JAO Response to the ASAC Report
John Carpenter on behalf of the JAO
April 8, 2019

We would like to thank the ASAC for their comments and recommendations, as well as for the valuable discussion at the face-to-face meeting in February/March 2019. The response from the JAO to each of their recommendations is below, where the ASAC recommendations are in italics and our responses follow in blue. For completeness, ASAC comments are marked as "Noted" if no specific recommendation was offered.

Charge 1: Assessment of the performance of ALMA scientific capabilities: The ASAC shall indicate what information is required from the Joint ALMA Observatory (JAO) to perform this assessment.

- *ASAC was impressed with the carefully coordinated planning for introducing new capabilities to be offered in Cycle 7 as well as in future cycles, via the ObsMode process. We strongly endorse these activities and congratulate the Observatory for recent successes in this area.*
  Noted.

- *Similarly, efforts to increase efficiency (aimed at providing as much as 300 extra hours of observing time per cycle) are endorsed.*
  Noted.

- *ASAC places a very high importance on offering high frequency observations as standard mode in Cycle 8, or, as a fall-back position, mixed standard/non-standard mode depending on distance to a suitable calibrator.*
  Offering high frequency as a standard mode is high priority for Cycle 8. The critical factors that need to be explored are 1) what fraction of high-frequency projects have a bright calibrator nearby and 2) what fraction of the high-frequency projects can be calibrated and imaged through the pipeline without manual intervention. Both aspects are being investigated.

- *ASAC notes the need to fill vacant positions in the DSO group, in order to ensure that science operations continue smoothly.*
  As of this writing, an offer has been made for the Head of DSO position. The application deadline for the Astronomer positions is April 8.

Charge 2: Assessment of the technical aspects of the ALMA system performance: ASAC shall indicate what information is required from the JAO to perform this assessment.

- *ASAC appreciates JAO's commitment to keep the targeted number of antennas available, and applauds their achievement of usually having many more than the nominal number active.*
  Noted.

- *ASAC recognizes the efforts undertaken by JAO to recover from the damage caused to the road, the power and communication cables, and buildings due to the heavy rain in January and February.*
  Noted.

- *ASAC understands that data delivery was delayed due to CASA issues, including the "mosaic" and "1 GB" issues. ASAC reiterates the need to perform rigorous CASA regression tests regularly in order to minimize the possibility of similar problems in the future. ASAC looks forward to a presentation on this issue at the next face-to-face meeting.*
  The CASA team is evaluating their test plans and expects to have their conclusions available by the time of the next ASAC f2f meeting.

- *ASAC notes the threat to operations caused by the combination of repairs needed on one transporter, and the damage to the road that has trapped both transporters at OSF. For stable long-term operations at ALMA, proactive solutions that avoid these problems need to be provided, and we acknowledge that there is not likely to be a cheap path forward.*
  The transporters were taken down to the OSF in January for maintenance since they would not be needed for approximately two months. Shortly afterwards, heavy rains damaged the road such that heavy vehicles were not passable. While the transporters were not needed until the end of March, it is true they were unable to travel to the AOS in February and the first half of March. In the end, the road was repaired and the antenna relocations proceeded on schedule with no delays. Nonetheless, we are aware of the operational risk of having both transporters at the OSF and are considering options for keeping one transporter at the AOS.

- *ASAC would like to see the status of the implementation measures taken to mitigate the impact of the now not-infrequent extreme weather conditions at the site.*
  We can provide an update at the next ASAC f2f meeting.

- *The accumulated QA0 pass time of the 12m array is 16% less than targeted (at the time of the meeting). ASAC acknowledges that this is due to the need to catch up for correlator issues and the recent heavy rains. ASAC encourages JAO to perform more extensive tests of the correlator system before starting a new Cycle.*
  The JAO spends about 60 hours of telescope time testing the new software and running end-to-end tests between data acquisition and data processing. As additional preventive measures, the JAO has started the practice of prioritizing data reduction for data taken immediately after a significant software or hardware change so that we can catch any problems sooner.

- *ASAC strongly recommends that ALMA announce the cancellation of the Cycle 6 1mm VLBI campaign to the user community as soon as possible. ASAC also strongly encourages ALMA to make it clear that 1mm VLBI will be offered in Cycle 7, as the information on the ALMA website at the time of ASAC's meeting is rather ambiguous. Finally, ASAC recommends that ALMA request a long term plan for high-frequency VLBI*

from the EHT team that realistically addresses the likelihood of VLBI in Bands 6 and 7 being available in Cycles 7, 8, and 9.
The EHT notified the Principal Investigators of the accepted 1mm VLBI proposals that the EHT run was canceled. ALMA followed up with these Principal Investigators to confirm that the ALMA observations would not take place and inform them that if they wish to continue their program, they will need to submit a Cycle 7 proposal.

The JAO believes that it is the EHT's responsibility to inform the broader community that the EHT run has been canceled. ALMA participates in the EHT observations but does not speak for the EHT. The JAO is in frequent communication with the EHT to discuss commissioning new VLBI capabilities on ALMA.

While the December 2018 pre-announcement indicated that VLBI was offered in Cycle 7, it indeed did not explicitly state that 1mm VLBI was offered. This will be corrected in the Cycle 8 pre-announcement in December 2019. The Call for Proposals issued in March 2019 explicitly states 1mm VLBI is available.

Charge 3: Assessment of the science outcomes from ALMA: Statistics on publications, citations, press releases, web sites, etc. collected by the Executives shall be collated by the JAO, and analyzed by the ASAC.

- *ASAC congratulates the JAO on delivering data of such high quality, leading to a publication rate that places the Observatory amongst the most productive facilities worldwide.*
  Noted.

- *ASAC is glad to see that JAO is considering an easing of restrictions on the release and potential scientific usage of EOC test data, and thanks JAO for the opportunity to comment on the policy.*
  We thank the ASAC for their comments on the policy. The policy has been finalized, approved by the ALMA Director, and communicated to the ALMA staff.

- *ASAC requests that publication statistics be made available in tabular form as well as in plots, since they can then be more useful for analysis, e.g., by specific regions and funding agencies.*
  We can provide statistics in tabular form once we formalize the reporting of the statistics as described elsewhere in the ASAC's report.

- *ASAC appreciates receiving the publication statistics, but notes that their provision is currently essentially on a voluntary basis. In order to ensure their continued availability and accuracy, we recommend that the board and JAO look into allocating dedicated resources for maintaining publication statistics that include a break-down by mean integration time, band, configuration, project type, capabilities, and other relevant parameters.*
  The JAO will discuss how to produce the statistics in a formal manner.

- *ASAC recommends that a concise statement about the 'recommendation' to re-image the calibrated archive data be placed in a visible location on the archive pages.*
  This recommendation will be discussed with ISOpT and the Archive Working Group.

- *ASAC welcomes the news that there will be a formal review of the ALMA archive during the coming year, and requests that the results of this review be presented to ASAC at the next face-to-face meeting.*
  We can present a summary at the next ASAC face-to-face meeting.

Charge 4: Recommendations of ways to maximize ALMA's scientific impact: This includes review of the scientific effectiveness of the Proposal Review Process after each Proposal cycle.

- *ASAC supports the changes to the review process being implemented for Cycle 7, including obscuring PI identification and increasing the number of review panels in order to reduce the workload of each reviewer.*
  Noted.

- *ASAC appreciates the Observatory's effort to check the font size to ensure a fair assessment process.*
  Noted.

- *ASAC expressed some concern about the fact that it is planned that only 18 out of 25 panel chairs will participate in the discussion of large programs, and discussed this with JAO.*
  If all 25 panel chairs participated in the Large-Program review, it would be difficult for everyone to have a chance to express their opinion. The APRC Chair requested that we take this measure out of concern 25 people is too large for a review committee. We will be careful to explain the situation to the panel chairs and the reasons behind the new structure.

- *ASAC strongly supports the plan to poll all PIs of the Cycle 7 ACA supplemental call to assess how acceptable the DPR process is (from both PI and reviewer perspectives). For a fair comparison of the PIs' satisfaction with the outcome from the DPR process and the panel review of a regular call, ASAC advises JAO to develop a plan on how this can be achieved given that no users' survey is planned for Cycle 7.*
  We anticipate that many of the supplemental call PIs will have participated in a normal call. Therefore, we will ask questions in the survey about their relative satisfaction with the two review models. We will discuss with ISOpT about the possibility of a Cycle 7 survey.

- *It is worth hearing how many new PIs joined from the Cycle 7 ACA supplemental call and how this differs from other calls. This will serve as one of the metrics of the effect of the DPR system.*
  Noted.

Charge 5: Reporting on operational or scientific issues raised by the wider community as communicated by the three regional Science Advisory Committees (ANASAC, ESAC and EASAC).

- *No new issues were raised for this topic that are not covered elsewhere in the report.*
  Noted.

Charge 6: Assessment of the scientific impacts of the ALMA Development Program, and particularly of new projects that are proposed.

- *ASAC endorses the proposed metric to balance broader receiver bandwidth against better receiver temperature, but the metric may need to be fine-tuned to the specific receiver band to which it is being applied. This fine-tuning should take into account the balance, for that particular band, between continuum/multi-tuning projects versus deep spectral-line/single-tuning projects.*
  We will investigate how the fraction of continuum and spectral line projects varies with receiver band to determine if the requirements need to band specific.

- *ASAC recommends that ALMA consider reviewing the current specifications for receiver noise, as they were set many years ago.*
  The ALMA System Requirements Team is re-evaluating the receiver temperature requirements as part of their update of the overall system requirements.

- *ASAC recommends that the project publish an updated schedule for both the construction and the installation of the Band 1 receivers as soon as possible, in view of the delays in this project and public interest.*
  Noted.

- *ASAC strongly recommends that the new Observing Tool that is under development must have some kind of off-line mode so that it can be used when an internet connection is not available.*
  The JAO will discuss the practicality of this option with the OT development team.

- *ASAC recommends that the Observatory work towards storage of calibrated uv -data in the ALMA archive. In the short term, this could include calibrated data produced by the ARI-L project.*
  The JAO is quantifying the financial costs required to store the calibrated measurements in the archive.

- *ASAC recommends that data products delivered by the Large Programs should be stored in the ALMA archive rather than on a separate site.*
  There is clear preference from everyone for the data products to be in the archive. We will discuss with ISOpT and the Archive Working Group if there is a way to overcome the practical inconvenience for the Large Program Principal Investigators and the end-users in how the files would need to be formatted.

Ad-hoc Charge 1: Seek additional community input to identify compelling science cases that might benefit from joint observations between ALMA and other facilities, especially the James Webb Space Telescope.

- *ASAC has identified a number of science use cases where joint observations clearly enhance the scientific return from both observatories, e.g., high-redshift galaxies, protoplanetary disks, transients and solar system objects.*
  Noted.

- *ASAC feels that programs that require simultaneous (e.g., solar system objects) or near-simultaneous (e.g., protoplanetary disk chemistry, transient such as GRBs or neutron-star mergers) observations should be given preference. ALMA observations of JWST targets that do not require simultaneity will remain possible after JWST ceases observing.*
  Noted.

- *ASAC discussed what fraction of time is appropriate for joint proposals: 5% appears to be a typical number for similar existing arrangements.*
  Noted.

- *ASAC recognizes the difficulties of implementing joint proposals, worsened by the combination of ALMA's configuration schedule and JWST's limited viewing range at any given time. A number of practical issues will need to be addressed before implementing such a joint proposal framework.*
  We agree with the ASAC that there are practical details that would need to be resolved if joint proposals are offered.