Report of the ALMA Scientific Advisory Committee: September 2002 Meeting

October 15, 2002

1. Calibration

S. Guilloteau presented the current status of calibration work in the project. The ASAC was pleased to see that a Calibration Group had recently formed, with B. Butler of NRAO leading this. The ASAC look forward to working with this group in restating and refining the calibration requirements which affect the scientific capabilities of ALMA.

Although it appreciates that this group has only just started its work, the ASAC remains concerned that a clear calibration plan for ALMA is still lacking. The ASAC recommends that a work plan which addresses all the calibration issues for ALMA, with a clear timeline indicating design reviews and decision points, be established over the next six months. In particular defining the minimum hardware required for calibration seems to be urgent, given the budget pressures in the project. For example, whether there is a need for one or more FTS systems, 60 GHz sounders, polarization widgets, and a coherent photonic calibration signal should be rapidly established. A presentation and/or a paper from the Calibration Group on its plans at the next ASAC meeting would be welcomed and would help the ASAC advise on scientific implications of the calibration schemes under consideration.

Regarding amplitude calibration, the ASAC was pleased to see the semi-transparent vane system had made progress, with a preliminary ALMA design available, and that there were plans for construction of a prototype on a millimeter dish. Although already tested as a prototype at BIMA, the status of the dual load system is less clear, and the ASAC recommends that a decision on this system be made rapidly by the Calibration Group.

The ASAC also recommends that a framework for deciding on the future of the coherent photonic calibration system be established as part of the calibration group's planning.

Finally, the ASAC reaffirms the unique scientific value of accurate polarization measurements from ALMA, and urges the calibration group to include polarization calibration as a vital part of its planning; polarization calibration should be included in the overall plan presented to the ASAC at its next meeting.

The ASAC makes the following recommendations concerning the Calibration:

- The ASAC recommends that a plan which addresses all the calibration issues for ALMA, with a clear timeline indicating design reviews and decision points, be established over the next six months.
- The ASAC recommends that the minimum hardware required for calibration be established over the next 12 months, or as soon as is practicable.
- The ASAC recommends that a decision on the dual-load calibration system be made rapidly by the Calibration Group.
- The ASAC recommends that a framework for deciding on the future of the coherent photonic calibration system be established as part of the calibration group's planning.

- The ASAC recommends that the calibration group include polarization calibration as part of its planning, and present a report to the ASAC at its next meeting on progress in defining a definite plan for polarization calibration.