

Well Summary

Location ID: ST-5-D (Westbay) Field Representative(s): Menzie / Summers

Date Started: 03/11/93 Date Completed: 06/29/93

Northing: 230922.96 Easting: 398537.26

Brass Cap: 4458.74 Outer Casing: 4459.18 Inner Casing: 4460.34

Drilling Method: Mud Rotary Drilling Contractor: Larjon Drilling Co.

Driller: J. Gower

Total Depth Borehole: 1,210' Total Depth 4" Well Casing: 1,200.38'

Total Depth 2" Well Casing: 1,195'

Total Depth Surface Casing: 80'

Diameter Well Casing: 2" (Westbay) Diameter Surface Casing: 14"

Water Producing (packed-off) Interval: 1,170.13' to 1,180.13' (Screen #1)

Water Producing (packed-off) Interval: 979.85' to 989.85' (Screen #2)

Water Producing (packed-off) Interval: 809.97' to 819.97' (Screen #3)

Water Producing (packed-off) Interval: 650.04' to 660.07' (Screen #4)

Water Producing (packed-off) Interval: 480.09' to 490.04' (Screen #5)

Water Zone Detected: Not detected Water Level Open Borehole: NA

Water Level Cased Borehole: 389.33' (GS) in the 4" casing

Quik-Foam Use: 50 gal.

Estimated Water Use: 48,800 gal.

Westbay Well Casing:

2in x 2ft SCD 80 PVC:	1	=	2 ft
2in x 5ft SCD 80 PVC:	10	=	50 ft
2in x 10ft SCD 80 PVC:	110	=	1,100 ft
5ft MP packer:	9	=	45 ft
Total SCD 40 PVC pipe:		=	1,197 ft

Regular coupling:	114
Pumping port coupling:	5
Measurement port coupling:	10
End cap:	1
Casing Clamp:	Yes

Well Completion:

100# bags 16/40 sand:	462	bags
100# bags 10/20 sand:	0	bags
100# bags 8/14 sand:	0	bags
100# bags 8/20 sand:	0	bags
94# bags cement:	200	bags (grout)
5 gal. buckets bentonite:		buckets
50# bentonite powder:	22	bags (grout)
Benseal: 50 # bags	32	bags

Surface Casing:

94# bags cement:	25	bags
50# bags bentonite powder:	2	bags
Grout:	0	bags

Pertinent Field Notes:

09/29/92 Steam cleaned and mobilized mud rotary drilling equipment to site - Menzie.

09/30/92 Drilled pilot hole from 0' to 70' with 12¼" mill tooth bit - Menzie.

10/01/92 Drilled pilot hole from 70'-80'. Reamed borehole (0'-80') to 16½" - Canavan.

10/02/92 Installed 83' of 14" surface casing and grouted it in place. Used 25 sacks of cement - Canavan.

10/05/92 Demobilized mud rotary equipment from site - Canavan.

- 03/11/93 Mobilize BE rig and associated equipment to site. Drill 9 7/8" x 39' rathole for kelly on moller. Demob BE rig from site.
- 03/12/93 Steam clean moller rig and associated equipment and begin mobilizing to well pad.
- 03/15/93 Continue steam cleaning and mobilizing equipment.
- 03/16/93 Continue steam cleaning and mobilizing equipment.
- 03/17/93 Continue steam cleaning and mobilizing equipment.
- 03/18/93 Continue steam cleaning and mobilizing equipment.
- 04/12/93 Mix mud.
- 04/13/93 Start drilling from 80' with 12 1/4" mill tooth bit, 5' stabilizer and two 7" x 30' collars. Drilled to 348' then 'U' joint on mud pump busted.
- 04/14/93 Repairs to mud pump completed. Resume drilling from 348' to 378'.
- 04/15/93 Drilled to 427', tripped out and changed to 12 1/4" tricone button bit, added third 7" x 30' steel collar, retallied drill string, then drill 427' to 487'.
- 04/16/93 Drilled 487' - 687'.
- 04/17/93 Drilled 687' - 887'.
- 04/18/93 Drilled 887' - 1,039'.
- 04/19/93 Drilled 1,039' - 1,155'.
- 04/20/93 Drilled 1,155' - 1,210'(TD). Thin mud, trip out, and run full suite of geophysical logs.
- 04/21/93 Begin setting up for completion. Demobilize drill rig and associated equipment. Mobilize pulling unit. Load casing. Dig two more mud pits. Steam clean tremie and casing. Run tremie.
- 04/22/93 Run 4" stainless steel casing with five 10' extra strength screens. Begin pumping 8-20 sand gravel packs and sand/Benseal plugs. Completely plug tremie when pumping first sand/Benseal plug.
- 04/23/93 Change method of pumping plugs. We will pump a pure benseal plug (as we do in our regular monitoring wells), then between screens we will pump sand and heavy mud from the mud pits. Set up the equipment for this method. Steam clean tremie and run back down hole. Start pumping pure benseal plugs, 8-20 sand and heavy mud between screens, and 8-20 sand only around screens. This method is successful.

04/24/93 Continue pumping benseal plugs, 8-20 sand/heavy mud mix, and 8-20 sand gravel pack. Have filler sand installed above SWL by evening. Leave site until Monday, 04/26/93.

04/26/93 Install first load of grout. Check for grout invasion with bailer. Everything is cool.

04/27/93 Install 2nd load of grout. Well is grouted to surface.

04/28/93 Clean up oil-contaminated dirt and plastic rig liner. Surge and bail well for initial development.

04/29/93 Run tremie and straddle packer assembly into well and begin development by air lifting.

04/30/93 Air lift from all screens (no packer inflation).

05/03/93 Continue.

05/04/93 Continue.

05/05/93 Finish initial air lift. See development sheet for results.

05/06/93 Begin air lift development on Screen #1 at 1,170' - 1,180'.

05/07/93 Continue.

05/10/93 Continue.

05/11/93 Continue.

05/12/93 Continue.

05/13/93 Continue.

05/14/93 Complete development of Screen #1. See development sheet for results.

05/17/93 Begin air lift development of Screen #2 at 980' - 990'.

05/18/93 Continue.

05/19/93 Continue.

05/20/93 Continue.

05/21/93 Complete development of Screen #2. See development sheet for results.

05/24/93 Begin air lift development of Screen #3 at 810'-820'.

05/25/93 Continue.

05/26/93 Continue.

05/27/93 Continue.

05/28/93 Continue.

06/01/93 Continue.

06/02/93 Continue.

06/03/93 Continue.

06/04/93 Complete development of Screen #3. See development sheet for results.

06/07/93 Begin air lift development of Screen #4 at 650'-660'.

06/08/93 Continue.

06/09/93 Continue.

06/10/93 Continue.

06/11/93 Complete development of Screen #4. See development sheet for results.

06/14/93 Begin air lift development of Screen #5 at 480'-490'.

06/15/93 Continue.

06/16/93 Continue.

06/17/93 Continue.

06/18/93 Continue.

06/21/93 Complete development of Screen #5. See development sheet for results.

06/22/93 Deflate packer assembly and run more tremie to 1,200' to clean up sump one more time by air lift.

06/23/93 Complete clean up of sump. Trip out all tremie and packer assembly to surface.

06/24/93 Lay out and QA Westbay casing. Begin installing Westbay casing.

06/25/93 Complete installation of Westbay casing.

06/28/93 Begin inflating packers for Westbay casing.

06/29/93 Complete inflation of Westbay packers. Inflation tool for Westbay packers gets stuck in casing at $\approx 490'$. Contact G. Contaldo (Project Hydrogeologist) and discuss problem with him.

06/30/93 Try several suggestions from Westbay but tool still stuck.

07/01/93 Still stuck.

07/02/93 Still stuck.

07/06/93 Still stuck.

07/07/93 Still stuck.

07/08/93 Still stuck.

07/09/93 Still stuck.

07/12/93 Still stuck.

07/13/93 Still stuck.

07/14/93 Still stuck.

07/15/93 Still stuck.

07/16/93 Westbay representative, K. Seedhouse, on site to try to free inflation tool stuck at 490' but no success.

07/19/93 Dave Larsen of Westbay frees tool stuck at 490' and retrieves tool from well.

07/20/93 Inform Ray Spencer of Lockheed's environmental group that ST-5-D is ready for sampling.