REPORT OF THE SOFIA USERS GROUP (SUG), April 26, 2013

1.0 INTRODUCTION

The third meeting of the SOFIA Users Group (SUG) took place on April 26, 2013 at the SOFIA Science Center, Building N232, Conference Room 103, NASA Ames Research Center, Moffett Field, CA. The SUG is charged with providing input to the SOFIA Project by a representative sample of the scientific community of users and potential users. The SOFIA Users Group Charter and the agenda for the April 26, 2013 SUG meeting and the SUG membership may be viewed and downloaded on the internet at:

http://www.sofia.usra.edu/Science/advisorygroups/sug/SUG_003/index.html

Members attending the April 26, 2013 SUG meeting were Bob Gehrz, (chair), John Bally, Lee Armus, Imke de Pater, Jochen Eislöffel (by speaker phone), Urs Graf, Al Harper (by speaker phone), Michael Kaufman, and Luke Keller.

The SUG thanks the SOFIA Project personnel involved in supporting the meeting and preparing the informative presentations.

2.0 OVERVIEW OF THE STATUS OF THE SOFIA PROJECT

The SUG was pleased to see with the progress that the project has made in characterizing the issues that must be addressed to bring the image quality and pointing stability into the range desired for regular operations. We note again that the very successful June 23, 2011 observation of a stellar occultation by Pluto demonstrated SOFIA's capabilities to travel anywhere, any time to optimize observations of transient events. We congratulate the Project on having developed a realistic and functional plan for ramping up to full operational capability by 2014. The plans for bringing on new first generation science instruments (SIs) and for increasing flight hours continue to appear reasonable. We were pleased to see that the Cycle 2 call appears to be on schedule. It was especially gratifying to hear that the Project now believes that appropriate objects of opportunity can in principle be responded to on a very short timescale. The white paper that was prepared at our request describing the scheduling process that leads to the observing sequences for each observing cycle will be very helpful to future SOFIA observers. A white paper should be posted on the "Information for Observers" web page so that GIs can better understand the constraints on their proposed observations.

3.0 ISSUES ARISING DURING THE SUG DISCUSSIONS

We review here issues identified during SUG discussion that we would like the SOFIA Project to consider for action.

3.1 Director's Discretionary Time Awards (DDT)

At our last meeting we recommended that the SOFIA Project consider adopting the HST model for the release of DDT time awards to the general community. In the case of HST, DDT observations obtained as part of a DDT Program generally do not have a proprietary period and are generally made available immediately to the astronomical community. In special cases, HST DD proposers may request and justify proprietary periods. Apparently no action has been taken on this item yet, and we would like to hear how DDT time and data release were handled during Cycle 1 at our next meeting.

3.2 Maintaining Flexibility to Allow GIs to Alter Observational Programs in Flight

We noted at our last meeting that the need to maintain the versatility and flexibility of SOFIA observations is one of the defining advantages of the airborne platform. We recommended that the Director of Science operations draft guidelines for enabling GI's in flight on SOFIA to make changes in observing plans based on unforeseen changes in observation parameters. We pointed out that observations of transient events cannot be repeated at a later date, so that it is particularly important that observations of such objects be optimized to maximize the scientific return.

The *Spitzer* Space Telescope observing rules:

(http://irsa.ipac.caltech.edu/data/SPITZER/docs/spitzermission/observingprograms/proposalcycles/observingrules/)

provide a good example of how such guidelines might be crafted. No action appears to have been made on this recommendation yet, and we would like to hear a progress report at the next SUG Meeting.

3.3 Announcing Up-to-date Information about the Timetable for Proposal Selections

We noted during our last SUG meeting that the Cycle 1 proposal selection announcement was delayed by about 4 months and that the delay the proposers were not informed about the delay for a couple of months, leading to some unhappiness among members of the user community. We encourage the Project to communicate promptly unforeseen changes in the announced schedule to the proposers and keep an updated Cycle 1 and Cycle 2 schedule on the SOFIA website. At our next meeting, we would like to hear about the detailed plans for transitioning from Cycle 2 to Cycle 3.

3.4 Information about Accepted GI Proposals

We note that the lists of accepted GI proposals for both the US and German queues now contain information about the amount of time awarded to each program. This information should help future proposers to better understand the scientific priorities of the Project.

3.5 Helping Observers to Get the Most out of their Data

Maximizing the scientific impact of SOFIA requires that Guest Investigators (GIs) who are not SI specialists to be able to get the most out of their data and to be able to publish important new results promptly. We were pleased to hear that there is a concerted effort to get basic calibrated data into the hands of observers promptly. Close communication between guest observers and members of SI teams is to be encouraged. We encourage the Project to begin conducting workshops to train the community how to reduce SOFIA data.

We are concerned that current policies for funding both guest observations and instrument development do not adequately provide for support of graduate students. This is particularly disturbing since one of the historic strengths of airborne astronomy has been the opportunities it affords for the "hands-on" experiences most beneficial to development of expertise in experimental and observational astrophysics. We realize this is a result of systemic trends and constraints arising beyond the SOFIA program, but we urge the Project to find creative ways to preserve the unique value of airborne astronomy for the training and development of young researchers.

3.6 Shared Risk Observations with New Science Instruments

The SUG was given an update on plans to offer FORCAST grisms, EXES, and FIFI-LS during Cycle 2, with the understanding that observations will be considered to be "shared risk." We believe the Project should be conservative in representing the capabilities of new SIs until their performance has been evaluated fully in flight. At our last meeting, we recommended that the Project draft a statement that clearly defines the meaning of "shared risk" so that GIs proposing for such observations clearly

understand the ground rules. This seems to have been done to some extent in the Cycle 2 call, but it is difficult to discern a strong policy statement that covers all SIs.

3.7 Non-sidereal Tracking Issues

Planetary science is a high priority for NASA. It is important for NASAs major observatories to be fully capable of making observations of solar system objects. We believe, therefore, that it is imperative for the Project to implement non-sidereal guiding in the telescope control software as soon as possible. Furthermore, the SSPOT software needs to be capable of showing the overlays that are associated with planning non-sidereal observations. This item is of a high priority because the bright Comet C/2012 S1 (ISON) will be within range of SOFIA operations during November/December 2013. The SUG would like to hear a status report from the Project on non-sidereal tracking at its next meeting.

3.8 Tracking Flight Efficiency Statistics

In view of the high cost of SOFIA observing time, it is imperative to maximize the in-flight observing efficiency. We recommend that the Project track statistical measures of the time spent in the various phases of observation (e.g. target acquisition, astronomical integration, MCCS overhead, etc.). This would help to identify areas that require special attention and would enable the Project to monitor and quantify progress made in problem areas.

3.9 The SOFIA Water Vapor Meter

The SOFIA water vapor meter obtains data that are crucial for the analysis of data from many of the SOFIA SIs. It did not function properly during recent GREAT flights. Our understanding is that the instrument is under evaluation and repair at the moment.

3.10 Mission Control and Communication System (MCC) Issues

The SUG learned that there were numerous MCCS failures during recent flights that seriously degraded time-on-target. We would like a report from the Project at our next meeting that outlines the status of these problems and what steps are being taken to address them.

Respectfully submitted on behalf of the SOFIA Users Group,

Robert D. Gehrz, Chair May 10, 2013