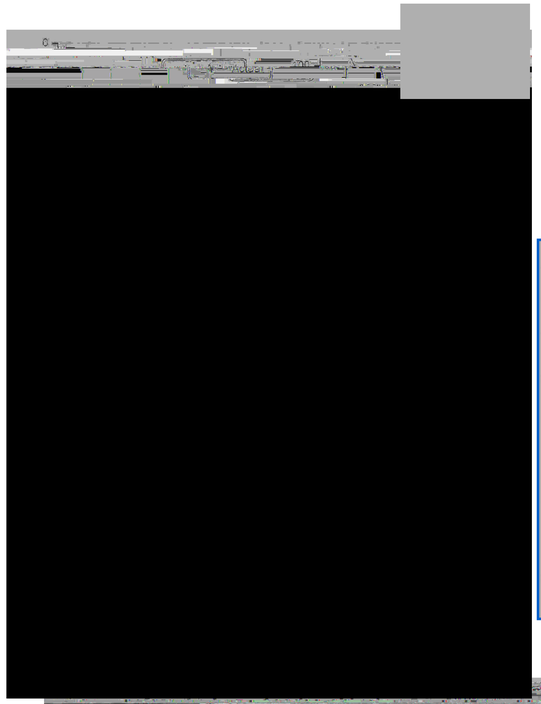
Renewable Energy in a Petroleum-Dominated Society

Geothermal in the Middle East

Jamie E. Hutchins, P.E., LEED AP



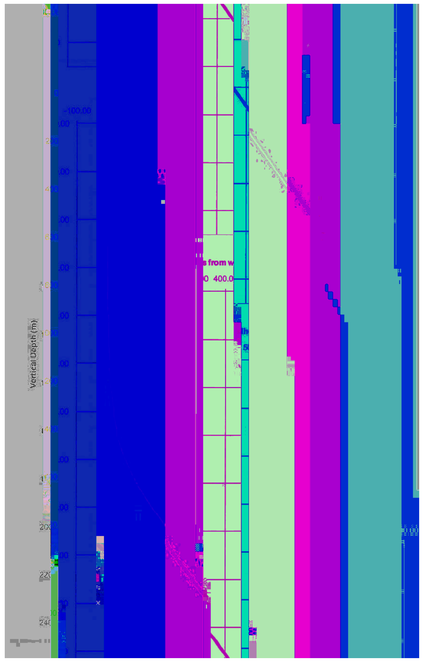
A pilot geothermal project was recently completed in the Middle East. The geothermal resource is a high salinity brine from a reservoir at about 375 m thick and about 2150 m deep.

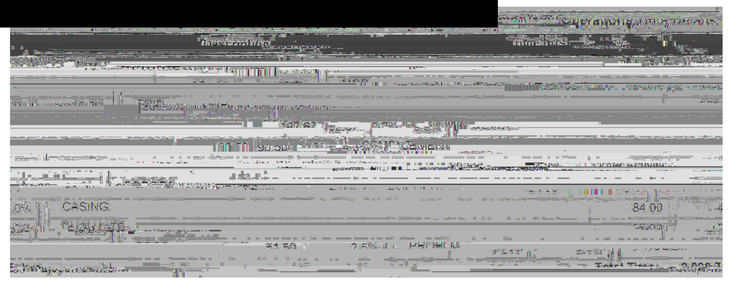
The wellheads are located adjacent to each other, hence directional drilling was used to hit the bottom target zone at about 1700 m depth. The production casing was cemented over a calculated depth of 550 m and 350 m respectively, then directionally drilled at 2° per 30 m depth to a total depth of 630 m.

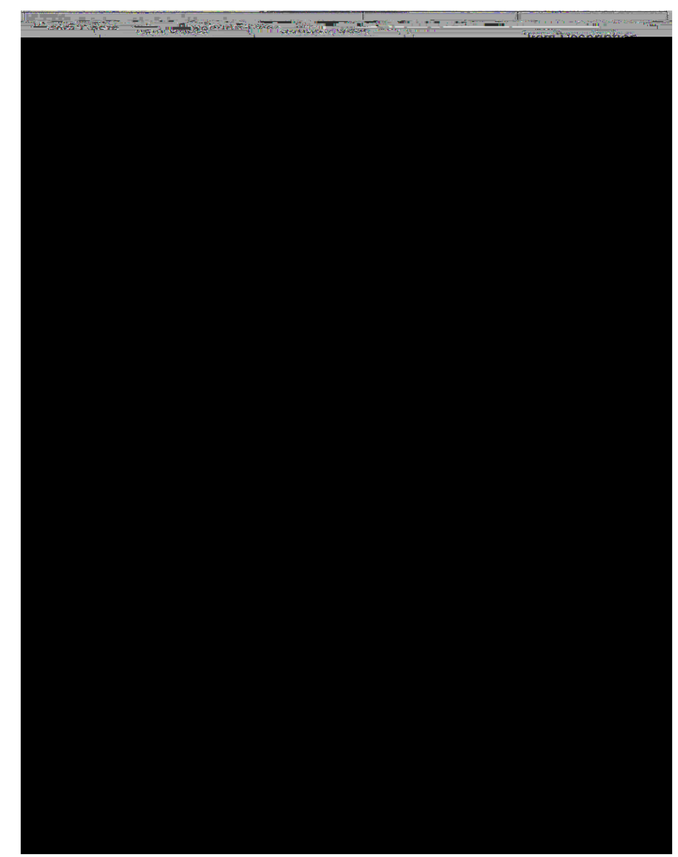
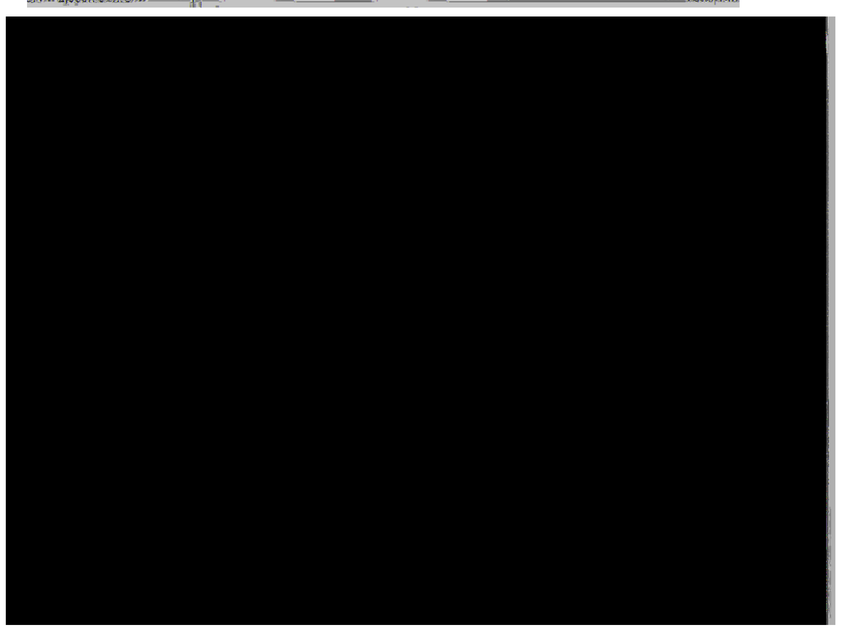
Drilling and completion of the production well took 76 days, largely delayed due to lost circulation and other problems. Drilling and completion of the second well took 50 days, with a total of US$8,282,661. Drilling and completion of the second well took 50 days, with a total of US$6,818,441.

Production tests indicate a flow rate of 6100 barrels per day (about 55,000 barrels per day) with a temperature at the wellhead ranging from 90 to 95°C. Flow tests are ongoing.

Figures presented on this poster are for the first geothermal well only.





Hole & Casing Details	Surface Casing	Intermediate Casing	Anchor Casing	Production Casing	Slotted Production Liner
Hole Size (inches)	36"	26	17½"	12¼"	8½"
Hole Depth (metres MD RT)	50	500	1200	2000	2640
Casing Details	Seamless	ERW	ERW	Seamless	Seamless
Weight	26 lb/ft	234.00 lb/ft.	133.00 lb/ft.	68 lb/ft	47 lb/ft
Grade	K-80	K-80	K-80	K-52	K-55
Connection	Buttress	Buttress	Buttress	Threaded & Coupled	Welded	Buttress
Approximate No. of Joints	4	40	96	124	98	
Perforation						220 x 15 mm dia holes per metre, 1 metre blank at each end.
Setting Depth (m MD)		47	498	1190	450 to 1990	1973 to 2640
Casing Cementing		Cemented back to surface.	Cemented back to surface.	Cemented back to surface	Cemented back to hanger.	Not cemented.
Drilling Fluid	Aerated Mud	Polymer	Polymer	Polymer sweeps as required.	Polymer Mud	Aerated Brine water with Polymer

The data presented in this poster is from the first well drilled. The wells described herein are certainly not the only geothermal resources in the Middle East, but the data presented here is based on the first well drilled. Once the resource has been accessed, more data will be published for public use.