



SMT IF Upgrade 2006

Engineering Minutes

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An engineering meeting was held Thursday afternoon, 27 Jul 2006 to review Phase I capabilities and plans and project status and schedules involving the SMT IF upgrade and the 1.3 mm side-band separating receiver. Attending the meeting were Dr. Lucy Ziurys, Tom Folkers, David Forbes, Gene Lauria, George Reiland, and Robert Freund. The topics discussed were;

1. A review of system requirements,
2. Phase I plans,
3. Action item status
4. Current project status and schedule.

Bob started the meeting by discussing new information on the temperature stability on the fourth floor of the SMT. Tom had supplied temperature measurements as a response to an action item from June 15th. The disturbing result was the large temperature fluctuations produced when the heaters turn on. The change was about 1 degree C per minute and lasted for many minutes, a value that far exceeded the desired value of 1 degree C per 1000 seconds. Tom and Dave proposed that the exhaust heat from the third floor computer room be vented to the outside through the fourth floor. This might reduce the need for the use of the fourth floor gas-fired heaters. Measurements of the inside temperature of the receiver's 2-channel IF processor was proposed as a means to gain further information.

Bob quickly reviewed the latest Phase I block diagram. He distributed a simplified diagram of the "Interim 1.3/2 mm Receiver Configuration Selection" and the achievable reception modes. Tom asked that the diagram clearly emphasize the exchange of polarization content between signal channels for some of the observing modes.

At the general staff meeting on Monday, Tom stated that all current purchase orders had been processed by the Steward Business office. Bob asked whether phone calls could be placed especially to the filter vendor(s) to confirm receipt of the order and to short-circuit any potential problems. Gene volunteered to contact the vendor(s).

Bob reviewed the action items generated by the previous 5 meetings. There are currently only 3 items outstanding. One block diagram and 2 engineering budgets

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are late. The tasks were initiated during the meeting held on July 6, and are labeled as items #5, #6, and #7 in the summary for that meeting. A high priority was assigned to the production of the IF power level budget. Dave stated that he had draft block diagrams of the "4-Channel IF Processor" and the "Facility Total Power System".

Before Gene discussed project status, Bob reviewed the 10 tasks of Phase I. Tom indicated that additional changes to the card cage would be required to support all the extra computer control requirements. Dave indicated that the current digital control design could be simplified to accomplish our goals. Tom volunteered to summarize the digital I/O signals as a first step in the simplification process.

Gene addressed the status of each of the 10 Phase I tasks. He started with the receiver cartridge. He stated that he thought a mistake had occurred with the feed horn plate of the cartridge assembly and would result in a 2 week set-back. The plate in question is being returned from the platters to correct the placement of mounting holes.

Gene stated that the cartridge wiring harness had been completed. The next step in the cartridge assembly process was to install the LO waveguides. This step must wait until the cartridge pieces are gold plated. Gene has submitted requests for quotes for the manufacture of a new spider.

There was a brief discussion as to how best to utilize John Fitzner's time. No decision was forthcoming. Tom stated that John was not an employee of Steward as had been previously stated and must be officially hired before he can start working. He indicated that the administrative process has been set in motion.

George stated that there were no known problems with the LO system that would adversely effect meeting a completion date of September 18.

There were no known problems associated with the modifications to the receiver 2-channel IF processor.

Gene stated that he was getting quotes for transfer switches for use in the "Interim Receiver Selector" chassis. He had nothing else to report on this task.

Some of the tasks involving the "IF Converter System" were apportioned among the staff. Dave volunteered to do the mechanical design of the crate. As stated earlier, Bob will deliver an IF power budget. The results will be used to determine the characteristics of the "IF Converter" module output amplifiers so that they can be ordered. George volunteered to create the block diagram of the LO sources and miscellaneous electronics in the "IF Converter System". George will also determine the power level requirements for the 100 MHz reference signal inputs for a "Converter" module.

George indicated that he finally obtained an economically priced quote for the 100 MHz phase locked oscillator. The quote was provided by Jersey Microwave.

Dave stated that parts need to be ordered before the Filter Bank modifications can begin. He estimated the task would be completed in about 2 weeks. He proposed that pictures be taken of the exiting third floor configuration before and after changes occur. His proposal was accepted.

Software issues were not discussed.

The 7 action items are summarized below:

1. Temperature sensors will be installed inside the receiver's "2-Channel IF Processor".
2. Bob will add a note to the "Interim 1.3/2 mm Receiver Configuration Selector" diagram to indicate the exchange of polarization information between signal channels with changes in the sideband observing mode.
3. Gene will contact Micro-Tronics to confirm receipt of our purchase orders.
4. Bob will produce an IF power level budget.
5. Tom volunteered to summarize the digital I/O control signals.
6. George will determine the 100 MHz reference signal power level requirements for a "Converter" module.
7. Take photographs of the "before" and "after" configurations at the SMT.

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There were no decisions taken.

Robert