Alluvium</u> - light brown, sandy, small amount of dark gray limestone.
4 - 13	<u>Alluvium</u> - considerable gravel, moist. Gravel of light gray chert, recrystallized dolomite and brown argillaceous limestone.
13 - 23	<u>Limestone</u> - Brown, argillaceous with numerous small red stained small fractures (1-3mm). Some larger fractures containing clay. Cuttings approximately 20% clay. Trace of calcite xls.
23 - 32	<u>Limestone</u> - As above, but becoming less stained and more medium gray.
32 - 40	<u>Limestone</u> - Brownish - Argillaceous, fractured and stained as above. Partly recrystallized.
40 - 67	<u>Limestone</u> - Medium gray to brown, partly rexlized. Minor amount of red stains along small fractures.

cc: Hall
Lange
Deymonaz
Caywood

LITHOLOGIC LOG B-262 (777-1)

THERMEX PROJECT

ELEVATION: 5,780'

DATE DRILLED: 4/8/77

NW $\frac{1}{4}$ NE $\frac{1}{4}$ Sec 36 T24S R7W

Depth (m)	DESCRIPTION
0 - 3	<u>Alluvium</u> - yellow-brown with angular limestone fragments.
3 - 14	<u>Limestone</u> - Dark gray to brownish, argillaceous. Small amount of tan fine-grained sandstone.
14 - 32	<u>Limestone</u> - As above with red staining and some tan to red argillaceous material. Some small calcite veins 1-5mm.
24	<u>Water</u> - Less than 1 gpm.
32 - 38	<u>Sandstone</u> - Quartz 40-60%, calcareous (?) matrix, iron stained, fractured.
38 - 68	<u>Lost circulation, fractured zone.</u> Smooth and hard to 170.

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LITHOLOGIC LOG B-267 (777-11)

Thermex Project

ELEVATION: 6,240'

NE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 29 T25S R6W

DATE DRILLED: 4/13/77

Depth (m)	DESCRIPTION
0 - 8	Qal - dark to medium brown. Gravel of light gray porph. andesite.
8 - 11	Latite - yellow-brown stained and altered, fine granular G.M. fresh K-spar and altered H.B.
11 - 17	Latite - light gray altered
17 - 20	Latite - as above with yellow-brown staining. Fractured.
20 - 35	Latite - as above, but light gray. Fractured.
35 - 44	Latite - bluish-gray. Phenos of fresh K-spar and H.B. in blue-gray G,M, (K=4.5-5.0) Fractured
44 - 68	Latite - as above with several small zones of red stained and altered material. Becoming slightly less porphyritic with depth. Fractured (K=4.5-5.0)

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LITHOLOGIC LOG B-268 (777-10)

Thermex Project

ELEVATION: 6,160'

SE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 23 T26S R7W

DATE DRILLED: 4/15/77

Depth (m)	DESCRIPTION
0 - 6	Qal - sand
6 - 52	Qal - gravels with alternating silt and clay matrix.
52 - 68	Latite - porphyritic, altered phenos of feldspar in aphanitic groundmass.

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LITHOLOGIC LOG B-269 (777-9)

Thermex Project

SW $\frac{1}{4}$ NE $\frac{1}{4}$ Sec 13 T26S R7W

ELEVATION: 6,240'

DATE DRILLED: 4/15/77

Depth (m)	DESCRIPTION
6 - 8	XL-lithic Tuff - light gray to brown, moderately altered (K=5.0-5.5)
8 - 41	Rhyolite - porphyritic, pinkish-gray with XLS of plag, and H.B.
41 - 43	XL-Tuff - white, well indurated. XLS of feldspar, and biotite. Minor pink staining.
43 - 68	XL-Tuff - as above with numerous small bands of dark gray rhyolite (K=5.0)

LITHOLOGIC LOG B-270 (777-8)

Thermex Project

SE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 19 T25S R6W

ELEVATION: 6,680'

DATE DRILLED: 4/14/77

Depth (m)	DESCRIPTION
0 - 2	Qal - reddish-brown with gravels of L.S. and altered volcanics.
2 - 14	Rhyolite - aphanitic with trace of feldspar phenos, mostly altered (K=5.0-5.5)
14 - 19	Clay - yellow brown with frags of rexlized L.S.
19 - 40	Quartzite - fractured. (K=6.5)
40 - 60	Clay - light gray to yellow. Hard with lenses of dark gray rexlized L.S. (K=4.5-5.0)
60 - 68	L.S. - light gray, fine grained, rexlized.

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LITHOLOGIC LOG B-271 (777-7)

Thermex Project

ELEVATION: 6,130'

NE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 1 T26S R7W

DATE DRILLED: 4/14/77

Depth (m)	DESCRIPTION
0 - 14	Qal - With basaltic gravels and small amt. of silicic rock.
14 - 30	Qal - gravels of rhyolites and tuffs with lesser amts. of basalt, in silty/sandy matrix.
30 - 91	Qal - as above with increasing amts. of L.S. and dolomite frags (up to 70%). Small flow of water, approximately 1-2 gpm between 52 and 56 meters. Similar flow of water at 91mm.
91 - 99	Qal - as above.

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LITHOLOGIC LOG B-272 (777-5)

Thermex Project

SE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 7 T25S R6W

ELEVATION: 6,220'

DATE DRILLED: 4/12/77

Depth (m)	DESCRIPTION
0 - 20	Latite - porphyritic, XLS of plag and mafics altered to kaolin and chlorite respectively. G.M. mostly altered to red clay. Clay ~ 80%
20 - 59	Latite - porphyritic, XLS of feldspar and bio in white to reddish tuffaceous matrix. Matrix 75%, becoming slightly lighter with depth (K=4.5-5.0)
59 - 68	Latite - as above with red matrix.

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LITHOLOGIC LOG B-273 (777-6)

Thermex Project

ELEVATION: 6,040'

SW $\frac{1}{4}$ SW $\frac{1}{4}$ Sec 30 T24S R6W

DATE DRILLED: 4/13/77

Depth (m)	DESCRIPTION
0 - 5	Qal - yellow-brown silty with gravels of weathered volcanics and L.S.
5 - 26	Andesite - porphyritic, light gray to reddish. Feldspars and matrix almost completely altered. Becoming better indurated with depth.
26 - 50	Andesite - porphyritic, medium gray with altered plag & trace of bio. Zones of silicification. Some poorly indurated tuffaceous material. Occasional small fractures with red iron staining. (K=4.5-5.0)
50 - 59	Andesite - as above with trace of pyrite.
59 - 63	Andesite - greenish-gray, aphanitic to slightly prophyritic. Partly silicified, very dense (K=6) Pyrite 1-2%.
63 - 67	Andesite - as above, but lighter color and less pyrite.

cc. Hall
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Deymonaz
Caywood

LITHOLOGIC LOG B-423 (777-4)

Thermex Project

ELEVATION: 6,160'

NW $\frac{1}{4}$ SW $\frac{1}{4}$ Sec 13 T24S R7W

DATE DRILLED:

Depth (m)	DESCRIPTION
0 - 4	Alluvium - 60-80% gravel of medium gray to pinkish porphyritic rhyolite.
4 - 8	Welded XL-Tuff - 35% plag XLS altering to kaolin. Medium gray to red.
8 - 11	Welded XL-Tuff - as above with white ash matrix.
11 - 14	Welded XL-Tuff - 30-40% XLS (2-5% qtz, 25% plag, 5% mafics) red altered matrix, hint of flow banding. (K=4.5-5.0)
14 - 26	Welded XL-Tuff - as above with darker red color, less alteration of matrix. XLS ~ 30%, half of mafics altered to chlorite. (K=5.0-5.5)
26 - 30	Welded XL-Tuff - as above, but less well indurated. XL content ~ 40%.
30 - 38	Welded XL-Tuff - repeat 45-85
38 - 67	Welded XL-Tuff - as above with red matrix, mostly altered to dense hard clay. (K=4.5-5.0)

cc: Hall
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Caywood

LITHOLOGIC LOG B - 430 (777=13)

THERMEX PROJECT

SE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec 30 T26S R6W

ELEVATION: 7,280'

DATE DRILLED: 8/4/77

Depth (m)

DESCRIPTION

0 - 12

Qal Gravelly Sand - ~10% gravel; brown; angular; poorly sorted; ave size 1mm, range .25-5mm; consists mostly of crystalline welded tuff pebbles, feldspar and quartz

12 - 30

Crystalline Welded Tuff - brown gray-reddish gray; ~75% crystalline with crystals of feldspar, biotite and quartz ave 1mm in size; alteration - matrix strong with some chloritization.

30 - 67

Crystalline Welded Tuff - greenish gray; fine grained; ~50% crystalline; 25% feldspar, 15% biotite, less than 10% quartz; chloritization widespread.

cc: Hall
Lange
Deymonaz
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LITHOLOGIC LOG B-431 (777-12)

THERMEX PROJECT

ELEVATION: 7,120'

DATE DRILLED: 8/4/77

NW $\frac{1}{4}$ SW $\frac{1}{4}$ Sec 20 T26S R6W

Depth (m)

DESCRIPTION

0 - 40	Weathered Crystal Welded Tuff - red; crystals range from 1mm-2.5mm and make up 40-50% of the tuff; feldspar 15-20%; quartz 10%; biotite less than 10%
40 - 73	Crystal Welded Tuff - repeat 0-97, but highly oxidized with large amt. of feldspars and matrix altered to clay.