

Report on Collection and Analysis of
Volcanic Gases from Surtsey

by

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In August 1966 lava production started again in Surtsey. Conditions for gassampling developed soon after the lava started to flow and the first attempt to sample gases was made on Sept. 2nd, 1966. A favourable sampling site was found on the roof of a lava tunnel where gases escaped under considerable pressure. The distance from the crater was approximately 100 meters. In the crater a lava pond was formed and the lava was drained through an opening at the base of the cindercone several meters below the surface of the pond. The lava then flowed in an open channel some 80 meters where it entered a closed tunnel. Gases were sampled on the tunnel roof some 20 meters from the opening.

On this occasion a sampling tube of fused silica was used instead of the stainless steel tubes used in previous samplings (see The Surtsey Research Progress Report I and II).

A second attempt to sample gases was made on March 31st by Bragi Arnason. Conditions were similar as on the previous trip except that the gases could be sampled directly at the base of the crater where the lava had not been exposed in an open flow, except in the crater pond. On this occasion a sampling tube of stainless steel was used.

The results of the chemical analysis are tabulated in tables 1 and 2. Table 1 gives the composition of the gas including water and HCl. Table 2 lists the same analysis recalculated on the basis of noncondensable gases. The sample March 31st Ib and Ic are fractions of the sample, which were specifically analysed with regard to the N₂/Ar ratio.

TABLE I

	2.9.1966	31.3.1967		
		I	II	III
H ₂ O	78.10	89.25	89.21	87.11
HCl	0.40	1.15	1.00	0.49
SO ₂	14.60	2.46	2.80	3.32
CO ₂	3.14	3.29	1.10	0.96
O ₂	0.00	0.00	0.00	0.00
H ₂	1.59	2.67	1.73	1.64
CO	0.09	0.11	0.11	0.32
N ₂ +Ar	2.08	1.07	4.05	6.16
	100.00	100.00	100.00	100.00
T ^o K	1400		1400	

TABLE II

	2.9.1966	31.3.1966				
		Ia	Ib	Ic	II	III
SO ₂	67.9	25.7			28.6	26.8
CO ₂	14.6	34.3			11.2	7.7
O ₂	0.0	0.0			0.0	0.0
H ₂	7.4	27.8			17.7	13.2
CO	0.4	1.1	1.4		1.1	2.6
N ₂	9.7	11.1	10.35	9.5(4)	41.4	49.7
A			0.22	0.2		
	100.0	100.0			100.0	100.0
T ^o K			1400			1400