



## A seismic survey at a proposed explosives storehouse at Fort Direction

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Seismic spreads were fired at two possible locations for a proposed explosive store at Cape Direction near South Arm. An excavation to about ten metres is proposed and it was hoped that some indication could be obtained on the likely ease of the site preparation.

The area is underlain by gently dipping siltstone of Permian age. At some points this is overlain by varying depths of windblown sand with soil and loose rock at other locations.

The approximate locations of the two seismic spreads are shown on Figure 1. Spread 1 was laid out on top of the ridge while spread 2 was sited on the side of the ridge to the northwest. Each spread consisted of 12 geophones with a spacing of five metres. Both spreads appear to be underlain dominantly by two layers of material.

### Spread 1

Upper layer velocity	500 m/s
Thickness	2–3 m
Lower layer velocity	2300 m/s

### Spread 2

Upper layer velocity	300 m/s
Thickness	1.5–2 m
Lower layer velocity	2800–3000 m/s

Spread 1 appears to have a wedge of material with a seismic velocity of 1600 m/s on the southern end. The calculated velocities are average and local variations may be present.

The surface material is interpreted as being soil, sand and loose rock which should be quite easy to excavate. Material with a seismic velocity of 1600 m/s is likely to be loose jointed rock or weathered rock and again should be comparatively easy to excavate. The higher velocity material (2300 m/s under spread 1 and 2800–3000 m/s under spread 2) is probably getting to the range where excavation without the use of explosives will be difficult. However the rock will be jointed and have regular, slightly dipping (from horizontal) bedding planes and it may be possible to break it up with a hydraulic impact hammer. Breakage may be encouraged along these planes of weakness and allow excavation even in zones with the higher velocity.

In summary, the material underlying the site of the proposed store is expected to consist of soil, sand and loose rock overlying fairly competent bedded siltstone. Solid rock is likely to be deeper under spread 1 and it will probably be slightly easier to excavate than under spread 2, the favoured location for the store.

[17 December 1987]

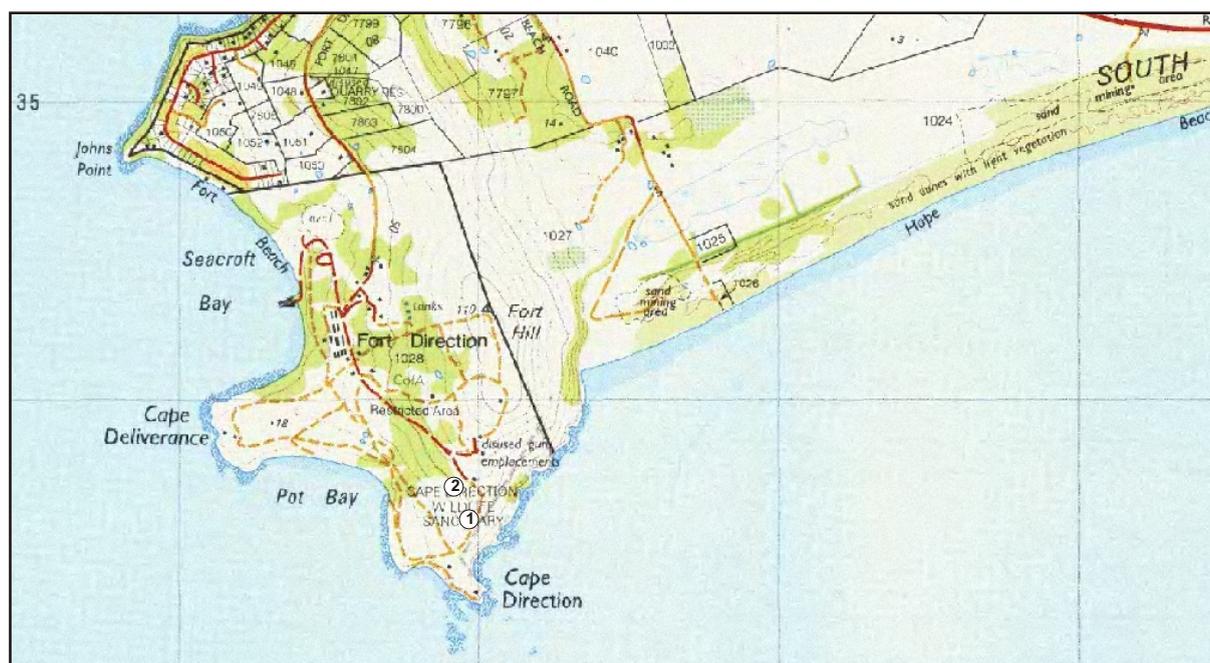


Figure 1. Location of seismic spreads.

# REFRACTION SEISMIC SPREADS — FORT DIRECTION

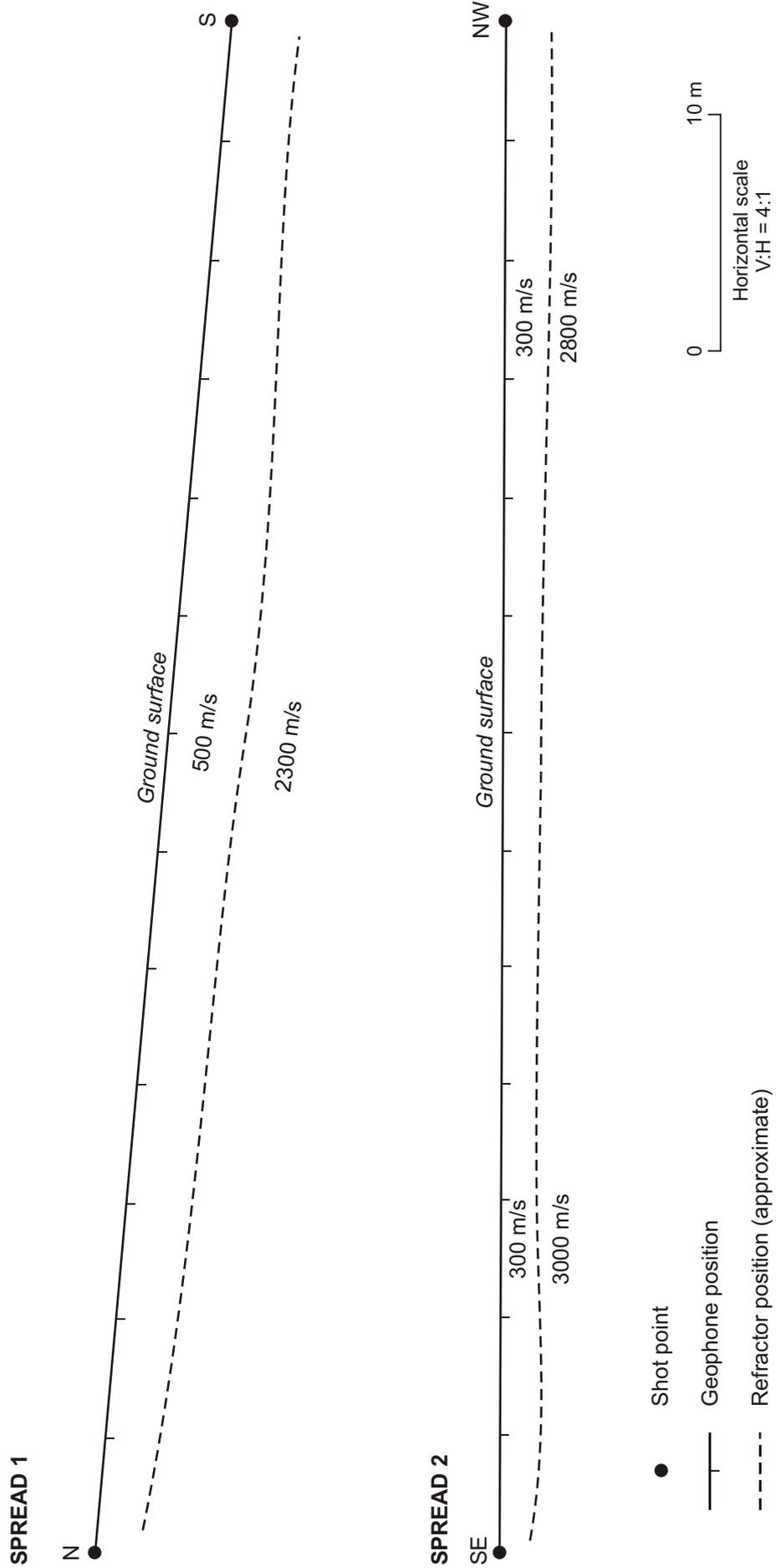


Figure 2