Date: 18 November, 1991
To: EISCAT data representatives
From: Peter Collis
Subject: Common programme result tapes

Data from the following experiments have now been analysed and a tapes containing results in the standard format will be mailed to you when copies have been made. Plots of system temperature and transmitter peak power during these experiments are enclosed.

(1991)

CP-1-I 10/11 Sept (0900 - 1600 UT)
CP-3-F 25/27 Sept (0900 - 1114 UT)
CP-4-A 07/09 Oct (1515 - 1557 UT)

Notes

1. Estimation of peak power from high voltage.

The relation between peak power (PP kW) and high voltage (HV kV) for UHF klystron 102 was re-calibrated on 18 September and the revisions incorporated into the system (in subroutine TXMONI) on 19 September. Prior to this calibration the relation used was

PP = 220.5+(-29.5+0.475*HV)*HV

The new values are:

PP = 0	HV‹20
PP = 8.75*HV	20‹HV‹80
PP = 2100+HV*35	HV›=80

This results in a decrease of about 25% in estimated peak power for typical high voltage values around 90 kV. A comparison of the enclosed plots of peak power for the CP-1-I (before the change) and CP-3-F (after the change) shows this difference. The change was taken into account in the data analysis and the accuracy of the long pulse results of electron density confirmed by detailed comparison with simultaneous ionosonde measurements from Ramfjordmoen.

2. CP-1-I, 10/11 September, 1991.

An almost trouble-free operetion with only very brief stoppages at 1652, 1713 and 1807 UT (10th September) due to breaks in transmission.

3. CP-3-F, 25/27 September, 1991.

The only gap of any significance during this operation was for a few minutes following a crowbar at 2329 UT on 26 September.

4. CP-4-A, 7/9 October, 1991.

Transmitter problems early on 9 October led to the following data gaps: 0041-0112, 0215-0224 and 0237-0250 UT. Raw data are also missing for the interval 0222-0229 UT on 8 October when data recording failed to start following a change of disc set. Post-integrated results are available.

Close inspection of the original results from this experiment revealed that the zero-lags of the Troms ø ACF's were slightly too large, in all channels. This was only evident during intervals with small signal levels (~few %), which were mainly confined to the night of 7-8 October. To overcome this problem, the data were re-analysed using values for the zero-lags obtained by parabolic extrapolation from lag two and lag one. The results on the tape to be sent to you are from this modified analysis.

The diurnal pattern of the positive excursions of system temperature during this experiment are due to excess sky noise. The sharp decreases and slow increases back to nominal levels between 2230 UT on 7th October and 1230 UT on the 8th are due to the behaviour of the noise injection.

One further detail is that two of the frequency codes in the Sodankylä results have been assigned the values 8275 and 8315 instead of 9275 and 9315, respectively, due to an error in the computer readback of the frequencies of those two channels.

A change to the TXMONI (transmitter monitoring) program before the start of this operation caused wrong (too low) values of peak power to be estimated. However, the high voltage values were correctly recorded and the transmitted power for data analysis purposes was calculated using the usual polynomial expression.

Between 0100 and 0640 UT (12th) there was a radar controller problem (1 second error), causing loss of remote site signals at the extremes of scan. This followed a crowbar at 0047 UT. A crowbar at 2335 UT was followed by DMA problems which were corrected by 0002 UT.

3. CP-1-I, 10/11 July.

A data gap from 1215-1330 UT on 10 July was caused by a transmitter problem. No data were recorded after 0825 UT 11 July in Kiruna due to a power failure.

Note that this experiment started at 10 UT but in Tromsø the LO1 was offset by about 13 kHz until 1430 UT, giving enormous (wrong) velocities. No results from this interval are included on the tape. Also, the Tromsö azimuth and elevation values written to the parameter block were zero until about 1730 UT; correct values were included manually into the analysis.

4. CP-2-D/CP-1-I.12/14 August.

These operations were severely disrupted by problems in Tromsö .The first CP-2 part contains several gaps due to crowbars and antenna faults,leading to the experiment being suspended at 14 UT to allow checks on the transmitter and antenna.Repairs to the transmitter allowed the resumption of CP-2 at 0157 UT (13th) but the antenna fault persisted, preventing scanning, so CP-2 was stopped at 0230 UT and CP-1 started at 0235 UT.Kiruna and Sodankylä continued data-taking throughout most

of this period and the remote site CP-2 results are written as a continuous sequence on the tapes, though there was no signal for much of the time.

The first part of the CP-1 operation continued to 1125 UT (13th), at which time it was stopped for further antenna checks. Scanning was still not possible after these investigations so CP-1 was resumed at 1845 UT and continued to 0845 UT (14th). A few cases of bad fits and high variances occurred in the CP-1 long pulse analysis (and a small number in the multipulse) from what seemed to be intermittent interference during both parts of this operation. The spikes in system temperature indicate when this problem occurred.

5. CP-2-D, 17/19 August.

Several short gaps and a small number of longer ones occurred during the first part of this operetion due to difficulties with the transmitter.The most significant losses were 2210-2320 (17th), 0003-0054(18th), 0350-0425(18th), 0442-0505(18th), 0513-0551(18th), 0609-0909(18th), 1300-1356(18th) and 1318-1348(18th), all times UT.

Low power was transmitted after 1348 UT and nominal levels were again possible after 1617 UT. Remote site operations were trouble-free.