Response to the Review Panel's Report

We are extremely grateful to the Panel for carrying out the review and for providing this insightful report. There are no statements in the report that we would take major issue with, so the following is largely an acknowledgement and commentary about how we plan to move forward on the recommendations. The numbering below is that of the Panel's report.

1) Inclusivity: The Panel is correct to point out that we need to make the plans for ACA commissioning more explicit and we will do this as we construct a more detailed scheme.

2) Organization: The point that things will get more difficult when we are doing commissioning and AIV tests simultaneously is well made: we will continue to keep close watch of whether the structure we have is working satisfactorily. We will try to increase the amount of contact and communications between the scientists and the engineers (both hardware and software).

3) Schedule: We are very much aware of the pressure on the schedule and agree that to have priorities set in advance is important. On the specific recommendations:

1. Prioritization. In the case of the "Start of Early Science" we already have a list of minimum requirements that is separate from the desired goals. We will attach priorities to the commissioning tasks in the detailed planning. Having monthly sessions to track progress and adjust plans is a good suggestion. We will keep the review panel informed of these in case they wish to keep in touch.
2. An analysis of the effort required on a task-by-task basis was made in drawing up the original commissioning plan and the resulting figures were consistent with the staffing plan we have. We will repeat this exercise in a little more detail, although it is clear that it is difficult to make accurate estimates of effort for such activities.
3. Performing a risk analysis and preparing mitigation strategies is clearly appropriate.

4) Staffing: We are working hard to find additional staff. Some offers have been made in the last few weeks and a new advertisement has just been released.

5) and 6) require no comment.

On the other issues:

Points 1) and 2) are of concern to us too. The Project is aware of the importance of the communication issues, but we will continue to press hard to ensure that adequate provisions are made. On point 3) it is less clear that there is a serious difficulty so long as the data rates used for the current planning (6 MB/s mean, 60 MB/s peak) can really be reached. This was analyzed in some detail in ALMA memo 501 and it appears that only rather extreme cases will not be catered for. We will, however, have another look at this, making use of the early experience that is now becoming available. On 4) the planning does now incorporate running the OSF interferometer until at least the start of Early Science. We ("science") are committed to adding the source mentioned in 5) to our plans and are trying to get funding released for it. The point 6) about the failure rate is well taken, although it is not a simple problem to solve. Item 7), which relates to the location of the most northern antenna station, is by contrast easily fixed and we are planning to do that. We also agree with point 8) about the importance of having the commissioning scientist keep scientifically active and are trying to do that. It is true that the ALMA "science verification" process will provide some opportunities, for this but we think that it is essential to keep other avenues open as well, e.g. using existing facilities.

We very much appreciate the Panel's help and advice (which included many verbal comments as well as the report) and we hope that we will be able to call on them again in the future.

Richard Hills and Alison Peck 12th Oct 2009