

Minutes of Plan meet of 6th June 2012 (follow-up of some pending topics from different areas) :

1. Documentation related :

1.1 detailed design doc : final ver release to Sanjay Dongare; Lband design doc to be completed and released -- follow-up from last week (APK/others)  
==> no update available; need to wait for some more time and also to identify next group to put their design in this format (OF is a likely candidate). To take up next week.

1.2 follow-up on finalisation of level 2 (ITR) & level 3 (NTR) report formats (SSK/DO)  
==> ITR new version is now available on web-page, for final round of minor changes and adjustments. Some discussion on NTR also -- Divya to update based on the comments so far and ask Sanjay to circulate the results for next round, by next week.

2. FE & OF related :

2.1 Testing and release of raw-dump procedure :

(i) Plans to incorporate on-off sensitivity measurements & analysis (DO/NK/HRB) data set to be provided by HRB to DO & NK.

==> HRB to send one of the available data sets to get going; and then try for special off-source locations later on. Follow-up 2 weeks later.

2.2 Cone-dipole for 250-500 MHz :

(i) conclusions regarding phase centre measurements at test range (HRB/GSS)  
==> present measurements indicate phase centre may be 10 to 30 cm above the throat or flange of the cone; feed group to meet tomorrow and send a summary note by end of this week, for discussion in next week's Plan meet.

(ii) Completion of 3rd feed with LNA and putting it up on W01 -- status update (GSS/ANR/SSK/APK)

==> still waiting for item (i) above to converge !

(iii) Completion of new prototype in Pune workshop -- from 16 May (GSS/HSK)

==> job under progress in Pune w'shop, will be ready by next week.

2.3 Cone-dipole for 500-1000 MHz :

(i) follow-up on latest situation & plans (HRB/GSS/SSK/APK)

==> to bring down feed from C11; send dipole for phase measurement to Pune; meanwhile, make a modified stool from old stock with workshop, as a back-up option. Follow-up on status next week.

(ii) improved version of feed -- to check E-H taper match (HRB/GSS/SSK/APK)

==> edge taper results don't show very good performance; to continue with tuning height of dipole; HRB to report next week if new results are available.

## 2.4 Testing of modified Common Box :

(i) 3dB attn unit on W04 -- pending from 16 & 30 May (ANR/APK)

==> still some oscillations; trying R&D with mix and match of Sirenza and ECG.

(ii) new, multistage unit -- pending from 16 & 30 May (SSK/ANR/APK)

==> to be taken up with urgency and assemble and report within a week.

## 2.5 Status update on work of refurbishing 235/610 feeds -- pending from 28 Mar and 30 May (no updates last week) (GSS/HSK)

==> appears that lack of proper communication between FE & mech groups has led to no action over last few months; fresh action to be initiated to clear-up the misunderstanding and move the work forward. To check the status after 2 weeks.

## 2.6 Status of CSIRO feed work -- from 4 weeks ago (HSK/JNC)

==> one set of castings (for 1 feed) has come; 3 parties have been approached for quotes; to go through formal procedure of selecting L1; is it worth trying all the 3 vendors? Probably yes. To check status after 3 weeks.

## 2.7 Status of 550-900 MHz filters -- from 4 weeks ago (APK/ANR)

==> delivery of first set expected shortly. Follow-up after 2 weeks.

## 2.8 Status of delivery of lasers & mux-demux

==> 50 lasers are in customs clearance at present (50 more to come in next batch); for mux-demux : forex problems with RBI for Aimil is causing the delay in procurement of the order. To follow-up after 3 weeks.

## 2.9 New OF systems : 8 antennas done; S2 has 10 dB extra loss; two more can be done in 2 mos : S6 + 1 central square. Can follow-up after one month.

## 3. RFI related matters :

### 3.1 Follow-up on new scheme for estimating effect of military satellite RFI at 243 band (SSK)

==> planning a test using c6 broadband link over 24 hrs monitoring; to check again 2 weeks later.

## 4. Operations :

### 4.1 Users requirements to Ops Group completed by all : to discuss next step (RBS)

==> postponed to next week, when RBS will be back.

### 4.2 Plans for using new MCM card on serial port of PC for upgraded analog back-end system -- from 9 May (CPK/JPB/BAK)

==> no action; concerned parties will take it up now; check after 2 weeks.

### 4.3 Status on Miltec PC delivery and testing -- from 4 Apr & last week (RBS/SSK)

==> testing will finish next week; item will ship then; check after 2 weeks.

## 5. Back-ends :

5.1 Updates on PoCo testing : any new updates ? (MM/DVL/BAK)

==> some baselines OK with GSB, some not OK. Delay and fringe value checking still pending (with Sanjay Kudale).

5.2 Packetised corr : results from recent tests (SCC/BAK)

==> modified design using PoCo X-engine on F board also shows some different kinds of glitches; reason for this needs to be understood.

5.3 Update on SFP+ work -- from 16 May (KDB/BAK)

==> waiting for a final design schematic and layout of boards and box awaited. To check after couple of weeks.

5.4 Plans for next-gen time & frequency standards (NSD/BAK)

==> some prelim work has been done; to check again after 1 month.

5.5 GPU corr update :

==> 4.5 hr run on 8 inputs of 32 Mz; results look encouraging; some small amount of buffer loss and slightly funny pulsar profile in 2 pols; needs a bit more testing and debugging; meanwhile, to start work on getting 8 node system ready; also look into getting infiniband. Follow-up after 3 weeks.

6. Other items :

6.1 Status of jobs in TIFR workshop -- from 4 May & last week (HSK)

==> no fresh update; HSK to check and report about current list of jobs. Some other smaller nos of chassis are being done in Pune with outside vendors. To follow-up after 2 weeks.

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## Summary of the discussions during Plan meeting on 20-June-2012

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The items discussed are prefixed by a '\*' & comments entered within '['].  
Item with '\*\*' pre-fix represent 'additional item' discussed.

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List of topics for Plan meet of 20th June 2012 (follow-up of some pending topics from different areas) :

### 1. Documentation related :

1.1 detailed design doc : final ver release to Sanjay Dongare; Lband design doc to be completed and released -- follow-up from last 2 weeks (APK/others)

\*1.2 follow-up on finalisation of level 2 (ITR) (SSK/DO) -- if there are no more comments on present version, then it can be taken as final.

[Template on the website; awaiting feedback from the community.]

Reminder : discussion of level 3 (NTR) is due next week ; current format to be put up on website by Dongare (SSK/DO)

### 2. FE & OF related :

2.1 Status update on refurbishing of 235/610 feeds -- from 6 June (GSS/HSK)

2.2 Cone-dipole for 250-500 MHz :

\* (i) conclusions regarding phase centre measurements at test range -- from last week (GSS/SSK)

[It has been decided that the feed should go to the antenna.]

\* (ii) Completion of final prototype in Pune workshop -- from last week (GSS/HSK)

[The mounting arrangement for the 'stool' is fabricated.]

(iii) Completing 3 antennas (C6, S2 & W01) -- check if C6 is OK now; fix a date for getting new feed from Pune and installing system on W01 (GSS/ANR/SSK/APK)

2.3 Cone-dipole for 500-1000 MHz :

(i) To check if shortened stool is ready and fix time-scale for use on C11 -- from last week (HRB/HSK/GSS)

(ii) improved version of feed : E-H taper match -- from last week (HRB/GSS/SSK/APK)

\*2.4 Testing of modified Common Box : new unit to be put on W04 (SSK/ANR/APK)

[The modifications to the Common Box has been completed & will go to W04 later

this week (by 22-Jun-12).]

2.5 Follow-up on delivery of 550-900 MHz filters -- from 6 June (ANR/APK)

\*2.6 Plans for 15 new FE boxes -- follow-up form last week (ANR/SSK/HSK)

[Formal online workorder for the workshop has been submitted.]

\*\*2.7 Any other item :

[Detailed mechanical drawings of L-band feed, have been provided to the Mechanical team for fabrication of 5 units (spare)]

3. RFI related matters :

\*3.1 Follow-up on new scheme for estimating effect of military satellite RFI at 243 band : results of tests by RFI team -- from 6 June (SSK)

[Tests have revealed that there are multiple satellites located at different parts of the sky which are responsible for the RFI. The frequencies are slightly different but within the same 'band'. Next step is to characterize RFI from individual satellite.]

3.2 Mobile phone tower RFI -- results from iPhone tests of last week (SSK/PAR)

4. Operations :

\*4.1 Plans for using new MCM card on serial port of PC for upgraded analog back-end system -- from 9 May & 6 June (CPK/JPB/BAK)

[Scheme has been finalized for use of 'ethernet' port for control of the MCM cards from a dedicated PC linked to ONLINE. A total of 40 MCM cards need to be controlled. It needs to be checked if a single PC can handle that large number of IP addresses. In any case, an additional switch will be needed.]

\*4.2 Delivery of Miltec PC -- from 6 June (CPK/RBS)

[Delay due to use of un-shielded connectors by Miltec people. Now this is being corrected for & expected delivery is after ~ 1 week (say 29-Jun-12).]

5. Back-ends :

\*5.1 Updates on PoCo testing : any new updates ? (MM/DVL/BAK)

[The source of the 'problem' has been identified; further tests continuing to fix the same.

First DRAFT document providing system details & test procedure is now getting ready. It will be discussed within the group first & in 2-3 weeks time, be available on the intranet.]

\*5.2 Packetised corr : results from recent tests (SCC/BAK)

[The problem of 'phase jump' is being explored. An alternate to the 'XAUI' based X-engine, viz., '10GB' design is being tried. If successful then to proceed by-passing the XAUI-based system.

One of the advantages of using the '10GB' design is that such jumps lead to a loss of contiguous 'band' of frequency rather than a series of equally spaced frequencies - making the entire spectral region unusable.

The other problem of intermittent phase jump seen with antenna based signals, is also being pursued - identified to be within the F-engine.]

\*5.3 GPU Corr : new updates, if any (SHR/SKS/BAK)

[The work of extending the correlator from 200 MHz BW to 400 MHz (4 bit/sample) is progressing well - to complete in 2 weeks (~ 04-July-12).

Procurement of 8-node items from NVIDIA (new version of GPU boards) is in progress.]

\*5.4 Update on SFP+ work -- from 6 June (KDB/BAK)

[CX4 to SFP+ converter add-on card / box supporting 8-inputs-8-outputs is progressing well enough to meet the deadline of next CASPER meeting in Aug-2012. Schematics & layout completed; PCB being worked on; complete 'box' to be ready by end-July'12.]

6. Other items :

6.1 Status of jobs in TIFR workshop -- from 6 June (HSK)

\*6.2 Follow-up on 15-m related works (JNC)

[Feed for 15-m tested on a GMRT antenna : deflection observed = 5.1 dB (expected ~ 5.5 dB);

There have been 2 problems with the Common Box :

- (i) Heating -> optical transmitter has been replaced to the type used for GMRT (can withstand upto + 85C);
- (ii) RFI from the FE-control using labjack / media-converter; subsequently RFI shielding has been provided, which now seems acceptable; Next activity : water-proofing & then installation on 15-m;]

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Minutes of Plan meet of 27th June 2012 (follow-up of some pending topics from different areas) :

1. Documentation related :

1.1 detailed design doc : final ver release to Sanjay Dongare; Lband design doc to be completed and released -- follow-up from last 2 weeks (APK/others) ==> final changes and doc format to be completed this week; for the Lband system : to add the remaining, older parts and produce an updated document.

1.2 follow-up on finalisation of level 2 (ITR) (SSK/DO) -- if there are no more comments on present version, then it can be taken as final.  
==> item not discussed; follow-up next week.

1.3 discussion of level 3 (NTR) ; current format to be put up on website by Dongare (SSK/DO)  
==> item not discussed; some action has been initiated by DO; follow-up next week.

2. FE & OF related :

2.1 SoP for RF raw dump procedure : to be finalised & released -- from 13 June (HRB)  
==> not discussed due to absence of concerned members; TBD next week.

2.2 Final version of RF beam shape analysis package -- from 30 May (DO/MS/HRB)  
==> not discussed due to absence of concerned members; TBD next week.

2.3 Follow-up on raw dump analysis with on-off sensitivity calculations included -- from 6 June (DO/NK/HRB)  
==> The plot of sensitivity versus frequency 250-500 MHz (from antenna base raw measurements) was presented. Broad notch at ~ 360 MHz -- needs to be re-confirmed if it is RFI. Other signatures of RFI also seen (data taken during day time). A trend of a slope (rising with freq) needs to be understood in terms of any re-tuning of filters or assumed spectral index of Cas-A [need to re-check with a different astronomical target, e.g. 3C48 ?]

Need to confirm by using GSB, also repeat the measurement possibly at 'night' (lower RFI) time on Cas-A & Cyg-A.

The two ends of the plot also show some unusual behaviour needing understanding (RR & LL differing; also a possible slight shift).

2.4 Status update on refurbishing of 235/610 feeds -- from 6 June (GSS/HSK)  
==> email updated from GSS : detailed discussions have taken place and work is under progress as per new modifications; expected to complete all 4 feeds by end of July.

2.5 Cone-dipole for 250-500 MHz :

(i) Completion of the final prototype in Pune workshop and shifting to GMRT and installation on W01 to complete set of 3 antennas -- urgent ! (GSS/ANR/SSK/APK)  
==> dipole and cone have come to GMRT; will get integrated and tests by HRB and then integrate with FE box and test and then put on W01 (maybe possible by Friday)  
Meanwhile S02 FE box is giving some problem -- to be replaced with new LNA and put back. Follow-up next week.

(ii) Mass production fabrication :

==> 4 parties had been tried; 3 have responded, with slightly different terms and prices; select 2 best parties and give order for 2 sample pieces with each and then decide for final 20 nos. In parallel, start 10 nos in-house, at reduced priority level. To review after 2 weeks.

2.6 Cone-dipole for 500-1000 MHz :

(i) existing feed with shortened stool to go on C11 -- from last week (HRB/HSK/GSS)

==> no inputs available

(ii) improved version of feed : E-H taper match -- from last week (HRB/GSS/SSK/APK)

==> no inputs available

2.7 Status of work orders for CSIRO feed with 2-3 parties -- from 6 June (HSK/JNC)

==> enquiries to 3 parties for machining ; clearance for supply of 3 more castings also released to party. Follow-up after 2 weeks.

2.8 Testing of modified Common Box on W04 (SSK/ANR/APK)

==> installed and working on W04; shows ~ 5 dB increase in power level at final output; next step : FE & BE group to plan careful test to check power level at all the various stages till baseband output and compare with signal flow analysis values. In parallel to assemble two more units. Review after 2 weeks.

2.9 Follow-up on delivery of 550-900 MHz filters -- from 6 June (ANR/APK)

==> 10 weeks from now for final delivery of the prototype units. To review after 2 months.

2.10 Scheme for directional coupler in 250-500 FE box -- from 13 June (ANR/SSK/APK)

==> no action taken; to be followed 2 weeks from now.

2.11 Fabrication of L-band feed : (SSK/HSK)

==> drawings from RRI are not production version. HSK needs access to one feed for doing this; FE to provide the spare unit (w/o electronics) to mech for the same. To review after 2-3 weeks.

3. RFI related matters :

3.1 Mobile phone tower RFI -- results from iPhone tests of last week (SSK/PAR)

==> not possible with APK's iPhone -- need to find some other way. To check again next week.

4. Operations :

4.1 Delivery of Miltec PC -- from last week (CPK/RBS)

==> machine has arrived just today; needs to be installed with software etc



and then put through tests, including RFI etc. Follow-up after 2 weeks.

4.2 Follow-up on mass production of Rabbit card -- from 13 June (CPK/RBS/SN)

==> 2 units received and being tested; follow-up after 2 weeks.

5. Back-ends :

5.1 Updates on PoCo testing : any new updates ? (MM/DVL/BAK)

==> modified code allowing comparison for astro\_cal values -- small difference of 0.057 deg/sec; csq vs arm antennas appear to show stable phase, but arm vs arm shows significant fringe rates; DVL to work with the team and follow-up.

5.2 Packetised corr : results from recent tests and plans (SCC/BAK)

==> SCC has some clues about one block that may be giving trouble; follow-up next week.

5.3 GPU Corr : new updates, if any (SHR/SKS/BAK)

==> waiting for nvidia access to 8 node ; 400 MHz, 4 bit version will be ready by next week; C2050 vs C2075 purchase of 4 nos from Leadtek being investigated; 8 port INF switch procurement ongoing; to look at reconfiguring of 4 nodes to new set-up.

5.4 Improved user interface for GPU Corr -- from 13 June (SSK/JPK/SHR)

==> path for final conversion to FITS format is almost done; DVL to sit with the team and see how to run the GPU corr and then we can decide about other short improvements; meanwhile, to continue with plans for full version by end July -- including polar mode and beam outputs.

6. Other items :

6.1 Status of environmental chamber delivery -- from 30 May (ANR/SSK)

==> items delivered; waiting for the distilled water tanks to be purchased; to review after 3-4 weeks.

6.2 Status of jobs in TIFR workshop -- from 6 June (HSK)

==> collection of items by end of this week by Bhilare; some issues of dimensions (in the drawing) and tolerances to be sorted out during the visit.

6.3 Follow-up on 15-m related works (JNC)

==> FE system installed & tested successfully on W2 (GMRT). Now being prepared for installation on 15-m (needing bracket adjustment for addressing the thermal/heating issue). The backend is also being assembled at Pune. C&M system is waiting for computers to arrive. 'first-light' could be expected within a week.

The next phase (6 months) will involve R&D on iBOB card for the baseband, filtering to make the stream GSB compatible. Some extra nodes need to be arranged in the GSB. Some amount of "delay" work (@ GSB) has been initiated by Jayanta to handle 256 milli-sec block;

In the phase-2, VLBI reference frame will be incorporated.

#### 6.4 Status of the FPA (JNC)

==> tests planned at GMRT (cabling in progress). The decision on LOFAR beam-former location - inside airconditioned lab or outside - to be taken shortly.

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