Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 1 **Report For 12-Aug-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		675,276 / 0	
Measured Depth (ft):	0	**Drilling Days (act.):**	0	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	0	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	0.00	01	1,714,090	675,276	
Proposed TD (ft):	1700	**Days On Location:**	1	**Last BOP Test:**					
Hole Made (ft) / Hrs:	0 / 0.0	**Last Casing:**				**Totals:**	1,714,090	675,276	
Average ROP (ft/hr):		**Next Casing:**	5.500 at 220	**Working Interest:**		**Well Cost ($):**		675,276	
Pers/Hrs:	**Operator:** 2 / 0	**Contractor:**	7 / 0	**Service:**	8 / 0	**Other:**	2 / 0	**Total:**	19 / 0

SafetySummary: No incidents or events reported. 1 day since LTI.

Current Operations: Bob, Monty, Kevin and Joe, fly to site locate hole position, fly mini excavator to site begin construction of drill pad, fly camp crew to site

Planned Operations: Construct drill pad, dig and install cellar to collar the hole. Build man camp, sort and fly loads to valley.

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	8:00	8.00	0	WOD	personnel at lodge and town on Akutan	
8:00	9:30	1.50	0	MOB	Meeting to discuss project fly to Valley to site hole location	
9:30	19:00	9.50	0	MOB	Fly loads to site , begin construction of camp and drill pad.	
19:00	0:00	5.00	0	WOD	Crews down for evening	

Management Summary

Stage personnel at container location to pull and sort loads. Fly city representative to location, stake hole. Fly materials and personnel to Valley to begin construction of camp.

Comments

Helicopter AS 350 flight time 3.5hrs.

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	675,276	675,276	39.40 %
	Totals $:	1,714,090	0	0	675,276	675,276	39.40 %

Safety Information

First Aid Treatments: **Medical Treatments:** **Lost Time Incidents:** **Days Since LTI:** 1

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Overcast / broken	**Visibility:**	6
Air Temperature:	58 degF	**Bar. Pressure:**	
Wind Speed/Dir:	12 / W	**Wind Gusts:**	16

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 2 **Report For 13-Aug-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		14,260 / 0	
Measured Depth (ft):	0	**Drilling Days (act.):**	0	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	0	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	0.00	01	1,714,090	689,536	
Proposed TD (ft):	1700	**Days On Location:**	2	**Last BOP Test:**					
Hole Made (ft) / Hrs:	0 / 0.0	**Last Casing:**				**Totals:**	1,714,090	689,536	
Average ROP (ft/hr):		**Next Casing:**	5.500 at 220	**Working Interest:**		**Well Cost ($):**		689,536	
Pers/Hrs:	**Operator:** 2 / 0	**Contractor:**	6 / 0	**Service:**	5 / 0	**Other:**	2 / 0	**Total:**	15 / 0

SafetySummary: No incidents or events reported. 2 days since LTI.

Current Operations: Weather clearing up, should be able to fly. Hold planning meeting.

Planned Operations: Continue to rig up camp and fly loads to valley

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	0:00	24.00	0	WOW	weather Delay	X

Management Summary

Shut down due to weather, No flying today.

Comments

Weather Delay

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	14,260	689,536	40.23 %
	Totals $:	1,714,090	0	0	14,260	689,536	40.23 %

Safety Information

First Aid Treatments: **Medical Treatments:** **Lost Time Incidents:** **Days Since LTI:** 2

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Heavy rain	**Visibility:**	0.3
Air Temperature:	55 degF	**Bar. Pressure:**	
Wind Speed/Dir:	28 / N	**Wind Gusts:**	35
Comments:	weather delay , rain and high winds		

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 3 **Report For 14-Aug-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		28,630 / 0	
Measured Depth (ft):	0	**Drilling Days (act.):**	0	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	0	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	0.00	01	1,714,090	718,166	
Proposed TD (ft):	1700	**Days On Location:**	3	**Last BOP Test:**					
Hole Made (ft) / Hrs:	0 / 0.0	**Last Casing:**				**Totals:**	1,714,090	718,166	
Average ROP (ft/hr):		**Next Casing:**	5.500 at 220	**Working Interest:**		**Well Cost ($):**		718,166	
Pers/Hrs:	**Operator:** 2 / 0	**Contractor:**	6 / 0	**Service:**	7 / 0	**Other:**	2 / 0	**Total:**	17 / 0

SafetySummary: No incidents or events reported. 3 days since LTI.

Current Operations: Slinging loads to valley for camp and drill site, complete 6x6x4' cellar, set and level rig foundation

Planned Operations: build camp and set tents on frames, set rig

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	9:00	9.00	0	WOD	Wait on daylight and weather report to determine if capable of flight, hold plan meeting from 08:00-09:00	X
9:00	19:00	10.00	0	MOB	Fly 52 loads to site of rig systems and camp boxes and lumber and equipment	
19:00	0:00	5.00	0	WOD	Fly crews to lodge for evening meals and rest, 19:00 hrs to 00:00, rest for night	X

Management Summary

Cellar complete, rig skid and substructure set, pits 50% complete.

Comments

Helicopter flew 5.7 hrs, 52 loads to site.

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	28,630	718,166	41.90 %
	Totals $:	1,714,090	0	0	28,630	718,166	41.90 %

Safety Information

First Aid Treatments:	**Medical Treatments:**	**Lost Time Incidents:**	**Days Since LTI:** 3

☐ **BOP Test** ☐ **Crownamatic Check**

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 4 **Report For 15-Aug-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		29,013 / 0	
Measured Depth (ft):	0	**Drilling Days (act.):**	0	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	0	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	0.00	01	1,714,090	747,179	
Proposed TD (ft):	1700	**Days On Location:**	4	**Last BOP Test:**					
Hole Made (ft) / Hrs:	0 / 0.0	**Last Casing:**				**Totals:**	1,714,090	747,179	
Average ROP (ft/hr):		**Next Casing:**	5.500 at 220	**Working Interest:**		**Well Cost ($):**		747,179	
Pers/Hrs:	**Operator:** 2 / 0	**Contractor:**	6 / 0	**Service:**	7 / 0	**Other:**	2 / 0	**Total:**	17 / 0

SafetySummary: No incidents or events reported. 4 days since LTI.

Current Operations: sling loads starting at 9:00

Planned Operations: complete rig up of camp, assemble rig with helicopter, fly diesel fuel to site for camp and rig.

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	8:00	8.00	0	WOD	Wait on daylight , morning planning meeting at 08:00	X
8:00	15:00	7.00	0	MOB	Fly drill loads to site and stage prior to assembling rig, fly diesel drums and gasoline to camp, camp continue to be built making frames for tents, Kitchen up, stores tent complete.	
15:00	18:00	3.00	0	RIGU	Assemble rig with helicopter, continue to stage and set auxiliary equipment, water pump set, rig generator , rig complete set up at 18:00 hours.	
18:00	19:30	1.50	0	OTHER	Fly crews to lodge for evening, will resume work at daylight on Tuesday	
19:30	0:00	4.50	0	WOD	Crews at lodge	X

Management Summary

Rig is assembled, support equipment is 80% placed, camp is 75% complete

Comments

Flew helicopter for 5.5 hrs today 48 loads

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	29,013	747,179	43.59 %
	Totals $:	1,714,090	0	0	29,013	747,179	43.59 %

Safety Information

First Aid Treatments:	**Medical Treatments:**	**Lost Time Incidents:**	**Days Since LTI:** 4

☐ **BOP Test** ☐ **Crownamatic Check**

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 5 **Report For 16-Aug-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		23,935 / 0	
Measured Depth (ft):	0	**Drilling Days (act.):**	0	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	0	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	0.00	01	1,714,090	771,114	
Proposed TD (ft):	1700	**Days On Location:**	5	**Last BOP Test:**					
Hole Made (ft) / Hrs:	0 / 0.0	**Last Casing:**				**Totals:**	1,714,090	771,114	
Average ROP (ft/hr):		**Next Casing:**	5.500 at 220	**Working Interest:**		**Well Cost ($):**		771,114	

Pers/Hrs: **Operator:** 2 / 0 **Contractor:** 6 / 0 **Service:** 7 / 0 **Other:** 2 / 0 **Total:** 17 / 0

SafetySummary: No incidents or events reported. 5 days since LTI.

Current Operations: Flying crew and bags from lodge to site

Planned Operations: complete set up of core shack and operations tent, complete set up of rig equipment

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	9:00	9.00	0	WOD	Crews at lodge for evening planning meeting at 08:00	X
9:00	19:00	10.00	0	RIGU	Continue rig up of drill site, complete core shack, construct frame for operations tent. Camp generator went down at 10:00 hrs, fly standby gen. to site, get operational at 12:00 hrs, standby generator has oil leak from rear main seal, questionable to maintain camp. Complete drill pad site, core tent and operations tent complete, fuel in all tanks on site.	
19:00	20:00	1.00	0	OTHER	Fly crews to lodge for evening, Unable to stay on site due to failed generators	X
20:00	0:00	4.00	0	WOD	Crews at lodge for night	X

Management Summary

Site 85% complete for operation, inter-net connection still not functioning, all fuel tanks on location have been filled,

Comments

Camp generator went down at 11:00, fly backup set from staging area. work on inter-net connection from dish to camp and operations tent. Heavy rain throughout the day, having difficulty to install internet connection. Plan to bring all crews gear and site personnel to camp tomorrow,

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	23,935	771,114	44.99 %
	Totals $:	1,714,090	0	0	23,935	771,114	44.99 %

Safety Information

First Aid Treatments:	**Medical Treatments:**	**Lost Time Incidents:**	**Days Since LTI:** 5

☐ **BOP Test** ☐ **Crownamatic Check**

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 6 **Report For 17-Aug-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		21,955 / 0	
Measured Depth (ft):	0	**Drilling Days (act.):**	0	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	0	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	0.00	01	1,714,090	793,069	
Proposed TD (ft):	1700	**Days On Location:**	6	**Last BOP Test:**					
Hole Made (ft) / Hrs:	0 / 0.0	**Last Casing:**				**Totals:**	1,714,090	793,069	
Average ROP (ft/hr):		**Next Casing:**	5.500 at 220	**Working Interest:**		**Well Cost ($):**		793,069	
Pers/Hrs:	**Operator:** 2 / 0	**Contractor:**	6 / 0	**Service:**	4 / 0	**Other:**	2 / 0	**Total:**	14 / 0

SafetySummary: No incidents or events reported. 6 days since LTI.

Current Operations: Waiting on City of Akutan to spud well

Planned Operations: set all drilling and support personnel in camp, continue set up drilling operations, fly diesel drums and totes to rig and camp, prepare to spud well.

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	9:00	9.00	0	WOD	Rig crews down for night at lodge.	X
9:00	19:00	10.00	0	RIGU	Completed move and rig up, ready to spud, moved in and rigged up third generator. Heavy rain all day.	
19:00	0:00	5.00	0	OTHER	moved into camp	

Management Summary

Completed move and rig up, ready to spud. Completed moving all required drilling supplies to site. Moved in and rigged up third generator. Moved crews into camp.

Comments

Heavy rain all day.

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	21,955	793,069	46.27 %
	Totals $:	1,714,090	0	0	21,955	793,069	46.27 %

Safety Information

First Aid Treatments:	**Medical Treatments:**	**Lost Time Incidents:**	**Days Since LTI:** 6

☐ **BOP Test** ☐ **Crownamatic Check**

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 7 **Report For 18-Aug-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		19,390 / 0	
Measured Depth (ft):	49	**Drilling Days (act.):**	1	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	49	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01	1,714,090	812,458	
Proposed TD (ft):	1700	**Days On Location:**	7	**Last BOP Test:**					
Hole Made (ft) / Hrs:	49 / 4.0	**Last Casing:**				**Totals:**	1,714,090	812,458	
Average ROP (ft/hr):	12.25	**Next Casing:**	5.500 at 220	**Working Interest:**		**Well Cost ($):**		812,458	
Pers/Hrs:	**Operator:** 2 / 0	**Contractor:**	6 / 0	**Service:**	1 / 0	**Other:**	2 / 0	**Total:**	11 / 0

SafetySummary: No incidents or events reported. 7 days since LTI.

Current Operations: Installing 8 5/8" .322 wall surface casing

Planned Operations: Spud AK-3 well, core PQ to 49', ream 10 3/4"to 42', set and cement 8 5/8"surface casing in place at 40'

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	8:00	8.00	0	WOD	Crews at lodge for night.	
8:00	12:00	4.00	0	WOW	Waiting on weather to allow Mayor and Priest to site for blessing ritual , 08:00 mix spud mud, prepare to spud hole , install 5' PQ barrel and core bit. fill water tanks.	X
12:00	16:00	4.00	49	DRIL	PQ core from bottom of cellar 4' to 49', cored 45'. shot core at 35' with laser thermometer, 105.5 degrees F. R	
16:00	19:00	3.00	49	OPEN	Install 4.75"x 10 3/4" hole opener, ream hole from cellar floor -4' to 42', condition mud circulate bottoms up. let set to check for fill.30 minutes, 8' of fill try to circulate, plugged bit	
19:00	21:00	2.00	49	TRPO	Pull hole opener to surface plugged bit, break off bit, lay down, clean bit, Run back in hole, tag fill at 32'	
21:00	0:00	3.00	49	REAM	Ream 10 3/4" hole to 42' mix mud to 65 -70 vis, circulate and work hole,formation sluffing off from 25-30 ' continue to work and pump hole to 42'	

Management Summary

Wait on weather to fly Mayor and Priest to site to bless the hole prior to spud, spud hole at 12:00hrs, core to 49' , trip out install 10 3/4" hole opener, ream to 42' condition hole, trip out for plugged bit, continue to condition hole prior to install 8 5/8" surface casing

Comments

Reference to top of hole at ground surface, City of Akutan Mayor and Priest on location at 11:30, perform blessing ritual. Begin coring at 12:00 start of core at bottom of cellar -4' from GS.

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	19,390	812,458	47.40 %
	Totals $:	1,714,090	0	0	19,390	812,458	47.40 %

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS %	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
18-Aug-16 12:00 at Depth 0 ft																				
90.00	52																			

Bit/BHA/Workstring Information

BHA - No. 2 - HO, BS, OTHER = 3.52

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
4	45	10.0	10.0	3,000	5,000	450	500	2,500	3,000	18	18	100

Comments: PQ core to 45' below ground surface.Run 10 3/4" hole opener from -4' to 42' to set 8" surface conductor.

Rig Information

Equipment Problems:

Location Condition:

Transport:

Daily Drilling Report

Geothermal Resource Group

Well ID: AK-3

Well Name: AK-3

Field: Hot Springs Bay Va

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 7

Report For 18-Aug-16

Safety Information

First Aid Treatments:	Medical Treatments:	Lost Time Incidents:	Days Since LTI: 7

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	low overcast	**Visibility:**	0.3
Air Temperature:	50 degF	**Bar. Pressure:**	
Wind Speed/Dir:	10 / E	**Wind Gusts:**	15
Comments:	Heavy rain through out the day		

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 8 **Report For 19-Aug-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		23,300 / 0	
Measured Depth (ft):	49	**Drilling Days (act.):**	2	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	49	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01	1,714,090	835,758	
Proposed TD (ft):	1700	**Days On Location:**	8	**Last BOP Test:**					
Hole Made (ft) / Hrs:	49 / 0.0	**Last Casing:**	8.650 at 40			**Totals:**	1,714,090	835,758	
Average ROP (ft/hr):		**Next Casing:**	5.500 at 220	**Working Interest:**		**Well Cost ($):**		835,758	

Pers/Hrs:	**Operator:**	2 / 0	**Contractor:**	6 / 0	**Service:**	3 / 0	**Other:**	2 / 0	**Total:**	13 / 0

SafetySummary: No incidents or events reported. 8 days since LTI.

Current Operations: Coring ahead PQ size through rubble to 49'

Planned Operations: Cement 8 5/8" casing in 10 3/4" hole from -4'to 40' measured depth from ground surface.

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	6:00	6.00	49	CASE	pick up 8 5/8" casing , weld together total of 41.2' , run in hole hit bridge at 22'-26' wash and work pipe to bottom	
6:00	8:00	2.00	49	CIRC	Complete getting casing to bottom at 40' from ground surface, circulate hole with 55 vis, 9.0 mud.	
8:00	9:30	1.50	49	CMTP	Mix 12 -94 lbs sack of #2 portland cement with 96 gallons , 14.2 ppg cement,pump cement, returns to surface. plug down at 09:30	
9:30	21:30	12.00	49	WOC	Wait on Cement, sound annulus after 8 hrs. 3' below cellar floor, mix 1 sk cement with 6 gallons of water fill to cellar floor. Lay plywood on site for walk way due to muddy site. Prepare tooling to drill ahead, install new 8AM- PQ core bit onto core barrel SN-6B2837, new PQ reamer shell #2B4814 .	
21:30	22:00	0.50	49	TRPI	Trip in hole with PQ core barrel, tag top of cement at 28'.	
22:00	0:00	2.00	49	CMTD	Core ahead through cement to bottom of casing, 40' BGS, core rubble to previous TD of 49' Circulate hole clean, prior to begin coring ahead.	

Management Summary

Reamed PQ hole to 10 3/4" to 42' from BGS, ran 8 5/8" A53 grade B casing from surface to 40', cemented in place with 12 sks of portland cement mixed with 96 gallons of water. Wait on cement for 12 hrs, perform top job (3') , trip in hole with new #8 PQ core bit, Tag cement at 28', core out cement to casing shoe (40') core out rubble to 49'

Comments

From 25-28'and 38-42' hole conditions were broken rock and clays, causing difficulty in maintaining hole open during casing run. Cement job success with returns to surface. Temperature at 35' measured with laser heat gun 105.5 degrees F

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	8.650	0	40	40	40	MOVE	10.750		OTHER	

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	23,300	835,758	48.76 %
	Totals $:	1,714,090	0	0	23,300	835,758	48.76 %

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Polymer - 5GAL	1	220			

Bit/BHA/Workstring Information

BHA - No. 3 - BIT, NBS, CORE, 2 OTHER = 8.52

Rig Information

Equipment Problems:

Location Condition:

Transport:

Safety Information

First Aid Treatments:	**Medical Treatments:**	**Lost Time Incidents:**	**Days Since LTI:** 8

☐ **BOP Test** ☐ **Crownamatic Check**

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 9 **Report For 20-Aug-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		28,083 / 0	
Measured Depth (ft):	176	**Drilling Days (act.):**	3	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	176	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01	1,714,090	863,841	
Proposed TD (ft):	1700	**Days On Location:**	9	**Last BOP Test:**					
Hole Made (ft) / Hrs:	127 / 14.5	**Last Casing:**	8.650 at 40			**Totals:**	1,714,090	863,841	
Average ROP (ft/hr):	8.76	**Next Casing:**	5.500 at 220	**Working Interest:**		**Well Cost ($):**		863,841	
Pers/Hrs:	**Operator:** 2 / 0	**Contractor:**	6 / 0	**Service:**	3 / 0	**Other:**	2 / 0	**Total:**	13 / 0

SafetySummary: No incidents or events reported. 9 days since LTI.

Current Operations: Well kicked, Lost rod due to foot clamp slipping. Top of HWT rod 2' below foot clamp.

Planned Operations: Core ahead PQ to planned 5.5" casing depth of 220' BGS.

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	9:30	9.50	100	DRIL	Core PQ from 49' to 100', core temp at 100' -104 degrees F,	
9:30	10:00	0.50	100	SURV	Run Totco inclination tool, 0.5 degrees at 100', Run MRT 190F,	
10:00	12:00	2.00	129	DRIL	Core ahead to 130' with PQ, prepare to run MRT and Temperature logging probe on Totco.	
12:00	12:30	0.50	129	SURV	Run survey MRT on survey tool along with down loadable temperature probe, Inclination .5 Degrees. MRT reading 145 F. Probe reading 140 F	
12:30	14:00	1.50	149	DRIL	Core ahead PQ to 149'.Take steam kick, 190F coming out of annulus. Pump cold water 56 F down rods, cool hole break joint lay down inner barrel,	
14:00	15:30	1.50	149	CIRC	Pump cold water through core pipe, flow check, no flow from annulus, drop inner barrel. mix new mud 2 bags gel, pump barrel down, begin coring	
15:30	17:00	1.50	176	DRIL	Core ahead, while coring from 176, high torque, stuck pipe, taking steam kick.	
17:00	18:00	1.00	176	STUCK	Work to free stuck pipe, free hot water flowing from annulus, due to plugged inner barrel. Free pipe and gain circulation through core rods. Rig up pack off to seal 8"casing to HWT core rods pump cold water to hole.	X
18:00	0:00	6.00	176	KILL	Pump 60 gpm cold water 56 degrees trough core rods to cool hole	X

Management Summary

Core ahead , take steam kick at 150' cool hole with cold fresh water. continue coring ahead at 165' stuck pipe, work pipe free, cool hole to 130 Degrees F, Rig up packoff to seal 8" conductor on HWT core rod, Pump cold water to well bore.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	8.650	0	40	40	40	MOVE	10.750		OTHER	

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	28,083	863,841	50.40 %
	Totals $:	1,714,090	0	0	28,083	863,841	50.40 %

Bit/BHA/Workstring Information

BHA - No. 3 - BIT, NBS, CORE, 2 OTHER = 8.52

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
100	176	10.0	10.0	3,000	5,000	450	500	2,250	2,500	18	18	200

Survey Information

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates N-S	Coordinates E-W	D.L.S.
TOTCO	100.0	0.50							
TOTCO	129.0	0.50							

Daily Drilling Report

Geothermal Resource Group

Well ID: AK-3

Well Name: AK-3

Field: Hot Springs Bay Va

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 9

Report For 20-Aug-16

Rig Information

Equipment Problems:

Location Condition:

Transport:

Safety Information

First Aid Treatments:	Medical Treatments:	Lost Time Incidents:	Days Since LTI: 9

☐ **BOP Test** ☐ **Crownamatic Check**

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 10 **Report For 21-Aug-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		32,780 / 0	
Measured Depth (ft):	176	**Drilling Days (act.):**	4	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	176	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01	1,714,090	896,621	
Proposed TD (ft):	1700	**Days On Location:**	10	**Last BOP Test:**					
Hole Made (ft) / Hrs:	11 / 0.0	**Last Casing:**	8.650 at 40			**Totals:**	1,714,090	896,621	
Average ROP (ft/hr):		**Next Casing:**	5.500 at 220	**Working Interest:**		**Well Cost ($):**		896,621	
Pers/Hrs:	**Operator:** 2 / 0	**Contractor:**	6 / 0	**Service:**	4 / 0	**Other:**	2 / 0	**Total:**	14 / 0

SafetySummary: 1 First Aid case reported. 1 day since LTI. Conducted Safety Meeting.

Current Operations: Continue pumping 35 gpm 60 degree cold water into 8" casing , packed off on top with poor boy packer.

Planned Operations: Assemble fishing tool to catch top of core rod with inside grapple, configure poor boy packoff with HWT rod clamp and stripping rubbers. pack off the 8" casing to HWT , Kill hole.

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	7:00	7.00	176	OTHER	Well kicked. Steam flow to surface. Lost rod due to foot clamp slipping. Top of HWT rod 2' below foot clamp.	X
7:00	15:30	8.50	176	FISH	fly fishing tool from lay down yard,connect inside grapple ,run in on new HWT core rod, catch fish bring through foot camp. secure in head, break down fishing joint. Well blowing and flowing 66 gpm,	X
15:30	17:30	2.00	176	WELLHD	Rig up and install10' joint to string , shut in flow, secure well from blowing, begin pumping cold water into well bore. 60 degree in 136 F out,	X
17:30	0:00	6.50	176	WELLHD	Secure poor boy packoff from HWT to 8" casing begin pumping 60 gpm of 60 degree water through string into hole. Hole secure.	X

Management Summary

Made up and ran inside grapple fishing tool, brought fish to surface, cooled hole to laydown fish, packed off 8" with pack off assembly, gained control of well,

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	8.650	0	40	40	40	MOVE	10.750		OTHER	

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	32,780	896,621	52.31 %
	Totals $:	1,714,090	0	0	32,780	896,621	52.31 %

Bit/BHA/Workstring Information

BHA - No. 3 - BIT, NBS, CORE, 2 OTHER = 8.52

Rig Information

Equipment Problems:

Location Condition:

Transport:

Safety Information

First Aid Treatments: 1 **Medical Treatments:** **Lost Time Incidents:** **Days Since LTI:** 1

Accident Description: During the setting of the core joint to secure the top of the core pipe to shut off steam flow, hot water sprayed under the Rain Jacket of Brian Walker, he sustained minor burns to the lower back just above his belt line. First aid was administered to cool and the cover the burn mark. He returned to work after changing work clothes.

☐ **BOP Test** ☐ **Crownamatic Check**

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 11 **Report For 22-Aug-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		27,560 / 0	
Measured Depth (ft):	176	**Drilling Days (act.):**	5	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	176	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01	1,714,090	924,181	
Proposed TD (ft):	1700	**Days On Location:**	11	**Last BOP Test:**					
Hole Made (ft) / Hrs:	0 / 0.0	**Last Casing:**	8.650 at 40			**Totals:**	1,714,090	924,181	
Average ROP (ft/hr):		**Next Casing:**	5.500 at 220	**Working Interest:**		**Well Cost ($):**		924,181	
Pers/Hrs:	**Operator:** 2 / 0	**Contractor:**	5 / 0	**Service:**	3 / 0	**Other:**	2 / 0	**Total:**	12 / 0

SafetySummary: No incidents or events reported. 2 days since LTI.

Current Operations: Cooled hole pumping in thru pack off. RIH to 172. No cement. Reinstall pack off and cooling hole.

Planned Operations: Attend conference meeting at city of Akutan to discuss plan for killing hole. Kill hole, resume drilling operation to drill hole to 5.5" casing depth, set and cement casing in to hole.

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	7:00	7.00	176	WELLHD	Continue pumping 35 gpm 60 degree cold water into 8" casing , packed off on top with poor boy packer.	X
7:00	15:00	8.00	176	WELLHD	Continue pumping cold water into hole from 176'. attend conference meeting on at City of Akutan 10:0013:00, discuss cementing options and well control plan. prepare to pump 10 sks of portland cement from 88' as a drift plug.	X
15:00	15:30	0.50	176	TRPO	Pull 100' of rods , cooling hole after pulling 2 doubles , then 2 doubles and 1 double. position bottom of core rod at 88'.	
15:30	16:30	1.00	176	CMTPL	Mix and pump 10- 92.4 lbs sacks of portland cement into 77 gallons of water, pump through string as drift plug, chasing with 70 gallons of displacement. shut hole in monitor discharge, clean equipment.	X
16:30	17:30	1.00	176	WOC	Rotate pipe each 15 minutes, to ensure free. initial static hole with top of fluid 3' below top of 8" casing , after 1 hour, approx. .5-1 gallon flowing out of hole.	
17:30	0:00	6.50	176	WOC	Wait on cement, grab sample placed in warm laundry tent to cure. Flow from 8" casing measured at 11-13 gpm, temp. building to 186 degrees at 00:00	

Management Summary

Controlled hole by pumping cold water into well bore through pack off, devised plan to cement loss zones with 10 sack cement drift plug from 88' to 176', mix and pump cement plug, wait on cement to set, before checking top of cement.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	8.650	0	40	40	40	MOVE	10.750		OTHER	

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	27,560	924,181	53.92 %
	Totals $:	1,714,090	0	0	27,560	924,181	53.92 %

Bit/BHA/Workstring Information

BHA - No. 3 - BIT, NBS, CORE, 2 OTHER = 8.52

Rig Information

Equipment Problems:

Location Condition:

Transport:

Safety Information

First Aid Treatments: **Medical Treatments:** **Lost Time Incidents:** **Days Since LTI:** 2

☐ **BOP Test** ☐ **Crownamatic Check**

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 12 **Report For 23-Aug-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		25,140 / 0	
Measured Depth (ft):	176	**Drilling Days (act.):**	6	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	176	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01	1,714,090	949,321	
Proposed TD (ft):	1700	**Days On Location:**	12	**Last BOP Test:**					
Hole Made (ft) / Hrs:	0 / 0.0	**Last Casing:**	8.650 at 40			**Totals:**	1,714,090	949,321	
Average ROP (ft/hr):		**Next Casing:**	5.500 at 220	**Working Interest:**		**Well Cost ($):**		949,321	
Pers/Hrs:	**Operator:** 2 / 0	**Contractor:**	5 / 0	**Service:**	3 / 0	**Other:**	2 / 0	**Total:**	12 / 0

SafetySummary: No incidents or events reported. 3 days since LTI.

Current Operations: Opened hole and cleaned out cement stringers to 170' with well flow controlled. Cleaned out cement to 176' with hole opener. Drilling ahead with 7.5" hole opener with well flow controlled.

Planned Operations: Pull to 168', mix and pump 9 sack balance plug, displacing with 26 gallons of water, pull to 49', wait on cement to set before tag Top of cement

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	3:00	3.00	176	WOC	pump cold water through core rods to cool hole prior to running in hole to tag top of cement.Initial reading 186 degrees F, lift pipe 1 foot and rotate, pipe free. begin pumping 60 degree F cold water into hole through core rod. to cool hole prior to tag top of cement. water temp at 00:15 186F, 00:30 , 148: 00:45-138: 01:30 134: 02:00-120F	X
3:00	3:30	0.50	176	WELLHD	Take off poor boy packoff, prior to lowering rod into hole to tag top of cement. Starting temp of discharge 120F	X
3:30	4:00	0.50	176	TRPI	RUN 20' into hole start temp. 115 F- joint down 142F, at 109'	X
4:00	4:15	0.25	176	TRPI	run in hole with 80' of rod temp begin at 115F end at 126F, tag top of cement at 172' BGS, circulating hole at top of cement fluid temp out 114F, pumping 30 gpm.	X
4:15	6:00	1.75	176	PUMP	Pumping cold water to cool hole,Discuss with GRG, Bill Rickard , plan to re cement hole to stop flow.	X
6:00	7:00	1.00	176	PUMP	Continue to pump cold water, change out stripping rubbers on packoff, attempt to gain shut in pressure, estimate at 4-9 psi, out floe from 8" now at 11-13 gpm,	X
7:00	8:30	1.50	176	PUMP	Continue to pump cold water through core rod into hole with bottom of rod at 170', pull rod to 168' prepare to mix and pump 9sks of cement in a balance plug.	X
8:30	9:15	0.75	176	CMTPL	Mix 9 bags of cement in 70 gallons of water, 14.5 lb/gal cement mix, pump into core rod and displace with 37 gallons of water, trip out with core rod to 49'. shut down,	X
9:15	11:00	1.75	176	WOC	wait on cement to set, rotate and lift rods every 15 min,begin time to see when fluid level returns to top of 8" casing . took 1 hour and 15 min to see any water flow out of casing after cement down. minimum flow, less than 0.25 gpm.	X
11:00	13:00	2.00	176	WOC	Pull core rod from hole lay down core barrel. wait on cement to set, pick up 7.5" tricone button bit hole opener, assemble onto string, set in hole. continue to wait on cement.	
13:00	15:15	2.25	176	OPEN	Open hole 4.835" to 7.5" from 40' to 90' , catching chip samples, no set cement in samples, rock chips caught by mud logger, circulate hole clean, no flow, hole static at 90' BGS, continue to wait on cement to advance hole further.	
15:15	21:15	6.00	176	WOC	continue to wait on cement for full 12 hrs prior to opening hole to 7.5"	
21:15	0:00	2.75	176	OPEN	Tag hole at 90', begin reaming ahead with 7.5" hole opener to 125' at 00:00 hours.	

Management Summary

Circulated hole to cool discharge at 85F,ran in hole tag top of cement at 172', pull to 168', mix 9 sack cement place balance plug in hole, wait on cement for 6 hrs, pull and laydown core barrel, pick up 7.5' hole opener, hole static no flow, open hole from 40' to 90', continue to wait on cement to set for 12 hrs. ream ahead with hole opener to 125' at 00:00 hrs.

Comments

Hole is secure from second plug, no flow from hole,

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	8.650	0	40	40	40	MOVE	10.750		OTHER	

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	25,140	949,321	55.38 %
	Totals $:	1,714,090	0	0	25,140	949,321	55.38 %

Daily Drilling Report

Geothermal Resource Group

Well ID: AK-3

Well Name: AK-3

Field: Hot Springs Bay Va

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 12

Report For 23-Aug-16

Bit/BHA/Workstring Information

BHA - No. 4 - HO, BS, OTHER = 3.52

Rig Information

Equipment Problems:

Location Condition:

Transport:

Safety Information

First Aid Treatments:	Medical Treatments:	Lost Time Incidents:	Days Since LTI: 3

☐ **BOP Test** ☐ **Crownamatic Check**

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 13 **Report For 24-Aug-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		23,360 / 0	
Measured Depth (ft):	220	**Drilling Days (act.):**	7	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	220	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01	1,714,090	972,681	
Proposed TD (ft):	1700	**Days On Location:**	13	**Last BOP Test:**					
Hole Made (ft) / Hrs:	44 / 0.0	**Last Casing:**	5.500 at 222	**LOT (lbs/gal):**	18.26	**Totals:**	1,714,090	972,681	
Average ROP (ft/hr):		**Next Casing:**	4.500 at 800	**Working Interest:**		**Well Cost ($):**		972,681	
Pers/Hrs:	**Operator:** 2 / 0	**Contractor:**	5 / 0	**Service:**	3 / 0	**Other:**	2 / 0	**Total:**	12 / 0

SafetySummary: No incidents or events reported. 4 days since LTI.

Current Operations: Waiting on cement.

Planned Operations: Continue reaming ahead to 220' with 7.5" hole opener, circulate hole clean, run 5.5" casing to 220' below ground surface. Cement into place.

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	15:00	15.00	225	OPEN	Drill ahead with 7.5" hole opener from 125' to 225', circulating hole with 9.2-9.5 salt weighted water and bentonite gell, mud temps in 105 F mud tempps out 150-165F. Circulate hole to cool with cold water 60F and gell 45 vis each hour to keep hole cool.	
15:00	15:30	0.50	225	CIRC	Circulate hole with 60 F 9.4 mud to cool hole prior to tripping out with 7.5" hole opener	
15:30	16:00	0.50	225	TRPO	Trip out of hole with PQ rod and lay down 7.5" hole opener	
16:00	19:00	3.00	225	CASE	Rig up and run 5.5" od. casing from ground surface to 220' below ground surface. Circulating and filling each three joints as run in hole, circulate last joint to bottom(no fill) install landing joint set at 6" above cellar floor.	
19:00	21:30	2.50	225	CMTP	rig up cementing tubs, mix and pump 52 sacks of Thermolite HT, pump cement, drop plug, pump plug to bottom with fresh water, bump plug at 21:30 hrs with 800 psi. shut in valve. Cement returns to surface, captured discharge.	
21:30	0:00	2.50	225	CMTS	Mixed and pumped to keep hole full as cement shrank and settled in annulus of 8" casing. hole stopped taking any cement by 23:30, Cleaned all hoses and cementing equipment as hole monitoring from plug down to time cement remained at top of 8"	

Management Summary

Opened PQ hole to 7.5' and cleaned out cement stringers to 170' with well flow controlled. Cleaned out cement to 176' with hole opener. Drilled ahead with 7.5" hole opener with well flow controlled from 176' to 225'. Circulated hole with cool water and 9.2-9.5 salted water. Tripped out lay down hole opener, picked up and ran in hole 5.5" casing set at 220' below ground surface. Cement in place with 62 sacks cement with good returns to surface. Kept annulus full with Portland cement.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	8.650	0	40	40	40	MOVE	10.750		OTHER	
FULL	5.500	4	4	222	222	SURF	7.500	16	K55	18.26

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	23,360	972,681	56.75 %
	Totals $:	1,714,090	0	0	23,360	972,681	56.75 %

Bit/BHA/Workstring Information

BHA - No. 4 - HO, BS, OTHER = 3.52

Rig Information

Equipment Problems:

Location Condition:

Transport:

Safety Information

First Aid Treatments: **Medical Treatments:** **Lost Time Incidents:** **Days Since LTI:** 4

☐ **BOP Test** ☐ **Crownamatic Check**

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 14 **Report For 25-Aug-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		27,410 / 0	
Measured Depth (ft):	220	**Drilling Days (act.):**	8	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	220	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01	1,714,090	1,000,091	
Proposed TD (ft):	1700	**Days On Location:**	14	**Last BOP Test:**					
Hole Made (ft) / Hrs:	0 / 0.0	**Last Casing:**	5.500 at 222	**LOT (lbs/gal):**	18.26	**Totals:**	1,714,090	1,000,091	
Average ROP (ft/hr):		**Next Casing:**	4.500 at 800	**Working Interest:**		**Well Cost ($):**		1,000,091	

Pers/Hrs:	**Operator:**	2 / 0	**Contractor:**	6 / 0	**Service:**	1 / 0	**Other:**	2 / 0	**Total:**	11 / 0

SafetySummary: No incidents or events reported. 5 days since LTI.

Current Operations: Nippling up.

Planned Operations: Cut off 8" casing to 3" above cellar floor, nipple up BOP to 5" casing

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	9:30	9.50	225	WOC	Wait on Cement 12 hrs.	
9:30	17:30	8.00	225	BOPNU	Cut off 8" casing, bleed down pressure from 5 1/2" casing , remove and laydown landing joint. Sling well head equipment from staging area. begin nipple up 5 1/2" casing riser, 5" well head, 6" master valve, Determine there is not sufficient clearance between master valve and rig foot clamp, foot clamp 2.5' below rig floor, crew to take off top flange from valve,	X
17:30	0:00	6.50	225	BOPNU	Continue nipple up BOP, raise rig 4" with jack screw legs, install annular bag, 2 1/16" side valves,	

Management Summary

Cement stopped falling, annulus full. Wait on cement to cure after primary cementing of 5.5" casing. Cut and laid down 8" riser. Waited for fog to lift. Obtained material and installed poor boy pack off on 8-5/8" by 5-1/2" annulus. Installed WHE. Modified BOPE to fit under rig floor and nippled up.

Comments

Well head item dimensions as per drawing and plan, had to remove the top flange adapter from the 6" master valve, due to the foot clamp extending 2.5' below the rig floor, requiring additional time to nipple up, Major rig crew did not have a 1 5/8" hammer wrench to remove the nuts from the assembly, slowing down the removal considerably, estimate additional 5 hrs of down time due to height issues.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	8.650	0	40	40	40	MOVE	10.750		OTHER	
FULL	5.500	4	4	222	222	SURF	7.500	16	K55	18.26

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	27,410	1,000,091	58.35 %
	Totals $:	1,714,090	0	0	27,410	1,000,091	58.35 %

Rig Information

Equipment Problems:

Location Condition:

Transport:

Safety Information

First Aid Treatments: **Medical Treatments:** **Lost Time Incidents:** **Days Since LTI:** 5

☐ **BOP Test** ☐ **Crownamatic Check**

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 15 **Report For 26-Aug-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		29,504 / 0	
Measured Depth (ft):	265	**Drilling Days (act.):**	9	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	265	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01	1,714,090	1,029,595	
Proposed TD (ft):	1700	**Days On Location:**	15	**Last BOP Test:**	26-Aug-16				
Hole Made (ft) / Hrs:	45 / 5.5	**Last Casing:**	5.500 at 222	**LOT (lbs/gal):**	18.26	**Totals:**	1,714,090	1,029,595	
Average ROP (ft/hr):	8.18	**Next Casing:**	4.500 at 800	**Working Interest:**		**Well Cost ($):**		1,029,595	

Pers/Hrs:	**Operator:**	2 / 0	**Contractor:**	7 / 0	**Service:**	3 / 0	**Other:**	2 / 0	**Total:**	14 / 0

SafetySummary: No incidents or events reported. 6 days since LTI. Conducted BOP Test.

Current Operations: Cored PQ from 265' to 322' at 06:00 hrs. TOTCO at 300' = 0.25 deg.

Planned Operations: Continue coring ahead with PQ to +/- 800'.

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	8:30	8.50	225	BOPNU	Complete nipple up of BOP, chain and secure to sub base, hook up all hoses, and kill line to side valve. Pressure test Bag to 600 psi. hold 5 min.	
8:30	10:00	1.50	225	TRPI	Run in hole with new PQ core bit, pumping cold water as each rod lowered into hole. in Temp 60F, out flow up to 139F, tag top of cement at 218' , circulate to cool hole prior to running Totco at 200'.	
10:00	11:30	1.50	225	BOPNU	Pull out of hole with PQ rod, Cut wire line, take off overshot, run line through pack off, rig up side port and valve in core Tee, Re swedge overshot to wire line.	
11:30	12:00	0.50	225	SURV	Break core rod at joint to run MRT and Totco survey at 200' below ground surface. .75 Degrees inclination, MRT 140 F	
12:00	14:00	2.00	225	BOPT	Close gate valve, pump to fill stack and annular Diverter on HWT core rod with water swivel attatched. pump with rig pump to 200 psi, hold 5 min, pump to 600 psi hold for 5 min. leaking gage.	
14:00	15:00	1.00	225	BOPT	Change out valves, tighten connections, install valve at pump discharge to isolate pump. Re-test at 200 psi 5 min. good, at 750 psi 5 min. dropped to 719 psi. 5 min.	
15:00	16:00	1.00	225	TRPI	Trip in hole to 218' (top of cement plug).	
16:00	17:00	1.00	225	BOPT	BOPE test , pump through core rod to fill annular diverter and circulate hole. Close bag. pump to 200 psi hold for 5 min, testing annular and side valves, pump to 750 psi hold for 5 min drop to 690 hold for 5 min. testing annular and side valves. no leaks, test good.	
17:00	18:00	1.00	225	DRILC	Core out cement from 218' to 220'. retrieve core barrel. lay out float plug, float shoe, and cement. Drop new inner barrel. core ahead to 225'. clean out and pump bottoms up.	
18:00	18:15	0.25	225	FIT	Circulate fresh 8.33 ppg water and polymer with 45 vis, pumping bottoms up and prepare to perform LOT.	
18:45	19:30	0.75	225	FIT	Perform LOT (leak off at 118 psi, .95 psi/ft).	
19:30	20:00	0.50	225	DRIL	Drop inner barrel, wait to latch, pumping down (wait for bag to release: 15 min).	
20:00	0:00	4.00	265	DRIL	Core ahead from 225' to 265' at 00:00 hours. Fracture observed in core at 227',	

Management Summary

Completed nipple up of BOP. Performed low (200 psi) and high (750 psi) BOPE test, 5 min each, OK. Cored out cement shoe. Cored PQ to 225'. performed LOT test (1 psi/ft). Cored PQ from 225' to 265'.

Comments

BOP test verified after changing out pressure gages, BOP annular bag takes a long time to open after being closed (15-20 min).

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	8.650	0	40	40	40	MOVE	10.750		OTHER	
FULL	5.500	4	4	222	222	SURF	7.500	16	K55	18.26

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	29,504	1,029,595	60.07 %
	Totals $:	1,714,090	0	0	29,504	1,029,595	60.07 %

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 15 **Report For 26-Aug-16**

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Polymer - 5GAL	1	220			

Bit/BHA/Workstring Information

No Run		Make	Model	Diam	Depth In	This Run Dist	Hrs	R.O.P. Avg	Max	WOB	RPM	Torque	Mud Wt	Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
5	1	ADT	8 AM	4.835	225	45	4	11.2	15.0	3,000	450	2,500	8	18	200				

Jets: **Out:** 805 **Grade:** **Cutter:** 4 / 4 **Dull:** NO / NO **Wear:** A **Brgs:** 0 **Gge:** 0 **Pull:** TD

BHA - No. 5 - BIT, NBS, CORE, 2 OTHER = 8.52

Drilling Parameters

Depth (ft) From	To	ROP (ft/hr) Avg	Max	WOB (lbs) Avg	Max	RPM Avg	Max	Torque (ft lbs) Avg	Max	Flow (gals/min) Avg	Max	Pressure (psi)
225	265	10.0	15.0	4,000	5,000	425	475	2,000	2,500	18	20	200

Survey Information

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates N-S	E-W	D.L.S.
TOTCO	200.0	0.75							

Rig Information

Equipment Problems:

Location Condition:

Transport:

Safety Information

First Aid Treatments: **Medical Treatments:** **Lost Time Incidents:** **Days Since LTI:** 6

☑ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Clear and sunny	**Visibility:**	10
Air Temperature:	65 degF	**Bar. Pressure:**	
Wind Speed/Dir:	3 / WSW	**Wind Gusts:**	5
Comments:	Nice day no rain		

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 16 **Report For 27-Aug-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		33,685 / 0	
Measured Depth (ft):	465	**Drilling Days (act.):**	10	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	465	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01	1,714,090	1,063,280	
Proposed TD (ft):	1700	**Days On Location:**	16	**Last BOP Test:**	26-Aug-16				
Hole Made (ft) / Hrs:	200 / 23.0	**Last Casing:**	5.500 at 222	**LOT (lbs/gal):**	18.26	**Totals:**	1,714,090	1,063,280	
Average ROP (ft/hr):	8.7	**Next Casing:**	4.500 at 800	**Working Interest:**		**Well Cost ($):**		1,063,280	

Pers/Hrs:	**Operator:**	2 / 0	**Contractor:**	7 / 0	**Service:**	1 / 0	**Other:**	2 / 0	**Total:**	12 / 0

SafetySummary: No incidents or events reported. 7 days since LTI. Conducted Safety Meeting.

Current Operations: Coring ahead PQ at 565' (06:00 am). Inc and MRT @ 500': 0.25 deg, 250 F.

Planned Operations: Continue coring ahead to next casing point (+/- 800')

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	4:30	4.50	300	DRIL	Continue core ahead PQ from 265' to 300'. Minor steam kick at 275' while pulling barrel. Increased mud weight to 9.2 lbs with salt and maintained in system re-circulating mud pits.	
4:30	5:00	0.50	300	SURV	Pull inner barrel at 300' and run survey: .25 degrees inclination, MRT 228F.	
5:00	12:30	7.50	400	DRIL	Core ahead from 300' to 400' with PQ core. Fluid loss of 5-7 gpm , with mud wt. of 8.6ppg, lowering mud wt with water at each batch mix of drilling fluid.	
12:30	13:00	0.50	400	SURV	Run survey tool at 400' with MRT: .25 degree inclination, MRT: 238F.	
13:00	0:00	11.00	465	DRIL	Core ahead with PQ from 400' to 465' at 00:00 hrs, minimum fluid loss to hole, mud wt. 8.4ppg, at 20:00, 22:00 est partial losses at 3-5 gpm.	

Management Summary

Continued coring ahead and ran survey at 300': 0.25 inc, MRT 228 F. Continued coring ahead and ran survey at 400': 0.25 inc, MRT 238 F. Continued coring ahead to 465'. Partial returns from 270' (3-7 GPM).

Comments

Coring ahead with good rates and full recovery. Managing fluid loss by decreasing mud weight.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	8.650	0	40	40	40	MOVE	10.750		OTHER	
FULL	5.500	4	4	222	222	SURF	7.500	16	K55	18.26

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	33,685	1,063,280	62.03 %
	Totals $:	1,714,090	0	0	33,685	1,063,280	62.03 %

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 16 **Report For 27-Aug-16**

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	% Oil	% Water	Sand	LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
27-Aug-16 00:00 at Depth 265 ft																				
8.50	55																			
27-Aug-16 01:00 at Depth 270 ft																				
8.40	55																			
27-Aug-16 03:00 at Depth 285 ft																				
9.20	55																			
27-Aug-16 06:00 at Depth 320 ft																				
9.40	55																			
27-Aug-16 10:00 at Depth 350 ft																				
86.00	55																			
27-Aug-16 13:00 at Depth 405 ft																				
8.50	55																			
27-Aug-16 16:00 at Depth 435 ft																				
8.50	55																			
27-Aug-16 20:00 at Depth 455 ft																				
8.60	55																			

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Polymer - 5GAL	1	220	Salt - 50#SK	52	546

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
5	1	ADT	8 AM	4.835	225	245	27	9.1	12.0	2,500	450	25,							

Jets: **Out:** 805 **Grade:** **Cutter:** 4 / 4 **Dull:** NO / NO **Wear:** A **Brgs:** 0 **Gge:** 0 **Pull:** TD

BHA - No. 5 - BIT, NBS, CORE, 2 OTHER = 8.52

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
265	465	8.7	12.0	2,500	3,000	425	475	2,000	2,500	18	25	200

Comments: had to vary rpm due to down hole rod chatter

Survey Information

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates N-S	Coordinates E-W	D.L.S.
TOTCO	300.0	0.25							
TOTCO	400.0	0.25							

Rig Information

Equipment Problems:

Location Condition:

Transport:

Safety Information

Meetings/Drills	Time	Description
Safety	30	2- 15 minute pre tour crew safety meetings , evening tour and daylight tour.

First Aid Treatments: **Medical Treatments:** **Lost Time Incidents:** **Days Since LTI:** 7

☐ **BOP Test** ☐ **Crownamatic Check**

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 17 **Report For 28-Aug-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		34,705 / 0	
Measured Depth (ft):	770	**Drilling Days (act.):**	11	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	465	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01	1,714,090	1,097,985	
Proposed TD (ft):	1700	**Days On Location:**	17	**Last BOP Test:**	26-Aug-16				
Hole Made (ft) / Hrs:	305 / 22.5	**Last Casing:**	5.500 at 222	**LOT (lbs/gal):**	18.26	**Totals:**	1,714,090	1,097,985	
Average ROP (ft/hr):	13.56	**Next Casing:**	4.500 at 800	**Working Interest:**		**Well Cost ($):**		1,097,985	

Pers/Hrs: **Operator:** 2 / 0 **Contractor:** 7 / 0 **Service:** 1 / 0 **Other:** 2 / 0 **Total:** 12 / 0

SafetySummary: No incidents or events reported. 8 days since LTI. Conducted Safety Meeting.

Current Operations: Coring ahead with PQ at 785' at 04:00 hrs.

Planned Operations: Continue coring ahead to casing point of 800' BGS. Run 4.5" ,K55 casing and cement in place.

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	3:30	3.50	500	DRIL	Core ahead PQ to 500'. Maximun Flow line temp out 145 F, mud temp in average 70, mixing cold (60 F) water with poly mud to maintain fluid temperatures.	
3:30	4:00	0.50	500	SURV	Run single shot Totco survey at 500', .25 degree inclination, MRT 250F	
4:00	11:00	7.00	600	DRIL	Core ahead with PQ to 600'. Maximum Flow line temp out 156 F, mud temp in avg. 72F	
11:00	11:30	0.50	600	SURV	Run single shot survey at 600', 1 degree inclination, MRT 280 F	
11:30	17:30	6.00	700	DRIL	Core ahead with PQ to 700' , maximum flow line temp out 156 F , average mud temp in 71 F	
17:30	18:00	0.50	700	SURV	Run single shot survey at 700' 1 degree inclination, MRT 275 F	
18:00	0:00	6.00	770	DRIL	Core ahead with PQ to 770'. Maximum flow line temp 165 F, average mud temp in 71 F. Pumped to waste sump 500 gal and added 500 gal of cold mud 60 F to cool fluid and hole.	

Management Summary

Continued coring ahead with PQ. Recovery 100 % to 770'. Took down hole survey at 500', 600', 700'.

Comments

Received 15 sacks of cement by helicopter at 18:00, hrs and then a full pallet at 21:00 hrs, have 54, sacks of Thermalite cement on site. 448' of 4 1/2" (45 jts.) casing , 9 -5 gallon pails of Poly mud. at location. 860 total feet of PQ rod on site including what is in hole (90 total on site, 4 damaged).

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	8.650	0	40	40	40	MOVE	10.750		OTHER	
FULL	5.500	4	4	222	222	SURF	7.500	16	K55	18.26

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	34,705	1,097,985	64.06 %
	Totals $:	1,714,090	0	0	34,705	1,097,985	64.06 %

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 17 **Report For 28-Aug-16**

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	% Oil	% Water	Sand	LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
28-Aug-16 00:30 at Depth 475 ft Sample from Mud Pits																				
8.60	55																	68	121	
28-Aug-16 03:00 at Depth 495 ft Sample from Mud Pits																				
8.60	55																	72	128	
28-Aug-16 06:00 at Depth 555 ft Sample from Mud Pits																				
8.50	58																	70	122	
28-Aug-16 09:00 at Depth 580 ft Sample from Mud Pits																				
8.50	55																	75	125	
28-Aug-16 11:00 at Depth 600 ft Sample from Mud Pits																				
8.50	58																	72	122	
28-Aug-16 13:00 at Depth 635 ft Sample from Mud Pits																				
8.40	55																	70	128	
28-Aug-16 15:00 at Depth 675 ft Sample from Mud Pits																				
8.40	58																	68	127	
28-Aug-16 18:00 at Depth 700 ft Sample from Mud Pits																				
8.40																		72	131	
28-Aug-16 21:00 at Depth 735 ft Sample from Mud Pits																				
8.40																		71	128	
28-Aug-16 23:30 at Depth 765 ft Sample from Mud Pits																				
8.40																		65	127	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Polymer - 5GAL	5	1,100			

Bit/BHA/Workstring Information

No Run		Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
5	1	ADT	8 AM	4.835	225	550	49.5	11.1	15.0	2,000	450	1,500	8	20	150				

Jets: **Out:** 805 **Grade:** **Cutter:** 4 / 4 **Dull:** NO / NO **Wear:** A **Brgs:** 0 **Gge:** 0 **Pull:** TD

BHA - No. 5 - BIT, NBS, CORE, 2 OTHER = 8.52

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
465	770	10.0	15.0	1,500	2,500	425	475	1,500	2,000	18	25	150

Comments: RPM varies due to adjusting for rod chatter down hole.

Survey Information

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates N-S	Coordinates E-W	D.L.S.
TOTCO	500.0	0.25							
TOTCO	600.0	1.00							
TOTCO	700.0	1.00							

Rig Information

Equipment Problems:

Location Condition:

Transport:

Safety Information

Meetings/Drills	Time	Description
Safety	30	2 ea. 15 min. pre tour crew safety meetings

First Aid Treatments: **Medical Treatments:** **Lost Time Incidents:** **Days Since LTI:** 8

☐ **BOP Test** ☐ **Crownamatic Check**

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 17

Report For 28-Aug-16

Weather Information

Sky Condition:	heavy fog, overcast	**Visibility:**	0.3
Air Temperature:	60 degF	**Bar. Pressure:**	
Wind Speed/Dir:	3 / W	**Wind Gusts:**	5
Comments:	Heavy mist and fog, helicopter unable to fly, cannot see the mountain ridge from rig.		

Rental Tools Information

Type	Description	Serial No.	Vendor	Acct Code	Today's Cost $	Start	End
OTHER						28-Aug-16	
				Total Daily Rental Cost $:	0		

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 18 **Report For 29-Aug-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		26,715 / 0	
Measured Depth (ft):	805	**Drilling Days (act.):**	12	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	805	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01	1,714,090	1,124,699	
Proposed TD (ft):	1700	**Days On Location:**	18	**Last BOP Test:**	26-Aug-16				
Hole Made (ft) / Hrs:	35 / 7.0	**Last Casing:**	4.500 at 800			**Totals:**	1,714,090	1,124,699	
Average ROP (ft/hr):	5.0	**Next Casing:**	3.500 at 1,700	**Working Interest:**		**Well Cost ($):**		1,124,699	

Pers/Hrs:	**Operator:**	2 / 0	**Contractor:**	7 / 0	**Service:**	1 / 0	**Other:**	2 / 0	**Total:**	12 / 0

SafetySummary: No incidents or events reported. 9 days since LTI. Conducted Safety Meeting.

Current Operations: Waiting on cement at 0600 hours after secondary cement top job.

Planned Operations: Remove landing joint, pick up HQ core pipe, tag top of cement, perform BOPE test, drill out cement, drill 5 'of new formation, conduct LOT.

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	6:00	6.00	800	DRIL	Core PQ ahead from 770' to 800' pull inner tube, prepare to run Totco. Core from 775-783 (highly broken formation).	
6:00	6:30	0.50	800	SURV	Run single shot survey at 800': 1 degree inclination, MRT 300 F (maxed tool out - mercury was above the 300 mark).	
6:30	7:30	1.00	805	DRIL	Drop inner barrel, core ahead from 800' to 805'.	
7:30	9:00	1.50	805	CIRC	Circulate the hole from 805' TD for 4.5" casing. Mud temp. out 121 F at beginning of circulation, 113 F out at end of circ. Mud temp in 87 F to 97 F	
9:00	11:00	2.00	805	TRPO	Pull out of hole with PQ rod from 805' BGS (pulling singles - 10'). Maintain the hole full while tripping out by pumping through the side wing valve.	
11:00	12:00	1.00	805	CASE	Rig up to run 4.5", K55, 111.6 ppf casing with Valley Flush Joint thread. Weld on but joint float shoe. Mix 1 cup Bakerlok joint compound.	
12:00	14:30	2.50	805	CASE	Run 43 jts of 4.5" casing, bakerlok'd first three joints. Fill each three joints as run in hole, circulating with 8.4 ppg mud (mud temp at landing of casing 132 F).	
14:30	15:30	1.00	805	CIRC	Circulate hole with 25 gpm 8.4 ppg mud (cooling hole prior to cementing: mud temp out 120 F , mud temp in 97F)	
15:30	16:30	1.00	805	CMTP	Mix 2 ea. 14 sack (ft3) slurries in mix tubs: 4.16 gallons /sack with 1 pint of retarder in each batch. Cement wt 13.5 ppg. Pump slurry into casing, install plug, pump down with 510 gallons of water. Pump pressure at displacement: 580 psi. Full returns during cement job, only saw cement colored water at return - no cement. Immediately flushed the annulus with 75 gallons of fresh water. Shut in pressure of annulus: 120 psi.	
16:30	22:30	6.00	805	WOC	Wait on cement to set. Place cement samples in water bath at 180 F.	
22:30	0:00	1.50	805	CMTS	Mix 14 sks of Thermolite cement with 60 gallons of fresh water (13.5 ppg) and additives. Pump 10 sack volume at .5 bpm. Initial pump pressure to 170 psi, fall back to 100. Wait 10 min. Pump 2 sks volume, pressure to 150 psi. Shut in side valve. Clean pump and discharge hoses. Set grab sample in water bath at 180 F.	

Management Summary

Cored ahead from 770 to 805' (TD for 4.5" casing). Circulate and condition hole prior to running casing. Run 800' of 4.5" K55 casing to 800' below ground surface. Cement casing in place with 28 sacks of Thermolite HT cement. Full returns but no cement returns to surface. Shut-in and flush annulus. WOC for initial set. Perform cement top squeeze job. Shut in and start WOC.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	8.650	0	40	40	40	MOVE	10.750		OTHER	
FULL	5.500	4	4	222	222	SURF	7.500	16	K55	18.26
FULL	4.500	0		800		PROD		12	K55	

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	26,715	1,124,699	65.61 %
	Totals $:	1,714,090	0	0	26,715	1,124,699	65.61 %

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 18 **Report For 29-Aug-16**

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
29-Aug-16 00:30 at Depth 775 ft Sample from Mud Pits																				
8.50	58																	110	125	
29-Aug-16 03:00 at Depth 785 ft Sample from Mud Pits																				
8.50	58																	95	132	
29-Aug-16 05:00 at Depth 795 ft Sample from Mud Pits																				
8.50																		105	128	
29-Aug-16 07:30 at Depth 805 ft Sample from Mud Pits																				
8.40																		97	121	

Bit/BHA/Workstring Information

No Run		Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
5	1	ADT	8 AM	4.835	225	585	56.5	10.4	12.0	1,500	450	1,500	8	20	120				

Jets: **Out:** 805 **Grade:** **Cutter:** 4 / 4 **Dull:** NO / NO **Wear:** A **Brgs:** 0 **Gge:** 0 **Pull:** TD

BHA - No. 5 - BIT, NBS, CORE, 2 OTHER = 8.52

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
770	805	10.0	12.0	1,500	2,000	425	475	1,500	2,000	18	22	125

Survey Information

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates N-S	Coordinates E-W	D.L.S.
TOTCO	800.0	1.00							

Rig Information

Equipment Problems:

Location Condition:

Transport:

Safety Information

Meetings/Drills	Time	Description
Safety	30	2 -15 minute pre tour crew safety meetings, morning and evening crews

First Aid Treatments: **Medical Treatments:** **Lost Time Incidents:** **Days Since LTI:** 9

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	partly cloudy	**Visibility:**	10
Air Temperature:	68 degF	**Bar. Pressure:**	
Wind Speed/Dir:	5 / W	**Wind Gusts:**	8
Comments:	Nice day weather allows for flying loads today.		

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 19 **Report For 30-Aug-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		41,620 / 0	
Measured Depth (ft):	805	**Drilling Days (act.):**	13	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	805	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01	1,714,090	1,166,319	
Proposed TD (ft):	1700	**Days On Location:**	19	**Last BOP Test:**	30-Aug-16				
Hole Made (ft) / Hrs:	0 / 6.5	**Last Casing:**	4.500 at 800			**Totals:**	1,714,090	1,166,319	
Average ROP (ft/hr):	0.0	**Next Casing:**	3.500 at 1,700	**Working Interest:**		**Well Cost ($):**		1,166,319	

Pers/Hrs: **Operator:** 2 / 0 **Contractor:** 7 / 0 **Service:** 1 / 0 **Other:** 3 / 0 **Total:** 13 / 0

SafetySummary: No incidents or events reported. 10 days since LTI. Conducted BOP Drill, BOP Test, Safety Meeting.

Current Operations: Performed LOT and cored ahead to 900' (06:15 hrs). Currently taking a single shot survey and MRT.

Planned Operations: Continue coring ahead with HQ to planned TD of 1700'.

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	6:00	6.00	805	WOC	At 03:00 annular pressure holding at 120 psi, casing pressure holding at 650 psi. Cement samples hard on casing job, firm on top job. Waiting on cement top job completed.	
6:00	10:30	4.50	805	BOPNU	Release annular. Back off and lay down landing joint. Close master valve. Raise rig to remove Annular to change out BOP rubber to HQ size.	
10:30	11:30	1.00	805	BOPNU	Nipple up Annular to stack. Clean and check wing valves. Adjust rig to previous level. Cycle BOP.	
11:30	14:30	3.00	805	BOPT	Close master valve. Install test stump in BOP. Close BOP. Test at 200 psi: OK, test at 700 psi: OK, 5 minutes each. Bleed off. Run in hole with 40' HQ core barrel and 2 joints. Fill pipe and hole. Close annular. Test BOP and 2 1/16 side valves at 200 psi, 5 min: OK; 700 psi, 5 min: OK.	
14:30	17:30	3.00	805	TRPI	Trip in hole with HQ core assembly (BHA #6), on new HQ core rod to 580'. Tag up. Begin coring out cement strings and wiper plug.	
17:30	0:00	6.50	805	DRILC	Drill out cement to float shoe at 800'.	

Management Summary

Wait on cement to set for primary and secondary cement operations. Change out BOP annular element from PQ to HQ. Retest BOP. OK. Drill out cement to 4.5" casing shoe at 800'.

Comments

Morning conditions cold 50 with rain and fog.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	8.650	0	40	40	40	MOVE	10.750		OTHER	
FULL	5.500	4	4	222	222	SURF	7.500	16	K55	18.26
FULL	4.500	0		800		PROD		12	K55	

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	41,620	1,166,319	68.04 %
	Totals $:	1,714,090	0	0	41,620	1,166,319	68.04 %

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
30-Aug-16 00:00 at Depth 800 ft Sample from Mud Pits																				
8.30	35																	85	105	

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
6	1	ADT	8 AM	3.825	680	230	6.5	35.4	35.4	1,500	550	2,000	8	20	200				

Jets: **Out:** 1300 **Grade:** **Cutter:** / **Dull:** / **Wear:** **Brgs:** **Gge:** **Pull:**

BHA - No. 6 - BIT, NBS, CORE, 2 OTHER = 13.56

Daily Drilling Report

Geothermal Resource Group

Well ID: AK-3

Well Name: AK-3

Field: Hot Springs Bay Va

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 19

Report For 30-Aug-16

Rig Information

Equipment Problems:

Location Condition:

Transport:

Safety Information

Meetings/Drills	Time	Description
Safety	30	2 15 min pre tour crew safety meetings, Morning and evening
BOP	30	2-15 min BOP drill, closing with spool valve at drillers stand, and manual closing valve at mid location.

First Aid Treatments:	Medical Treatments:	Lost Time Incidents:	Days Since LTI: 10

☑ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	overcast	**Visibility:**	4
Air Temperature:	55 degF	**Bar. Pressure:**	
Wind Speed/Dir:	3 / ESE	**Wind Gusts:**	5
Comments:	light mist and occasional rain with patchy fog.		

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 20 **Report For 31-Aug-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		32,876 / 0	
Measured Depth (ft):	1105	**Drilling Days (act.):**	14	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	1105	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01	1,714,090	1,199,195	
Proposed TD (ft):	1700	**Days On Location:**	20	**Last BOP Test:**	30-Aug-16				
Hole Made (ft) / Hrs:	300 / 22.5	**Last Casing:**	4.500 at 800			**Totals:**	1,714,090	1,199,195	
Average ROP (ft/hr):	13.33	**Next Casing:**	3.500 at 1,700	**Working Interest:**		**Well Cost ($):**		1,199,195	
Pers/Hrs:	**Operator:** 2 / 0	**Contractor:**	7 / 0	**Service:**	1 / 0	**Other:**	0 / 0	**Total:**	10 / 0

SafetySummary: No incidents or events reported. 11 days since LTI. Conducted Safety Meeting.

Current Operations: Coring ahead at 1195' at 06:00 hrs.

Planned Operations: Continue coring ahead HQ to loss zone or 1700'

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	1:00	1.00	810	DRIL	Core ahead through float shoe 800' to 810' retrieve core, drop new inner barrel,	
1:00	1:30	0.50	810	FIT	Conduct LOT at 810' w/ 8.34 ppg mud. Fill pipe with water, close annular. Pump 2.5 gallon, pressure 80 psi. Pump 2.5 gal, 170 psi. Pump 2.5 gal, 600 psi (holding each pressure for 2 min). No leak off. Pump would not start against 600 psi. Retest with 1 gallon increments. Pump 1 gallon, 80 psi. Pump 1 gallon, 420 psi. Pump 1 gallon, 640 psi. No leak off after 5 min. Exceed1 psi/ft (500 psi surface pressure). End test. Bleed off.	
1:30	6:30	5.00	900	DRIL	Core ahead with HQ to 900'. 100% recovery. Prepare to run single shot.	
6:30	7:00	0.50	900	SURV	Run single shot survey and MRT: 0.75 inclination, MRT: 300 - 310 F (max reading on MRT).	
7:00	23:00	16.00	1,100	DRIL	Core ahead with HQ from 900' to 1100'. 100% recovery. Mud temp in average 112F out 150 F Max reading at 1100' mud temp in 114F out 162F. Full returns through out coring run. Rod chatter beginning at 920' increase amount of polymer in drill fluid. Reduce chatter.	
23:00	23:30	0.50	1,100	SURV	Run single shot survey at 1100': 1 degree inclination, no MRT.	
23:30	0:00	0.50	1,105	DRIL	Core ahead with HQ from 1100' to 1105'. Mud temp: in 114F out 165F.	

Management Summary

Cleaned out cement shoe track and float shoe, core 5' of new hole to 810', Conduct LOT test. continue core ahead HQ to 1105' at 00:00 hrs.

Comments

100% recovery on core, no fluid losses to present depth. MRT at 900' was above 300F (max read of MRT), core temperature while laying out core from 185' / 195F. No helicopter runs this day due to overcast and fog.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	8.650	0	40	40	40	MOVE	10.750		OTHER	
FULL	5.500	4	4	222	222	SURF	7.500	16	K55	18.26
FULL	4.500	0		800		PROD		12	K55	

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	32,876	1,199,195	69.96 %
	Totals $:	1,714,090	0	0	32,876	1,199,195	69.96 %

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 20 **Report For 31-Aug-16**

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
31-Aug-16 01:00 at Depth 805 ft Sample from Mud Pits																				
8.30	35																	80	115	
31-Aug-16 03:00 at Depth 840 ft Sample from Mud Pits																				
8.40	50																	86	115	
31-Aug-16 05:00 at Depth 890 ft Sample from Mud Pits																				
8.40	55																	91	118	
31-Aug-16 07:00 at Depth 900 ft Sample from Mud Pits																				
8.40	60																	94	121	
31-Aug-16 09:00 at Depth 930 ft Sample from Mud Pits																				
8.40	65																	94	135	
31-Aug-16 11:00 at Depth 950 ft Sample from Mud Pits																				
8.40	75																	97	140	
31-Aug-16 13:00 at Depth 985 ft Sample from Mud Pits																				
8.40	75																	110	148	
31-Aug-16 14:00 at Depth 1,005 ft Sample from Mud Pits																				
8.40	70																	112	151	
31-Aug-16 16:00 at Depth 1,040 ft Sample from Mud Pits																				
8.40	70																	108	130	
31-Aug-16 17:30 at Depth 1,055 ft Sample from Mud Pits																				
8.40	70																	112	157	
31-Aug-16 19:30 at Depth 1,065 ft Sample from Mud Pits																				
8.40	75																	114	161	
31-Aug-16 23:30 at Depth 1,100 ft Sample from Mud Pits																				
8.40	70																	115	158	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Polymer - 5GAL	5	1,100			

Bit/BHA/Workstring Information

No Run		Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
6	1	ADT	8 AM	3.825	680	530	29	18.3	12.0	15	525	1,500	8	18	380				

Jets: **Out:** 1300 **Grade:** **Cutter:** / **Dull:** / **Wear:** **Brgs:** **Gge:** **Pull:**

BHA - No. 6 - BIT, NBS, CORE, 2 OTHER = 13.56

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
805	1,105	12.0	15.0	1,500	2,000	525	550	1,000	1,500	18	22	375

Comments: Coring smoothly to 920' rod chatter 920' increase amount of poly to water smooth out chatter

Survey Information

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates N-S	Coordinates E-W	D.L.S.
TOTCO	900.0	0.75							
TOTCO	1,100.0	1.00							

Rig Information

Equipment Problems:

Location Condition:

Transport:

Daily Drilling Report

Geothermal Resource Group

Well ID: AK-3

Well Name: AK-3

Field: Hot Springs Bay Va

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 20

Report For 31-Aug-16

Safety Information

Meetings/Drills	Time	Description
Safety	30	2 15-minute pre tour crew safety meetings: morning and evening

First Aid Treatments:	Medical Treatments:	Lost Time Incidents:	Days Since LTI: 11

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Over cast and rain	**Visibility:**	3
Air Temperature:	50 degF	**Bar. Pressure:**	
Wind Speed/Dir:	3 / W	**Wind Gusts:**	6

Comments: Mist, rain and fog all night and day, helicopter unable to fly.

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 21 **Report For 01-Sep-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		42,637 / 0	
Measured Depth (ft):	1385	**Drilling Days (act.):**	15	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	1385	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01	1,714,090	1,241,832	
Proposed TD (ft):	1700	**Days On Location:**	21	**Last BOP Test:**	30-Aug-16				
Hole Made (ft) / Hrs:	280 / 19.0	**Last Casing:**	4.500 at 800			**Totals:**	1,714,090	1,241,832	
Average ROP (ft/hr):	14.74	**Next Casing:**	3.500 at 1,700	**Working Interest:**		**Well Cost ($):**		1,241,832	
Pers/Hrs:	**Operator:** 2 / 0	**Contractor:**	7 / 0	**Service:**	1 / 0	**Other:**	2 / 0	**Total:**	12 / 0

SafetySummary: No incidents or events reported. 12 days since LTI. Conducted Safety Meeting.

Current Operations: Coring ahead HQ at 1410' at 06:00 hr

Planned Operations: Continue coring ahead HQ to Loss zones or 1700'

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	15:30	15.50	1,300	DRIL	Core ahead with HQ from 1100' to 1300'. Average mud temp: in 118 F, out 168F with full returns.1280'-1300': started to see core samples whittled and bit walking. Determine to trip out for new bit.	
15:30	16:00	0.50	1,300	SURV	Run Totco single shot survey, 1 degree inclination.	
16:00	18:00	2.00	1,300	TRPO	Trip out of hole from 1300' to change bit. Pulling pipe in doubles (20'), line up kill pump to pump down back side while pull out of hole.	
18:00	20:30	2.50	1,300	TRPI	Install new HQ core bit (model 8 AM SN 6B3981). Reamer and stabilizer in good condition. Trip in hole (circulating at each 100'). At 500' start circulating each joint down due to hot fluid, mud temp out through core rod 185F.	
20:30	0:00	3.50	1,385	DRIL	Break in new bit and core ahead from 1300' to 1385'.	

Management Summary

Continued coring ahead HQ to 1300'. Bit walking and pressured up. Run single shot survey at 1300'. 1 degree inclination. Pull HQ#6 bit out of hole and replace with new HQ 8 AM. Circulate hole to cool as tripping in. Core ahead from 1300' to 1385'.

Comments

No losses or kicks through the daily drilling interval.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	8.650	0	40	40	40	MOVE	10.750		OTHER	
FULL	5.500	4	4	222	222	SURF	7.500	16	K55	18.26
FULL	4.500	0		800		PROD		12	K55	

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	42,637	1,241,832	72.45 %
	Totals $:	1,714,090	0	0	42,637	1,241,832	72.45 %

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 21 **Report For 01-Sep-16**

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	% Oil	% Water	Sand	LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
01-Sep-16 00:00 at Depth 1,105 ft Sample from Mud Pits																				
8.40	65																	121	160	
01-Sep-16 02:00 at Depth 1,130 ft Sample from Mud Pits																				
8.40	65																	120	169	
01-Sep-16 04:00 at Depth 1,160 ft Sample from Mud Pits																				
8.40	65																	124	178	
01-Sep-16 06:00 at Depth 1,190 ft Sample from Mud Pits																				
8.40	55																	121	172	
01-Sep-16 08:00 at Depth 1,215 ft Sample from Mud Pits																				
8.40	50																	123	177	
01-Sep-16 10:30 at Depth 1,245 ft Sample from Mud Pits																				
8.40	55																	121	174	
01-Sep-16 14:00 at Depth 1,275 ft Sample from Mud Pits																				
8.40	55																	123	180	
01-Sep-16 15:30 at Depth 1,300 ft Sample from Mud Pits																				
8.40	55																	121	178	
01-Sep-16 20:00 at Depth 1,300 ft Sample from Mud Pits																				
8.40	50																	113	190	
01-Sep-16 22:00 at Depth 1,350 ft Sample from Mud Pits																				
8.40	55																	89	135	
01-Sep-16 00:00 at Depth 1,385 ft Sample from Mud Pits																				
8.40	60																	87	121	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Polymer - 5GAL	3	660			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
6	1	ADT	8 AM	3.825	680	730	44.5	16.4	18.0	1,500	525	1,500	8	18	400				
Jets:					**Out:** 1300		**Grade:**	**Cutter:**	/	**Dull:**	/		**Wear:**	**Brgs:**		**Gge:**		**Pull:**	
7	1	ADT	8 AM	3.825	1300	85	3.5	24.3	25.0	1,500	525	1,500	8	20	410				
Jets:					**Out:** 1919		**Grade:**	**Cutter:**	8 / 8	**Dull:**	RG / NO		**Wear:** A	**Brgs:**		**Gge:** 0		**Pull:** PP	

BHA - No. 7 - BIT, NBS, CORE, 2 OTHER = 13.56

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
1,100	1,300	12.0	12.0	1,500	2,000	525	550	1,500	2,000	18	20	400
Comments: bit starting to whittle core, pressured up at 1300' pull bit.												
1,300	1,385	12.0	15.0	1,500	1,800	525	550	1,500	2,000	18	20	410

Survey Information

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates N-S	Coordinates E-W	D.L.S.
TOTCO	1,300.0	1.00							

Rig Information

Equipment Problems:

Location Condition:

Transport:

Daily Drilling Report

Geothermal Resource Group

Well ID: AK-3

Well Name: AK-3

Field: Hot Springs Bay Va

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 21

Report For 01-Sep-16

Safety Information

Meetings/Drills	Time	Description
Safety	30	2 -15 minute pre tour crew safety meetings, morning , evening

First Aid Treatments:	Medical Treatments:	Lost Time Incidents:	Days Since LTI: 12

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Sky clear , until 1400 then overcast	**Visibility:**	5
Air Temperature:	50 degF	**Bar. Pressure:**	
Wind Speed/Dir:	5 / WSW	**Wind Gusts:**	10

Comments: Sky clear in early morning, through 13:00 then dropped suddenly to low visibility, fog and rain from 14:00 through 00:00

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 22 **Report For 02-Sep-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		36,493 / 0	
Measured Depth (ft):	1645	**Drilling Days (act.):**	16	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	1645	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01	1,714,090	1,278,325	
Proposed TD (ft):	1700	**Days On Location:**	22	**Last BOP Test:**	30-Aug-16				
Hole Made (ft) / Hrs:	260 / 23.5	**Last Casing:**	4.500 at 800			**Totals:**	1,714,090	1,278,325	
Average ROP (ft/hr):	11.06	**Next Casing:**	3.500 at 1,700	**Working Interest:**		**Well Cost ($):**		1,278,325	
Pers/Hrs:	**Operator:** 2 / 0	**Contractor:**	7 / 0	**Service:**	1 / 0	**Other:**	0 / 0	**Total:**	10 / 0

SafetySummary: No incidents or events reported. 13 days since LTI. Conducted Safety Meeting.

Current Operations: Circulating at 1725' at 06:00. Reached TD with all HQ core pipe on location in the hole. Took survey at 1700': 1 degree inclination.

Planned Operations: Fly over additional HQ core pipe as weather allows to core ahead an additional 250'.

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	6:00	6.00	1,425	DRIL	Coring ahead HQ fom 1385' to 1425' with full returns.	
6:00	17:00	11.00	1,500	DRIL	Core ahead HQ from 1425' to 1500'. Mud temp in/ out 98/ 136 F. Full returns.	
17:00	17:30	0.50	1,500	SURV	Run Totco at 1500': 1.75 degree inclination.	
17:30	0:00	6.50	1,645	DRIL	Core ahead HQ from 1500' to 1645'. Full returns.	

Management Summary

Core ahead HQ from 1385' to 1645'. Survey at 1500' with Totco: 1.75 degree inclination.

Comments

Was able to fly to village to inspect HQ core pipe. Verify there is an additional 8 joints of HQ at staging area. Conditions too poor to sling load with helicopter.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	8.650	0	40	40	40	MOVE	10.750		OTHER	
FULL	5.500	4	4	222	222	SURF	7.500	16	K55	18.26
FULL	4.500	0		800		PROD		12	K55	

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	36,493	1,278,325	74.58 %
	Totals $:	1,714,090	0	0	36,493	1,278,325	74.58 %

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 22 **Report For 02-Sep-16**

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	% Oil	% Water	Sand	LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
02-Sep-16 00:00 at Depth 1,385 ft Sample from Mud Pits																				
8.40	70																	96	133	
02-Sep-16 04:00 at Depth 1,405 ft Sample from Mud Pits																				
8.40	70																	97	136	
02-Sep-16 06:00 at Depth 1,425 ft Sample from Mud Pits																				
8.40	75																	96	135	
02-Sep-16 08:00 at Depth 1,440 ft Sample from Mud Pits																				
8.40	75																	98	134	
02-Sep-16 10:00 at Depth 1,455 ft Sample from Mud Pits																				
8.40	70																	96	133	
02-Sep-16 12:00 at Depth 1,485 ft Sample from Mud Pits																				
8.40	75																	93	128	
02-Sep-16 14:00 at Depth 1,495 ft Sample from Mud Pits																				
8.40	75																	95	132	
02-Sep-16 15:30 at Depth 1,505 ft Sample from Mud Pits																				
8.40	75																	98	135	
02-Sep-16 19:00 at Depth 1,585 ft Sample from Mud Pits																				
8.40	80																	98	151	
02-Sep-16 20:00 at Depth 1,600 ft Sample from Mud Pits																				
8.40	80																	97	132	
02-Sep-16 00:00 at Depth 1,645 ft Sample from Mud Pits																				
8.40	75																	106	151	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Polymer - 5GAL	3	660			

Bit/BHA/Workstring Information

No Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Pump Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
7 1	ADT	8 AM	3.825	1300	345	26.5	13.0	20.0	2,000	525	2,000	8	18	415				

Jets: **Out:** 1919 **Grade:** **Cutter:** 8 / 8 **Dull:** RG / NO **Wear:** A **Brgs:** **Gge:** 0 **Pull:** PP

BHA - No. 7 - BIT, NBS, CORE, 2 OTHER = 13.56

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
1,385	1,500	16.0	20.0	1,500	2,000	525	550	2,000	2,500	18	20	400
1,500	1,645	15.0	18.0	1,500	2,000	525	550	2,000	2,500	18	20	415

Survey Information

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates N-S	Coordinates E-W	D.L.S.
TOTCO	1,500.0	1.75							
TOTCO	1,700.0	1.00							

Rig Information

Equipment Problems:

Location Condition:

Transport:

Daily Drilling Report

Geothermal Resource Group

Well ID: AK-3

Well Name: AK-3

Field: Hot Springs Bay Va

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 22

Report For 02-Sep-16

Safety Information

Meetings/Drills	Time	Description
Safety	30	2-15 minute pre tour crew safety meetings, morning , evening

First Aid Treatments:	Medical Treatments:	Lost Time Incidents:	Days Since LTI: 13

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Heavy overcast with ground fog and rain	**Visibility:**	1
Air Temperature:	52 degF	**Bar. Pressure:**	
Wind Speed/Dir:	12 / SW	**Wind Gusts:**	25

Comments: weather conditions worsened through out night , with high winds and rain, overcast sky and ground fog

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 23 **Report For 03-Sep-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		37,611 / 0	
Measured Depth (ft):	1865	**Drilling Days (act.):**	17	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	1865	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01	1,714,090	1,315,936	
Proposed TD (ft):	1700	**Days On Location:**	23	**Last BOP Test:**	30-Aug-16				
Hole Made (ft) / Hrs:	220 / 19.0	**Last Casing:**	4.500 at 800			**Totals:**	1,714,090	1,315,936	
Average ROP (ft/hr):	11.58	**Next Casing:**	3.500 at 1,700	**Working Interest:**		**Well Cost ($):**		1,315,936	
Pers/Hrs:	**Operator:** 2 / 0	**Contractor:**	7 / 0	**Service:**	1 / 0	**Other:**	1 / 0	**Total:**	11 / 0

SafetySummary: No incidents or events reported. 14 days since LTI. Conducted Safety Meeting.

Current Operations: Partial losses since 1878-1888. Drill to 1905' at 6 AM with partial losses. Bit torquing up. Cooling hole. Trip out of hole for bit at 8:45 AM.

Planned Operations: Pull out of hole with HQ rods. Rig up and perform pressure temperature logging. Run perforated pipe.

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	5:00	5.00	1,705	DRIL	Core ahead HQ core from 1645' to 1705' (*Planned TD), full returns. Mud temp in/out 112F/156F.	
5:00	5:30	0.50	1,705	SURV	Run Totco single shot survey tool, 1 degree inclination.	
5:30	6:30	1.00	1,725	DRIL	Core ahead with HQ core from 1705' to 1725'. Out of rod on site.	
6:30	11:00	4.50	1,725	CIRC	Circulate hole from 1725', wait on weather to fly additional core rod to site (winds blowing over 35 KNTS). Receive 8 jts of HQ in first delivery at 10:45, 15 jts of used rod from village yard at 11:00 hrs.	X
11:00	0:00	13.00	1,865	DRIL	Core ahead from 1725' to 1865'. Average fluid temp in/out: 102/55 F.	

Management Summary

Core ahead to 1725' with HQ core with full returns (survey at 1700': 1 degree inclination). Wait on weather to deliver additional core rod from village and staging area. Core ahead to 1865' with full returns.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	8.650	0	40	40	40	MOVE	10.750		OTHER	
FULL	5.500	4	4	222	222	SURF	7.500	16	K55	18.26
FULL	4.500	0		800		PROD		12	K55	

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	37,611	1,315,936	76.77 %
	Totals $:	1,714,090	0	0	37,611	1,315,936	76.77 %

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 23 **Report For 03-Sep-16**

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids	% Oil	% Water	Sand	LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
03-Sep-16 00:30 at Depth 1,650 ft Sample from Mud Pits																				
8.40	75																	112	156	
03-Sep-16 04:00 at Depth 1,695 ft Sample from Mud Pits																				
8.40	75																	108	155	
03-Sep-16 05:00 at Depth 1,705 ft Sample from Mud Pits																				
8.40	75																	105	152	
03-Sep-16 06:00 at Depth 1,725 ft Sample from Mud Pits																				
8.40	80																	108	158	
03-Sep-16 12:00 at Depth 1,740 ft Sample from Mud Pits																				
8.40	80																	95	146	
03-Sep-16 13:00 at Depth 1,755 ft Sample from Mud Pits																				
8.40	80																	102	151	
03-Sep-16 14:30 at Depth 1,755 ft Sample from Mud Pits																				
8.40	75																	105	155	
03-Sep-16 16:30 at Depth 1,785 ft Sample from Mud Pits																				
8.40	80																	108	158	
03-Sep-16 17:30 at Depth 1,805 ft Sample from Mud Pits																				
8.40	80																	108	159	
03-Sep-16 18:30 at Depth 1,815 ft Sample from Mud Pits																				
8.40	75																	110	162	
03-Sep-16 20:00 at Depth 1,845 ft Sample from Mud Pits																				
8.40	80																	112	162	
03-Sep-16 00:00 at Depth 1,865 ft Sample from Mud Pits																				
8.40	80																	110	160	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Polymer - 5GAL	2	440			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
7	1	ADT	8 AM	3.825	1300	565	44.5	12.7	14.0	2,000	525	2,000	8	18	445				

Jets: **Out:** 1919 **Grade:** **Cutter:** 8 / 8 **Dull:** RG / NO **Wear:** A **Brgs:** **Gge:** 0 **Pull:** PP

BHA - No. 7 - BIT, NBS, CORE, 2 OTHER = 13.56

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
1,645	1,705	12.0	14.0	1,500	2,000	450	525	2,000	2,500	18	20	415
1,705	1,725	20.0	20.0	1,500	2,000	525	550	2,000	2,500	18	20	415
1,725	1,865	11.0	14.0	1,500	2,000	525	550	2,000	2,500	18	20	445

Survey Information

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Closure	Vertical Section	Coordinates N-S	Coordinates E-W	D.L.S.
TOTCO	1,900.0	2.00							

Rig Information

Equipment Problems:

Location Condition:

Transport:

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 23

Report For 03-Sep-16

Safety Information

Meetings/Drills	Time	Description
Safety	30	2-15 minute pre tour crew safety meetings , morning, evening

First Aid Treatments:	Medical Treatments:	Lost Time Incidents:	Days Since LTI: 14

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Partly cloudy with high wind	**Visibility:**	10
Air Temperature:	50 degF	**Bar. Pressure:**	
Wind Speed/Dir:	38 / SW	**Wind Gusts:**	45
Comments:	Clear sky, with high wind and strong turbulence, cold . no rain		

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 24 **Report For 04-Sep-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		30,492 / 0	
Measured Depth (ft):	1955	**Drilling Days (act.):**	18	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	1955	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01	1,714,090	1,346,428	
Proposed TD (ft):	1700	**Days On Location:**	24	**Last BOP Test:**	30-Aug-16				
Hole Made (ft) / Hrs:	90 / 9.0	**Last Casing:**	4.500 at 800			**Totals:**	1,714,090	1,346,428	
Average ROP (ft/hr):	10.0	**Next Casing:**	3.500 at 1,700	**Working Interest:**		**Well Cost ($):**		1,346,428	
Pers/Hrs:	**Operator:** 2 / 0	**Contractor:**	7 / 0	**Service:**	1 / 0	**Other:**	2 / 0	**Total:**	12 / 0

SafetySummary: No incidents or events reported. 15 days since LTI. Conducted Safety Meeting.

Current Operations: Run PT survey. 150' of HQ perforated run in hole with 1 joint of blank well shut in. Continue running in perforated and blank liner.

Planned Operations: Run liner and complete well. Rig down, Install wellhead.

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	6:00	6.00	1,919	DRIL	Core ahead HQ from 1865' to 1919', bit torquing up and pressure building when on bottom. Partial losses since 1878-1888.	
6:00	7:00	1.00	1,919	CIRC	Circulate hole with fresh water to cool hole prior to trip out for bit. Partial losses.	
7:00	10:45	3.75	1,919	TRPO	Trip out of hole with HQ to change bit.	
10:45	14:30	3.75	1,919	TRPI	Trip in hole with new HQ core bit (#8) to 1919'. No losses.	
14:30	14:45	0.25	1,919	CIRC	Circulate hole and mix poly into fluid (mud wt 8.4 vis 80). Circulate hole and break in bit.	
14:45	17:45	3.00	1,955	DRIL	Core ahead HQ from 1919' to 1955' (TD).	
17:45	19:15	1.50	1,955	CIRC	Circulate hole with 2 bottoms up with fresh cold water (56 degree in out at 19:15 (1.5 hrs) 90 F. Shut pump off at 19:15 hrs.	
19:15	0:00	4.75	1,955	TRPO	Trip out of hole with HQ core string from 1955' to surface. Lay down BHA. Prepare to rig up wire line.	

Management Summary

Core ahead HQ from1865' to 1919'. Tripped out for bit. Ran in hole with new HQ bit (#8). Cored to 1955' (TD). Circulated hole. Tripped out to run PT survey log.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	8.650	0	40	40	40	MOVE	10.750		OTHER	
FULL	5.500	4	4	222	222	SURF	7.500	16	K55	18.26
FULL	4.500	0		800		PROD		12	K55	

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	30,492	1,346,428	78.55 %
	Totals $:	1,714,090	0	0	30,492	1,346,428	78.55 %

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 24 **Report For 04-Sep-16**

Mud Information

Dens.	Vis	PV	YP	Filt.	Cake	pH/ES	Solids %	Oil %	Water %	Sand %	LGS	Cl	Ca	CaCl	Gels 10s	Gels 10m	Gels 30m	Temp In	Temp Out	Mud Loss
04-Sep-16 01:00 at Depth 1,875 ft Sample from Mud Pits																				
8.40	80																	108	156	
04-Sep-16 03:00 at Depth 1,895 ft Sample from Mud Pits																				
8.40	80																	112	162	
04-Sep-16 05:00 at Depth 1,900 ft Sample from Mud Pits																				
8.40	80																	114	168	
04-Sep-16 06:30 at Depth 1,919 ft Sample from Mud Pits																				
8.40	80																	112	166	
04-Sep-16 15:00 at Depth 1,925 ft Sample from Mud Pits																				
8.40	70																	97	136	
04-Sep-16 17:00 at Depth 1,945 ft Sample from Mud Pits																				
8.40	75																	110	156	
04-Sep-16 17:30 at Depth 1,955 ft Sample from Mud Pits																				
8.40	75																	115	163	

Mud Consumables

Item Description	Qty.	Cost	Item Description	Qty.	Cost
Polymer - 5GAL	1	220			

Bit/BHA/Workstring Information

No	Run	Make	Model	Diam	Depth In	This Run Dist	This Run Hrs	R.O.P. Avg	R.O.P. Max	WOB	RPM	Torque	Mud Wt	Mud Flow	Pump Press	J. Vel	P. Drp	HHP	JIF
7	1	ADT	8 AM	3.825	1300	619	50.5	12.3	15.0	1,500	525	2,000	8	18	415				
Jets:					**Out:** 1919		**Grade:**	**Cutter:**	8 / 8	**Dull:**	RG / NO		**Wear:** A		**Brgs:**	**Gge:**	0	**Pull:** PP	
8	1	ADT	8 AM	3.825	1919	36	3	12.0	15.0	1,500	525	2,000							
Jets:					**Out:** 1955		**Grade:**	**Cutter:**	1 / 1	**Dull:**	NO / NO		**Wear:** A		**Brgs:**	**Gge:**	0	**Pull:** TD	

BHA - No. 8 - BIT, NBS, CORE, 2 OTHER = 13.56

Drilling Parameters

Depth (ft) From	Depth (ft) To	ROP (ft/hr) Avg	ROP (ft/hr) Max	WOB (lbs) Avg	WOB (lbs) Max	RPM Avg	RPM Max	Torque (ft lbs) Avg	Torque (ft lbs) Max	Flow (gals/min) Avg	Flow (gals/min) Max	Pressure (psi)
1,865	1,919	12.0	14.0	1,500	2,000	525	550	1,500	2,000	18	20	415
Comments: Bit worn , tripped out at 1919'												
1,919	1,955	15.0	15.0	1,500	2,000	525	550	2,000	2,500	18	20	425

Rig Information

Equipment Problems:

Location Condition:

Transport:

Safety Information

Meetings/Drills	Time	Description
Safety	30	2 -15 minute pre tour crew safety meeting, morning , evening

First Aid Treatments: **Medical Treatments:** **Lost Time Incidents:** **Days Since LTI:** 15

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Windy, turn to partly cloudy in afternoon	**Visibility:**	10
Air Temperature:	50 degF	**Bar. Pressure:**	
Wind Speed/Dir:	12 / SW	**Wind Gusts:**	15

Comments: clear and cool day, winds moderated in mid morning.

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 25 **Report For 05-Sep-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**	29,528 / 0
Measured Depth (ft):	1955	**Drilling Days (act.):**	19	**Well Bore:**	Original Well Bore	**AFE No.** / **AFE ($)**	**Actual ($)**
Vertical Depth (ft):	1955	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01 / 1,714,090	1,375,955
Proposed TD (ft):	1700	**Days On Location:**	25	**Last BOP Test:**	30-Aug-16		
Hole Made (ft) / Hrs:	0 / 0.0	**Last Casing:**	3.500 at 1,955			**Totals:**	1,714,090 / 1,375,955
Average ROP (ft/hr):		**Next Casing:**		**Working Interest:**		**Well Cost ($):**	1,375,955

Pers/Hrs: **Operator:** 2 / 0 **Contractor:** 7 / 0 **Service:** 1 / 0 **Other:** 2 / 0 **Total:** 12 / 0

SafetySummary: No incidents or events reported. 16 days since LTI. Conducted Safety Meeting.

Current Operations: PT survey ~02:45-05:20. Waiting for daylight. Resume site de-mob.

Planned Operations: Clean and clear site. Install remainder of discharge pipe and valve

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	1:30	1.50	1,955	SERV	Complete wire line equipment set up, install crossover to wire line logging lubricator. Assist in bringing wire line logging tool to rig floor. Hang lubricator with hoist line.	
1:30	6:00	4.50	1,955	LOG	Run pressure/temperature survey from ground surface to 1955'. Start log tool at 01:40 - set in hole zero at ground surface. Begin logging at 2:20 hours from 0' making stops at various times at 20 fpm to TD of 1955'. Log out at 40fpm. Tool on surface at 04:50 hours. Download data.	
6:00	6:30	0.50	1,955	CASE	Pick up and run in hole with 150' of HQ perforated pipe and 1 joint blank.	
6:30	9:00	2.50	1,955	WOO	Waiting on well design after PT data review. Receive well plan: From the current blank run 4 perforated / 1 blank alternating 4 to 1 until run out of perf pipe, then 50 joints of blank. Top of lap joint (TOL): 755' BGS.	X
9:00	15:30	6.50	1,955	CASE	Continue run in hole with HQ perforated and blank tubing per plan: Alternate 4 perf joints / 1 blank joint to 805' and 50' of blank HQ tubing inside 4-1/2" casing. Top of lap: 755' BGS. Lower string in hole on 75 joints of HQ pipe, set on bottom. Back off from top of blank (755') - Top 5 blank joints (805'-755') were tack welded and the backoff joint (755'-745') was greased instead of dope. Trip out of hole.	
15:30	19:30	4.00	1,955	MOB	RIG RELEASED and master valve closed at 15:30 hrs. Rig crews breaking down rig, helicopter flying loads (bundles of rods, support equipment) out. Crew lay down rig mast and disassemble power unit. Control unit, hoist, and engine flown away. Sub base and sub pad off site at and crews supended work at 19:30 hrs.	
19:30	0:00	4.50	1,955	OTHER	Re-install the top master valve flange. Install top connection to hook up to wire line lubricator. Rig up pressure gauge to side valve.	

Management Summary

Complete the pressure / temperature survey. Pick up and install completion liner with 950' of perforated HQ and 250' of blank HQ. Release rig at 15:30 hrs. Break rig down and fly to staging area. Evening crew on at 12:00 to help with tear down. Crews suspend work at 19:30 hrs.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	8.650	0	40	40	40	MOVE	10.750		OTHER	
FULL	5.500	4	4	222	222	SURF	7.500	16	K55	18.26
FULL	4.500	0		800		PROD		12	K55	
LINER	3.500	755		1,955		PERF	3.825	8	HQ	

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	29,528	1,375,955	80.27 %
	Totals $:	1,714,090	0	0	29,528	1,375,955	80.27 %

Rig Information

Equipment Problems:

Location Condition:

Transport:

Daily Drilling Report

Geothermal Resource Group

Well ID: AK-3

Well Name: AK-3

Field: Hot Springs Bay Va

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 25

Report For 05-Sep-16

Safety Information

Meetings/Drills	Time	Description
Safety	15	15 minute pre tour crew safety meeting , daylight crew.

First Aid Treatments:	Medical Treatments:	Lost Time Incidents:	Days Since LTI: 16

☐ **BOP Test** ☐ **Crownamatic Check**

Weather Information

Sky Condition:	Scattered clouds	**Visibility:**	10
Air Temperature:	55 degF	**Bar. Pressure:**	
Wind Speed/Dir:	5 / E	**Wind Gusts:**	8

Comments: Clear day from morning to evening, able to fly loads over the mountain

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 26 **Report For 06-Sep-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		17,340 / 0	
Measured Depth (ft):	1955	**Drilling Days (act.):**	20	**Well Bore:**	Original Well Bore	**AFE No.**		**AFE ($)**	**Actual ($)**
Vertical Depth (ft):	1955	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01		1,714,090	1,393,295
Proposed TD (ft):	1700	**Days On Location:**	26	**Last BOP Test:**	30-Aug-16				
Hole Made (ft) / Hrs:	0 / 0.0	**Last Casing:**	3.500 at 1,955			**Totals:**		1,714,090	1,393,295
Average ROP (ft/hr):		**Next Casing:**		**Working Interest:**		**Well Cost ($):**			1,393,295

Pers/Hrs:	**Operator:**	2 / 0	**Contractor:**	5 / 0	**Service:**	1 / 0	**Other:**	1 / 0	**Total:**	9 / 0

Current Operations: Waiting on daylight, estimated at 07:30 hrs.

Planned Operations: Conduct 3 rd P/T survey, complete drain line from cellar, prepare well head and site for winter conditions.

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	2:00	2.00	1,955	LOG	Prepare P/T tooling, install lubricator, run out slick line	
2:00	5:30	3.50	1,955	LOG	Conduct P/T survey from 0' to 1955' at 20 fpm. with down stops at 20' 50', 100' 300', 500', 1000', 1500' and 1955' with 2 minutes at each stop. Log up at 60' fpm. with same stop at 3 min. inclination.	
5:30	6:30	1.00	1,955	LOG	Down load data confirm results. transmit data, rig down survey tools.	
6:30	9:30	3.00	1,955	WOD	Crew waiting on Daylight to continue cleanup of site and removal of remainder of equipment to staging area. Helicopter on site at 09:30. sending 2 crew to staging area.	
9:30	19:00	9.50	1,955	MOB	Make up loads to fly out, Assemble well head with flow Tee, side 4: valve and 2" top valve and lubricator bonnet , construct fence posts around sumps and retention pond. begin excavating ditch for drain line from cellar. crews at staging area receiving loads and sorting into container,	
19:00	0:00	5.00	1,955	WOD	Crew will only work 12 hrs from this time forward to storing of equipment into containers.	

Management Summary

Conducted P T survey, removed all drilling equipment from the site, installed the well head discharge equipment, cleaned site prepare for demob of project.

Comments

Crews will work only single shift while loading equipment into containers. Camp services scheduled to begin camp tear down on Thursday the 8th of September. Blake Bundy (Geo) off site at 13:00 hrs.

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	8.650	0	40	40	40	MOVE	10.750		OTHER	
FULL	5.500	4	4	222	222	SURF	7.500	16	K55	18.26
FULL	4.500	0		800		PROD		12	K55	
LINER	3.500	755		1,955		PERF	3.825	8	HQ	

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	17,340	1,393,295	81.28 %
	Totals $:	1,714,090	0	0	17,340	1,393,295	81.28 %

Rig Information

Equipment Problems:

Location Condition:

Transport:

Weather Information

Sky Condition:	Clear	**Visibility:**	10
Air Temperature:	55 degF	**Bar. Pressure:**	
Wind Speed/Dir:	4 / SE	**Wind Gusts:**	6

Comments: One of the nicest days in along while. Sunshine through out the day

Daily Drilling Report

Well ID: AK-3

Field: Hot Springs Bay Va

Geothermal Resource Group

Well Name: AK-3

Sect: 5 Town: 112W Rng: S005 County: Aleutians East State: AK

Report No: 27 **Report For 07-Sep-16**

Operator:	City of Akutan	**Rig:**	Major LF90	**Spud Date:**	18-Aug-16	**Daily Cost / Mud ($):**		225,340 / 0	
Measured Depth (ft):	1955	**Drilling Days (act.):**	21	**Well Bore:**	Original Well Bore	**AFE No.**	**AFE ($)**	**Actual ($)**	
Vertical Depth (ft):	1955	**Drilling Days (plan):**	30	**RKB Elevation (ft):**	6.00	01	1,714,090	1,618,635	
Proposed TD (ft):	1700	**Days On Location:**	27	**Last BOP Test:**	30-Aug-16				
Hole Made (ft) / Hrs:	0 / 0.0	**Last Casing:**	3.500 at 1,955			**Totals:**	1,714,090	1,618,635	
Average ROP (ft/hr):		**Next Casing:**		**Working Interest:**		**Well Cost ($):**		1,618,635	

Pers/Hrs:	**Operator:**	2 / 0	**Contractor:**	5 / 0	**Service:**	1 / 0	**Other:**	1 / 0	**Total:**	9 / 0

Current Operations: FINAL REPORT

Planned Operations: Break down camp, secure pits with barbed wire fencing.

Toolpusher: Brian Walker

Wellsite Supervisors: MKeown **Tel No.:** 907-273-0057

Operations Summary

From	To	Elapsed	End MD(ft)	Code	Operations Description	Non-Prod
0:00	9:00	9.00	1,955	WOD	Waiting on daylight, kitchen now opening at 07:00 hrs, still dark, helicopter at site at 08:30, load crew take to staging area at 09:00	
9:00	13:00	4.00	1,955	LOG	Hook up, program and run P/T survey tool from 0 to 1955' BGS, casing pressure gauge reading 10 psi, however upon loading the tool, appears to be 0 casing pressure. Joe, Ray and Darren cut ditch to cellar floor and laid poly pipe to drain cellar through winter.	
13:00	19:00	6.00	1,955	MOB	Joe ,Ray, Darren and helicopter crew broke down the job site tent and core tent. Strung out barbed wire around sump and retention pond.Helicopter flew Monty from Job site at 14:30 hrs over the staging area, appear the crew has 90% of the Major container loaded, was loading the rig stack into container. Estimate loading will be complete by end of day.	
19:00	0:00	5.00	1,955	WOD	Suspend activities for the day. Crew remaining in camp tonight, working 12 hr days. Tear down of camp to begin tomorrow.	

Management Summary

Conducted P/T survey to 1955', continued tear down of camp, operations tent and core tent, completed drain line from cellar to discharge point. fenced mud sump and retention pond with barbed wire. Major crews loaded containers with equipment, FINAL REPORT

Comments

Major crews down to 5 on site, 2 expected to leave on the 8, th of Sept., the loading of containers should be completed today. Camp services to be on site the 8th of September to dismantle and remove camp from site.

Final report

Casing/Tubular Information

Type	Size (ins)	Top MD (ft)	Top TVD (ft)	Bottom MD (ft)	Bottom TVD (ft)	Hole Section	OH Diam. (ins)	Nom. Wgt. (lbs)	Nominal Grade	LOT (lbs/gal)
FULL	8.650	0	40	40	40	MOVE	10.750		OTHER	
FULL	5.500	4	4	222	222	SURF	7.500	16	K55	18.26
FULL	4.500	0		800		PROD		12	K55	
LINER	3.500	755		1,955		PERF	3.825	8	HQ	

Cost/AFE Information

AFE No	AFE Description	AFE Amount	Daily Mud	Well Mud	Daily Total	Well Total	% Spent
01		1,714,090	0	0	225,340	1,618,635	94.43 %
	Totals $:	1,714,090	0	0	225,340	1,618,635	94.43 %

Rig Information

Equipment Problems:

Location Condition:

Transport:

Weather Information

Sky Condition:	Partly cloudy	**Visibility:**	10
Air Temperature:	55 degF	**Bar. Pressure:**	
Wind Speed/Dir:	4 / ESE	**Wind Gusts:**	6

Comments: Cool day with partial sun from time to time.