



ORKUSTOFNUN

Notes regarding geology of plant site 6,
reykjanes Peninsula. In reply to preussag
questions of 17.10.96

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NOTES REGARDING GEOLOGY OF PLANT SITE 6, REYKJANES PENINSULA

IN REPLY TO PREUSSAG QUESTIONS OF 17.10. '96

Plant site 6 is located on about 12,000 years old shield lava, northwest of the main fissure swarm of Reykjanes. The distance to the marginal fault of the swarm is 2.5 km. Several tension gashes of small throws trending NE-SW occur in the area between plant site 6 and the marginal fault. Two such gashes trend towards the general area of the plant site. The ground fissures become more widely spaced apart farther to the NW. The jetty is not affected by these.

The geothermal wells and plant will necessarily be located in the hot core area of the fissure swarm among younger flows from eruptive fissures, however, also several thousand years old.

The steam pipeline will lie across the northwestern part of the fissure swarm. It will cross the two most recent crater rows and lava flows, which are ~800 and ~2000 years old.

The main geological advantage of site 6 over other considered areas is its distance from the main zone of geological unrest, on relatively stable ground. Geologically there is no obvious disadvantage relative to the other sites considered as the acquisition of fresh water and sea water is comparatively straightforward at site 6.

A site for wells for extraction of sea water is proposed at the northern end of Hafnaberg, immediately west of plant site 6 and on the same shield lava. At present it is not certain, whether the obtained liquid will have the full salt content of the sea off the coast.

At the very coast, the freshwater is mixed with sea water. It may be suitable for cooling but probably not for consumption. The salinity decreases inland but at present it is not exactly known, how far inland the good quality freshwater must be extracted. Two sites have been proposed, one east of the abandoned farm Kalmanstjörn, some 2.5 km NE from plant site 6 and on the same shield lava, the other one some 3-3.5 km to SE, in the fissure zone. At the latter site the freshwater is expected to have salinity below the limits for consumption water. At the other site the possible salination is at present still unknown.

Tidal currents and sea currents connected with the Irminger Stream (Gulf stream) flow from S to N at the coast at plant site 6. The heaviest gales with the longest fetch blow from SW at that site. The spent sea water should therefore preferably be conducted to the sea N or NE of the site of the sea water intake and as far as possible out into the sea, for sake of dilution, e.g. in prolongation of the proposed jetty towards north.

A detailed mapping of faults and ground fissures has been conducted as regards the general area of plant site 6. The results are being processed together with other geological information on the wider area.

Regarding danger from ash falls we refer to our assessment of sept. 1995 (KS/MS/SP-9513, Potential building sites at Reykjanes with regard to natural risk, Orkustofnun)

Regarding probabilities of future volcanic eruptions we refer to the same assessment as no new information has come up that would need to be considered.

The Icelandic building codes take notice of earthquake risks and design load. The Reykjanes Peninsula as a whole including all the towns southwest of Reykjavík, is included in the zone of highest design load (category 3) according to Icelandic Standard IST-13 of 1989.

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