SECOND SPELEOLOGICAL EXPEDITION TO SURTSEY

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Summary

The second ISS expedition to the volcanic island Surtsey off the South-coast of Iceland was organised in late summer 1998. Participants from the ISS were six and the expedition's planned duration was for four days.

Results of the first speleological investigations in Surtsey have been described by Jonsson & Hroarsson (1992). Seven caves were discovered of which three were surveyed and a map published of the largest cave.

Very severe weather conditions seriously inhibited the work of the second speleological expedition to Surtsey. Surveys of two caves were nearly completed but with less accuracy than could have been accomplished if conditions had allowed.

The first cave that was discovered in Surtsey, SU-01 was re-surveyed but Jonsson surveyed the cave in 1994 (unpubl.).The cave opens in to a sea cliff and by comparing the two surveys the destruction rate of the cave can be estimated. SU-01 is the only cave in Surtsey that opens out to the open sea.

One new cave was discovered inside the western crater and an unexpected connection made between the newly discovered cave and a previously known but unexplored pit, also inside the crater. A preliminary draft of the system is presented but an accurate survey awaits next expedition to Surtsey.

The underlying shaft of the hornito/crater on the northern side of the hyaloclastite crater rim was descended and explored. The shaft is 18 metres deep and ends in a semi-closed elongated eruptive fissure. The western end of the fissure is overhung by a lip of lava, sheltering the site from incoming precipitation and thus preserving an enormous quantity of mineral encrustations, some of which are water-soluble. Protruding small spiral-like crystals of mirabilite are abundant as well as crusts of gypsum with specks of fluorite and ralstonite. A preliminary draft of the volcanic conduit and fissure is presented.

Samples of mineral encrustations were collected from the largest cave, SU-03 and the cave was photographed.

Ten caves are now known in Surtsey. All have now been explored and five have been surveyed to a different level of accuracy. Further studies are needed to complete the investigations.