

NOTES ON TRIG STATIONS IN THE FRAMNES MOUNTAINS AND DEPOT PEAK REGION

David R Carstens Surveyor, Mawson 1962 and additional notes by Max J Corry, Surveyor 1965

Introduction

With a view to the extension of the existing triangulation covering the islands and connections to two mountains inland by Tellurometer measurement the following comments are designed to assist in assessing proposed stations. The network as suggested has been proved from some features but not from others. This network was laid out on a sketch map of the mountains and could well be considered on the new 1: 100,000 sheets before leaving Australia.

Bechervaise and Rookery

Bechervaise and Rookery are reached best on the sea ice. Rookery will require more care than Bechervaise until the sea ice is very reliable. A motor boat must be used in the changeover – summer period, and this is only safe in good weather and with a good forecast.

Painted Hill (later Painted Peak)

NM/S/67, the Tellurometer station at Painted Hill was climbed from the western side using crampons, to the top of the saddle south of the main peak, and then climbing up the ridge to the peak. I now consider that it is feasible to drive the Snow Trac around to the east side of the mountains and approach the abovementioned saddle on the snow slope that leads almost onto this saddle. We were led to believe that it was unsafe to approach these mountains from these snow slopes, but I since negotiated several such slopes safely. Normal precautions must be practiced because crevassing may exist, but certainly with a Snow Trac one is relatively safe. The southward sight to Van Hulssen Nunatak has been verified from both ends. The sight gives a grazing ray along the eastern side of the ridge.

Goldsworthy Ridge

NM/S/68 Goldsworthy Ridge Tellurometer station is located on the central of three ridges protruding northwards from the Main Mass of Mount Henderson. It is reached by approaching from about two miles to the north west around the end of a long wind scour in the blue ice, then travelling towards the ridges avoiding the worst of the crevassing. The vehicles are best left before descending into the melt lake between the two western ridges. This melt lake is bordered by steep ice slopes. The ascent is made up a scree slope which leads to a saddle to the north of the station. This scree slope is on the western side of the ridge and once climbed go through the saddle and it is easy to climb then to the top of the ridge.

This station has a poor position for extension southwards. Fischer Nunatak would have been a better position, and if it could be devised to make a connection to Fischer Nunatak from here it may be useful.

The ridge to the west of the Goldsworthy Ridge Tellurometer station is lower than the station therefore there is no reason why the Nunatak to the south of the Casey Range would not be visible from this station (NM/S/68).

McNair Nunatak

This peak was visited by a party in a Snow Trac in 1962. I have not seen it, but from photos and discussions it should be an easy peak to approach. Crevassing exists of course between Mount Henderson, Fischer Nunatak and McNair Nunatak. The best approach would be via Fischer Nunatak i.e. around the south end, because the east side of Mount Henderson has some extensive and large crevassing. The crevassing east of Fischer, i.e. between Fischer and McNair is hidden by the snow cover so care must be taken to understand the nature of the crevasses in this region. The approach to the peak can be made on the snow slope from the south east and the rock peak is not very high above where the vehicle can be driven, probably about forty feet.

Lucas Nunatak (Nunatak south of Casey Range)

This will probably be the most difficult to approach. Nobody has visited this site in 1962 so an accurate idea cannot be given. A party from Mawson visited the main Casey Range and reported considerable crevassing along the eastern side. This they negotiated on foot. However, one member of the party believes that with some searching a safe way through for vehicles would be found. This has proved to be the case in most places in the Mawson area.

The main Casey Range would prove a difficult climb, to be avoided if possible when backpacking the necessary equipment.

Van Hulssen Nunatak

This point will prove to be a difficult climb but to nominate a suitable station with all round visibility it is necessary to accept this high point. I have climbed this peak (without any equipment) and the best I can say it is climbable. We climbed the rock face on the southern side and returned down the scree which runs on the southern and western side. I think this would be the best way up for backpacking. To approach this mountain, I would advise to try coming from the north west along the moraine and wind scour. The most likely start for the climb is on the scree on the west face which leads to the top. There is insufficient room on top of the peak to set up and read a theodolite but a rock platform next to the pinnacle could be used as an eccentric station.

This peak stands over 1000 feet out of the snow and is almost completely surrounded by a wind scour. A note of the following was made while on this peak. **VISIBLE POINTS ARE :** Mill Peak, Baillieu Peak, NM/S/67, Fischer Nunatak, Casey Range and McNair Nunatak. **NOT VISIBLE :** Depot Peak and NM/S/68. Of course, the close features to the east are visible, e.g. Mount Twintop and Anniversary Nunataks.

Mount Twintop

I have not climbed this peak but it is easy to approach and has been climbed before. The 1958 party built a large cairn on the top, which remained in January 1963. This cairn could be used as a sight as it is of regular shape. Mount Twintop is a big lump of rock therefore would be a steep climb. I would suggest the approach be from the west would be best using the 1962 proved route to the Twintop area.

Anniversary Nunataks

There are several peaks here which may be hard to identify from a distance. The most westerly is NMA/S/69 and provides the easiest access to the peak. A Snow Trac can be driven onto the snow slope on the southern side. This region appears to be quite free of crevassing. I travelled direct from Twintop Fuel Depot i.e. just north of Mount Twintop, to these Nunataks and had only a short detour to avoid fields of crevassing. To climb to the peak, it is a walk up a rocky slope rising about 100 feet.

Assuming a Tellurometer traverse southward Mt Twintop would be the most suitable starting point, being high enough to command a good view southward. The most likely track would be to follow the southern traverse route making use of domes and ridges just clear of the track which could be approached by Snow Trac. There is a particularly high ridge (with large crevassing) close to Depot A (1962 traverse). The traverse could then be extended to Depot Peak along the 1962 traverse towards Amery. The surface is undulating all along here and suitable high positions could be located.

The peak of Depot Peak is visible from about twenty five miles but this peak is particularly steep and is UNCLIMBABLE especially in respect to taking equipment to the top.

The approach to Depot Peak should be made by following Dovers old route then heading around the southern end of the peak and driving onto the snow slope on the south east. This means crossing a field of small crevasses just to the west of the southern end of the peak. From the highest point of the main ridge of the peak, which is separated from the main peak by a deep cleft, a good view of many of the Nunataks in the Stinear Nunataks group is obtained.

Marking and Beacons

Permanent marks and beacons placed in 1962 involved the use of a *Cobra* mechanical rock drill. Several attempts at using a hand drill proved most laborious and the effort of operating and carrying the rock drill to a station was worthwhile. The rock drill was used to drill a hole for the station mark and three holes for guy points to tie down the beacon.

It is essential to have a starting technique for the rock drill if it is at all cold. I used to carry a box to the top of a hill in which a primus or blowlamp could be lit. This was necessary to keep the blowlamp out of the wind. Then a device to channel the hot gas from the blowlamp to the carburettor air intake of the rock drill is required. Allow this to warm up for a while then start turning the motor over slowly to suck some hot air into the machine. Starts were obtained in this way down to -30°F. A shortcut, if the Snow Trac is being used and can be taken close enough to the point where the drilling is required, is to put the air intake of the rock drill over the exhaust pipe of the Snow Trac, with the motor warm and running of course. With both these methods the hot gas does not really contain enough oxygen to promote combustion so as soon as the engine fires it is necessary to allow the *Cobra* to breathe fresh air. This primus setup was also required for starting the Snow Trac on cold mornings and is essential in the field.

The primus is also needed on the station to melt sulphur which is the best method of fixing the station mark in the hole drilled. The rock pins could also be fixed with sulphur. All the

stations involved, with perhaps the exception of Anniversary Nunataks west peak, consist of bare rock with very few *gibbers* around for building rock cairns or tie downs for beacons.

When ordering beaconing equipment ensure that sufficient rock pins are included for surveyors use, because supplies on the station may not be adequate.

Beacons in 1962 were constructed from scrap material about the station. Mainly I used 44 gallon drums, welded into a tower. Four drums high was the most used and proved a satisfactory mark. These were a little on the wide side for observing but with the split hairs on the diaphragm of a T2, this was not really a problem at distances over about ten miles. Other scrap material does exist, water piping, etc but it would be safer and quicker to take most requirements from Australia.

In considering the beacons and their design, requirements are not any different from Australian conditions except that continued high winds impose a continual strain, and a flimsy *temporary* structure will almost certainly be destroyed before a chance to observe it has arrived. Guy wires to hold the beacon down would definitely be more suitable than struts which would be difficult to fix in places. I included turnbuckles in all my guy wires. The guy wires consisted of 7 strand PMG type of guy wire.

Visibility in Antarctica can be considered as the same as in Australia, although the air is clear. Shimer and haze can completely break up the image of a beacon. I found this especially over sea ice, and the problem would be less on the plateau and with the higher sights possible from the mountain peaks.

Note by Max Corry : These notes have been prepared to supplement, but not supersede those above prepared by DR Carstens in 1962.

Painted Peak (formerly known as Painted Hill)

As suggested by Carstens, it is now feasible to drive a Snow Trac around the northern and eastern sides of the ridge and approach the saddle to the north of the station directly from the east. The main Mawson to Rumdoodle route should be left near the Russian airfield (that is, on the north eastern side of the large moraine) and a route struck, keeping out about a mile and a half from the rock, till due east of the saddle. Minor crevassing exists on the direct run west into the northern saddle, which has a gentler approach to the station than the saddle to the south. The vehicle can be parked near the northern end of the large wind scour that exists to the east of the main peak. Fifteen to twenty minutes are required to climb the exposed rocky, but comparatively easy ridge to the station.

Onley Hill

Onley Hill was established to supersede NM/S/68. Two routes are feasible, but both are difficult. The summer survey party approached Onley Hill by crossing the windscour to the east and approaching the station by the north eastern ridge. Later in the year, the north west ridge, just to the right of the big snow slope, was used, but ropework was necessary for a twenty feet rock face. Certainly, this route left much to be desired, especially in the respect of carrying equipment to the top. The station mark and beacon are on a narrow ridge which juts out about twenty yards or so from the main rock, where the eccentric station is established.

McNair Nunatak

This feature was visited three times in 1965; once by dog team and twice by Snow Trac.

The route of the dog team more or less followed the direct route from Fischer as followed in 1960. However, minor crevassing existed, especially to the north west of McNair. Camp was struck just to the north of the main peak. Approach to the summit where the survey station was located, was firstly up the large snow slope mentioned by Carstens, then around to the east and up a narrow crack in the rock to the flat platform which formed the summit. It was advisable to haul the equipment directly up to the summit from near the top of the snow slope.

Because of the crevassing, it was decided that for vehicular travel to attempt to roughly follow the old general route of 1954-6. From Fischer, the route skirted around the north end of the ice covered Russell Nunatak and then south to McNair. This route was a decided improvement as far as crevassing was concerned, provided a distance of at least 1½ mile was kept by the vehicle from Russell Nunatak. Care should be taken in the only visible crevassing, some three miles north west of Russell Nunatak.

Van Hulssen Nunatak

No proven route exists into this area, but in 1965, two Snow Tracs travelled to it from McNair Nunatak, but were forced to divert via Price Nunatak to avoid the crevassing that runs in a north east to south west direction in this region. Camp was made near the edge of the large windscour to the northwest of the peak. By travelling away from the rock for a couple of miles, it was possible to drive down into the windscour then back along it to the peak. The climb was started from the base of the western scree slope and care should be taken, as the scree is underlain by ice; a dangerous circumstance. The scree can be climbed to the north western ridge, which is followed to the station on a rock platform just below the summit. In days of high winds, the climb should be avoided.

Anniversary Nunataks

Access is fairly straight forward and it is best reached by following Carsten's route from Mount Twintop. As extremely bad crevassing exists just to the north west of the western range of the Anniversary Nunataks, it is advisable to skirt the southern end of the western range and take the vehicles north through the gap between the two ranges. The station may then be approached by an easy climb from the north.

Mount Twintop

A comparatively easy climb to the summit where the station is located from the saddle is the best approach. Access generally should be made from the old Twintop Depot (3 miles south of the present Twintop Depot) and heading towards the prominent saddle mentioned above. About ¾ to 1 hour should be allowed for this climb.

Depot Peak

A newly marked route to Depot Peak from Depot B was established in 1965. The route is generally safe for heavy tractors, but care should be taken, particularly for the last mile into the campsite, 300 yards from the rock. A short, but fairly steep climb from the east is

necessary to reach the top of the main ridge with an easy walk along the top of the ridge being necessary to reach the station located on Peak 4, the highest point of the ridge.

Notes on the location of Ice Stations between Mount Twintop and Depot Peak

All these stations are located on or at a convenient distance from the main marked trail. However, should the traverse need to be rerun in the future, the following notes may be of assistance. As the traverse suffered from the lack of reconnaissance prior to the commencement of the survey measurements, some improvement can be affected, especially in the regard to station location.

Whilst comparatively long lines are essential for the azimuth to be retained accurately, they are not as suitable for heighting determination by use of vertical angles. A figure of three to nine miles is probably the best figure for all round reliability for measurements completely, across the snow. If a new station is established, it should be connected to a station on the original traverse, to allow an idea of ice movement to be obtained. The following improvements are particularly mentioned :

- (i) Stations between NM/S/85 and NM/S/90 should be resited in order to eliminate the two short legs of a little over a mile. Possibly by establishing a new station in the general location of NM/S/87, another position may be found which would be intervisible to this new station and NM/S/91. At present though, NM/S/87 and NM/S/89 are clearly intervisible. Resiting northwest of NM/S/87 may prove difficult, because of the comparatively deep valley that exists in this vicinity;
- (ii) If NM/S/92 is shifted towards Depot Peak a couple of hundred yards, it may be possible to conduct measurements from the ground in directions. At present, elevation is required to see NM/S/93 and NM/S/94. NM/S/93 is reductant at present; Nm/S/94 can be seen just as NM/S/93 from NM/S/92. This would tend to eliminate the comparatively short line NM/S/93 to NM/S/94;
- (iii) NM/S/80 is redundant; NM/S/12 Twintop–NM/S/81 are clearly intervisible.