



Reservoir parameters. Data on cores sent to
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RESERVOIR PARAMETERS

Data on cores sent to Greg Boitnott

The data of the samples sent to Greg Boitnott is described in the following ways:

Field characteristics

G-samples are taken in a tertiary extinct deeply eroded central volcano called Geitafell in SE-Iceland, which have suffered high-T alteration. The H-sample is taken from a low-T environment of tertiary age in West-Iceland, and R- samples are taken from an interglacial relatively fresh olivine tholeiite lava-shield within Reykjavík.

G-8 The core is taken from a plagioclase porphyritic, flow-lineated basalt lava flow. The core is taken from the lower more vesicular part of the flow. Vesicles are filled by light-green clay (probably chlorite), zeolites (scolecite, laumontite), and epidote veining is observed in the rock.

G-13 A very epidote-rich re-sedimented basalt hyaloclastite. Size of fragments <1cm.

G-14 A 1-2 m thick strongly flow-lineated rhyolite dyke: the core is taken parallel to flow-lineation. Within chlorite-epidote zone.

G-28 A basalt breccia within Smectite-zeolite alteration zone. Void spaces largely filled with zeolites.

H-78 A relatively dense and coarse-grained olivine tholeiite lava flow from a monogenic shield volcano in W-Iceland, within the smectite-zeolite zone.

R-34 and R-43 These two samples are taken from an olivine tholeiite lava shield within Reykjavík. Petrographic analysis have not been made at this time, but rocks are assumed to be fresh, except that some opalline material is seen to have precipitated in some of the vugs in the lavas.

Petrography

The main characteristics of the rock samples have been assessed in the petrographic microscope by using 200 point counts of specific features in the rock presented in %. These include; % Primary minerals in the rock (plagioclase, pyroxene, olivine, ore, glass), % altered primary minerals, %minerals precipitated in "primary" vesicles in the rock, % "primary" vesicles that have not been filled by deposition, % deposition within fractures and % open fracture space. These values are shown in the accompanying tables.

Petrographic analysis have not been done on the R-samples as mentioned previously. The clay portion in the samples have not specifically been assessed, but one can assume that samples G-8, 13 and 14 have considerable amount of clay content (should be mainly chlorite), in samples H-78 less clay content (mainly smectite), and R-samples would only have minor clay (smectite).

Chemical analysis

Chemical analyses are shown in accompanying table. These are "standardized" rock analyses, where the major element oxides are presented as %, while trace elements are presented in ppm. %LOI (Loss Of Ignition), %CO₂, % FeO were analyzed additionally. Samples R-34 and R-43 were not analyzed specifically, but samples R-39,42,51 & 52, which are from the same volcanic formation are included for comparison.

Measurements of reservoir characteristics



The measurements of the reservoir characteristics are shown in the accompanying table, but is not described any further here.

Field characteristics

Acid lava	Basalt lava	Basalt Hyaloclast intrusion	Basaltic	Intermed acid intrusions	Basaltic	Intermed.	Acid	Rel. Fresh	Sample Name	Smectite Zeolite	Mixed lay clay	Chlorite epidote	Chlorite Epid. amfib.
	x							ANN	G-8			x	
x			x				x		G-14			x	
	x		x						G-28	x			
	x		x						H-78	x			
		x	x						G-13			x	
	x		x						G-37		x		
			x					R-39	R-39				
			x					R-42	R-42				
			x					R-51	R-51				
			x					R-52	R-52				

Chemical analyses

Sample name	%														Total		
	SiO2	TiO2	Al2O3	Fe2O3	MnO	MgO	CaO	Na2O	K2O	P2O5	LOI	U	Y	Zr	Cl	Sb	Samtals
G-8	46.06	2.15	16.02	11.69	0.19	5.25	11.87	2.54	0.12	0.2	4.43	4.43	100.6				100.6
G-14	70.37	0.22	12.94	1.56	0.03	0.12	1.69	2.39	4.67	0.03	5.88	5.88	99.98				99.98
G-28	45.45	2.93	13	14.46	0.19	3.62	9.41	2.11	0.39	0.3	8.75	8.75	100.71				100.71
H-78	45.65	2.78	13.92	15.84	0.22	6.77	10.18	2.51	0.39	0.25	2.17	2.17	100.78				100.78
G-13	54.91	2.49	13.92	11.63	0.2	3.1	6.87	2.75	0.62	0.98	3.18	3.18	100.05				100.05
G-37	46.63	3.09	12.61	15.83	0.2	7.33	6.34	4.09	0.17	0.34	3.54	3.54	100.17				100.17
R-39	46.79	1.473	14.77	12.82	0.196	10.2	11.04	2.05	0.16	0.137	<d/l	<d/l	99.7		As		99.7
R-42	47.08	1.467	14.92	12.57	0.19	9.98	11.3	2.08	0.15	0.138	<d/l	<d/l	99.95		5.2		99.95
R-51	46.9	1.588	15.6	12.76	0.196	8.88	11.37	1.96	0.16	0.096	1.07	1.07	100.65		5		100.65
R-52	46.54	1.585	15.78	12.75	0.192	8.88	11.36	2.05	0.16	0.091	1.08	1.08	100.54		3		100.54

name	ppm														%		Fe2O3 / (FeO+Fe2O3)		
	BaO	Ce	Cu	V	Zn	Ga	Nb	Pb	Rb	Sr	Th	U	Y	Zr	Cl	S		FeO	Fe2O3
G-8	203	25	107	330	120	23.1	12	2.8	4.6	697.5	4.5	4.5	30.9	140.1	<d/l	<d/l	4.9	6.24	0.560144
G-14	618	101	15	11	72	20	27.7	4.1	110.5	190.8	8.1	<d/l	46.8	170.1	<d/l	204	0.53	0.97	0.646667
G-28	291	54	157	344	154	20.5	18.7	1.9	10.5	248.2	4.9	<d/l	37.2	196.1	<d/l	<d/l	3.67	10.38	0.739879
H-78	252	35	109	432	144	21.8	15.5	3.3	6.3	253.1	6	<d/l	27.1	124.8	<d/l	<d/l	5.6	9.62	0.632063
G-13			1	158	158		39	7	14	300	3.8	1.2	86	435	50	283			
G-37			148	117	117		19	7	6	104	1.8	0.6	43	214	55	92			
R-39	47	23	220	268	79	17.2	10.3	1.2	4.4	176.7	1.6	<d/l	25	77.5	0.3	<d/l	7.84	4.11	0.343933
R-42	43	33	233	272	80	17.8	10.9	1.8	4.3	180.1	1.4	<d/l	24.5	77.2	0.35	<d/l	6.08	5.81	0.488646
R-51	53	35	273	286	67	18.7	11.5	1.6	4.7	277.4	<d/l	<d/l	26.2	86	0.2	<d/l	6.76	5.25	0.437136
R-52	41	34	253	285	70	18.3	11.3	1.7	4.8	273.3	1.4	<d/l	26.4	87	0.55	<d/l	6.55	5.47	0.455075

Geophysical measurements

Sample No.	Klinkenb Perm	Air Perm	Water perm	Effective porosity	Total porosity	Tot.grain density	Klink/wat	Air/klink	Air/water
G-8	0.106	0.165		17.1	17.1	2.78			
G-13	0.367	0.69	0.28	34.2	34.2	2.85	1.29	1.91	2.46
G-14	0.03	0.075		23.4	23.7	2.35			
G-28	0.002	0.006		16.6	16.9	2.79			
G-37	0.008	0.018		16.9	16.9	2.93			
H-78	0.027	0.035		5.3	5.4	2.95			

Petrography

Sample No.	Thinsect. No.	% primary minerals	% altered primary minerals	Vesicles	% Vesicles	fractures	% fractures	unfilled vesicles	% unfilled vesicles	unfilled fractures	% unfilled fractures	Total
G-8	15672	0	39.5	56	56	1.5	1.5	3	3	0	0	100
G-13	15677	0	53	44.5	44.5	2.5	2.5	0	0	0	0	100
G-14	15678											
G-28	15692	8	57.5	29.5	29.5	0	0	5	5	0	0	100
G-37	15701	30	47.5	21.5	21.5	1	1	0	0	0	0	100
H-78	15819	66	30.5	2	2	0	0	1.5	1.5	0	0	100
R-39	Not analysed yet											
R-42	Not analysed yet											
R-51	Not analysed yet											
R-52	Not analysed yet											