



Stratospheric Observatory
for Infrared Astronomy

Steering Committee Proposal



Presented to:
SOFIA International
Summit (SIS) Science
Council

Presented by:
Eddie Zavala

October 8, 2018



- SIS Co-Chairs report submitted with the following recommendation:
 - “NASA and DLR give serious consideration to the creation of a top-level SOFIA Steering Group...composed of, as a suggestion, of the NASA and DLR Program and Project Managers and Scientists, the SMO and DSI Directors, and others who are in appropriate leadership positions and are involved with SOFIA on a regular basis.”
 - “...such a forum would be necessary to implement the joint review process and to ensure that the recommendations emerging from the review[s] are carried out.”
 - “It could also address issue that arise within the SIS or in discussion amongst the scientists working on SOFIA, such as a joint instrumentation program, the coordination and possible linking of the German and US time allocation process, and a unified approach to data accessibility.”
 - “..it would help assure a unified and coherent approach to the problems which inevitably will arise as SOFIA moves forward.”
- Report was shared with NASA SMD/APD

- NASA HQ SMD/APD expanded their weekly telecons to include key SOFIA leadership
 - Program Executive
 - Program Scientist & Deputy Program Scientist
 - NASA Program Manager & Deputy Program Manager
 - DLR Program Manager
 - NASA Project Scientist & Deputy Project Scientist
 - DLR Project Scientist
 - SMO Director & Deputy SMO Director

- This new telecon started on August 28th and it is intended to provide a forum for “down-and-in” discussion of key topics across the SOFIA international Program leadership

- The Program Office supports the establishment of a SOFIA Steering Committee with the proper charter, diverse membership, and results-driven focus

What does a steering committee do?

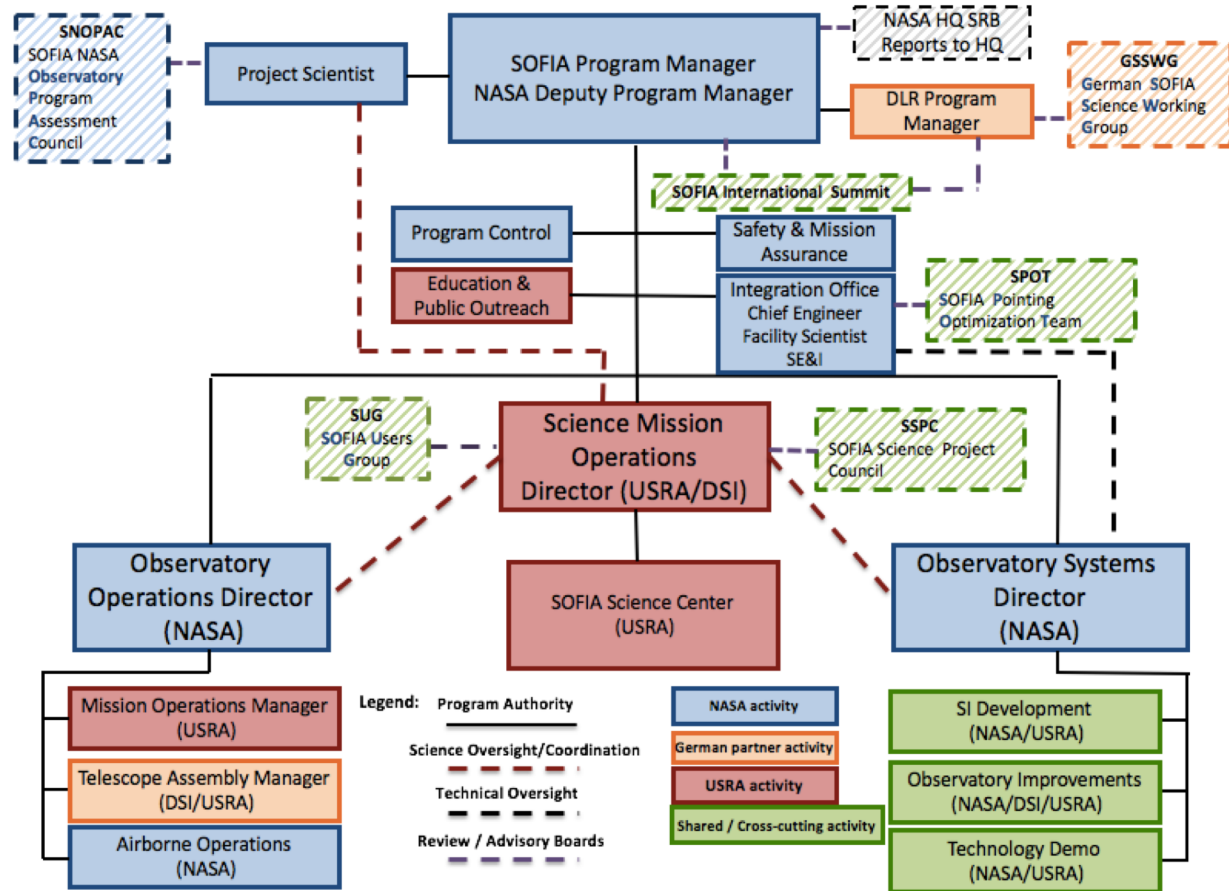
- It is a best practice approach for aligning programmatic business strategies, science priorities, and technical requirements
- The value of steering committees are increased when accompanied with clear charters and an expectation to influence effective decision-making through executive and key stakeholder participation
- A steering committee must include individuals from different sectors can make sure all relevant voices are heard
- Having a more diverse and new membership, with fresh perspective, will avoid repeating history...

I forget. Is this a committee meeting, a sub-committee meeting, a steering committee, an executive committee, a planning committee meeting, or an alignment committee meeting?!



SOFIA External Council History

- Numerous Councils with unique, appropriate emphasis on science and technical priorities with common/internal membership
- Standing Review Board (SRB) was comprised of a balanced panel between Programmatic, Science, and Technical/Engineering
- The independent SOFIA Science Assessment Review (SSAR) Panel in 2014 was also well balanced
- Aircraft Operations considerations are not represented in this structure



- The SRB and SSAR provided the most impactful reviews, with balanced, prioritized recommendations that the Program Office could act upon and successfully implement.

..that sound means its time to give the wheel a final spin..!



- The SOFIA Steering Committee can provide:
 - A forum for disposition and prioritization inputs from Councils and independent reviews
 - Top-level, diverse group with the “big picture” view of SOFIA and all factors/considerations to enable decision-making

- It is most beneficial for the SOFIA Steering Committee to be established after the SOFIA 5-Year Flagship Mission Review (S5YFMR) is complete and SOFIA transitions to a Project under the new Strategic Missions Program Office
 - This process will provide the re-entrant condition for SOFIA into the NASA Budgetary Process with a new baseline level
 - Now a joint U.S./German review that will separately review operations and science
 - SOFIA Operations and Maintenance Efficiency Review (SOMER) will focus on aircraft operations, evaluate alternative operations models, and provide recommendations for Program implementation
 - Science Review Terms of Reference haven't been provided, but it is anticipated that the review will focus on science progress and science prospects going forward; perhaps evaluating new paradigms for the science program design

- The Steering Committee will be comprised of senior stakeholders, science experts, operations experts, and technical experts (SRB or IRB model)
 - Purpose would be to encourage timely and effective decision-making:
 - To ensure the implementation of S5YFMR recommendations and priorities
 - To ensure that SOFIA aligns business objectives with science priorities and operations requirements, and periodically monitors progress to produce deliverables
 - Review any changes related to scope or budgets and project strategy
- Future Work: The NASA / DLR Program Office will establish the SOFIA Steering Committee, with a diverse membership, by late-Summer/Early Fall 2019

And give it a “Snappy Name”!

SOFIA Operations



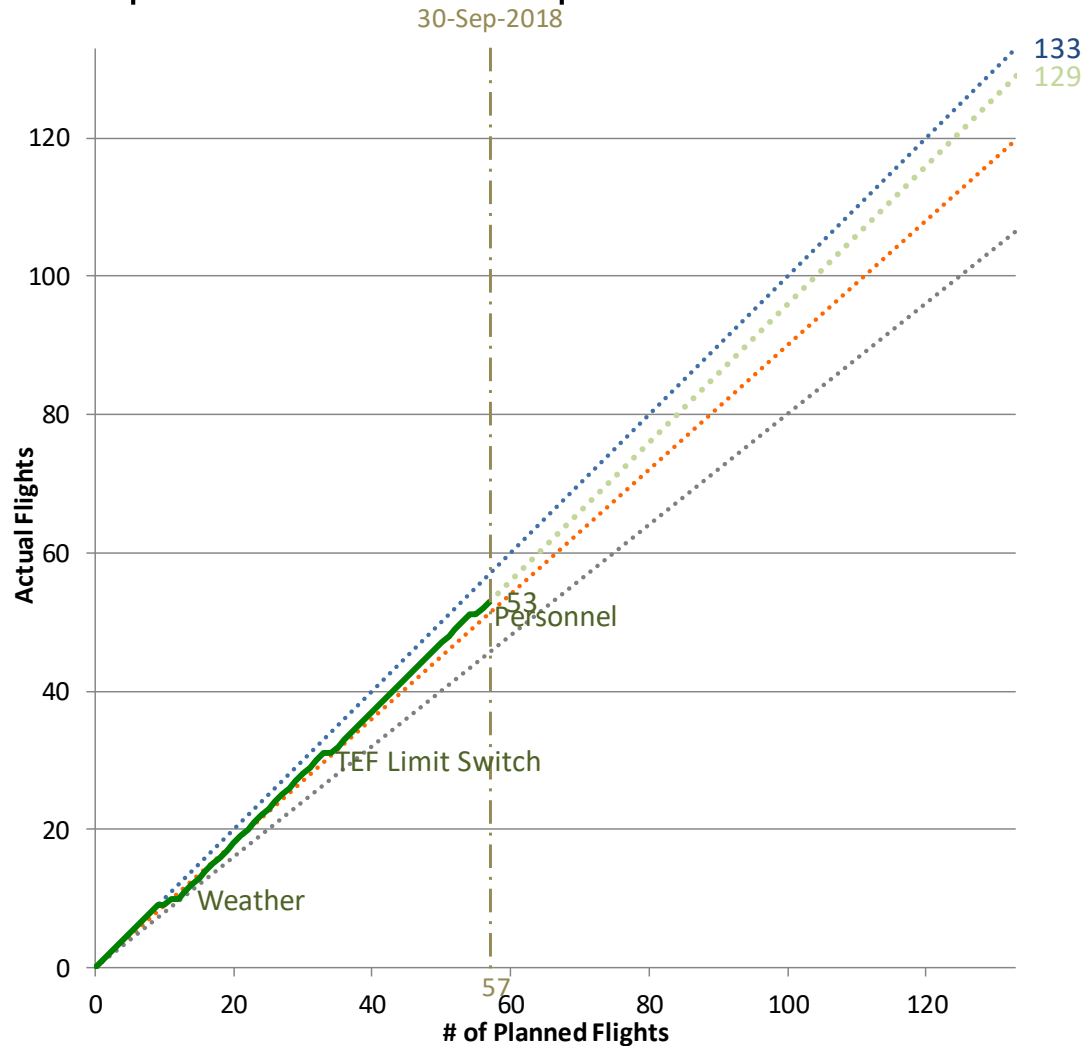
Dispatch Rate – Cycle 6 (for all flight types: Science, Engineering, Ferry, etc.)

- The SOFIA Cycle 6 performance is improved

Dispatch Rate:
93.0% through
30-Sep-2018

Possible Dispatch
Rate 97.0% by end
of cycle assuming
no additional
losses

- 100%
- 90%
- 80%
- Actual
- Projected
- - - Status as of



SOFIA Operations Opportunities



- The SOFIA Cycle 6 performance (aircraft dispatch rate and science observing project completion) is improved over prior cycles
- The first-order operations capacity of the Program will be driven by the FY19 appropriations and can be anywhere between \$74.6M - \$85.2M
 - Program is pressing forward with full science flight capacity (4 flights/week, max of 128 science flights, and 80% RHs ~816RHs)
- The FY20 budget guidance is not adequate for continued SOFIA operations - the S5YFMR process will provides an opportunity for re-entry to the budgetary process and re-baseline of SOFIA performance requirements

FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
\$39.8M	\$16.6M	\$0.0M	\$0.0M	\$0.0M	\$0.0M

- The SOMER is the first review to be conducted by a joint U.S./German panel that has aircraft operations and management expertise
 - The Program is completely transparent and open to the opportunity for how increased efficiencies and capacity can be realized
 - Budgetary outcome needs to be aligned with support requirements

Backup Charts



SOFIA
Stratospheric Observatory
for Infrared Astronomy

Cycle 6 Daily Overview – Page 1 of 2

Schedule as of 5-Oct-2018
 • May use for operations planning
 • Approved by the Program Management Board 7-Sep-2018



				Eng Run	FCF		
S	M	T	W	T	F	11	456
6	7	8	9	10	11	12	

May -- 2018

Cycle 6 Start													OC#6 H (NZ) GREAT										OC#6 I (NZ) HAWK+										OC#6 J FORCAST										OC#6 K HAWK+										OC#6 L EXES																													
OC#6 G GREAT LFA/HFA													Aircraft Prep										Ferry CHC - 2 fits										12 Flights LFA/HFA										Post										Media																													
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F
13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25								

May -- 2018

Tour										Tour										Tour										Tour										Titan																																																																					
OC#6 H (NZ) GREAT										4 Flights 4G/HFA										SI Rem.										SI Install										8 Flights										Post										Down										Prep										OC#6 I (NZ) HAWK+										FPI+										2 fits									
S	M	T	W	T	F	S	S	M	T	S	S	M	T	W	T	F	S	S	M	T	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F					
17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25																																								

June -- 2018

COSPASR Tour										OC#6 I (NZ) HAWK+										Maintenance / Upgrades #17										MD Rem										OC#6 J FORCAST																																																																
Crew Rest										Eng LO										SI Rem										CR										Eng LO										Chk Flt										SI Install										SI Rem										SI Install										10 Flights														
S	M	T	W	T	F	S	S	M	T	S	S	M	T	W	T	F	S	S	M	T	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F
22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25																																							

July -- 2018

OC#6 J FORCAST										Varda										1 baseline sci flt removed for leak repair										OC#6 K HAWK+										Contingency Exercised																																							
SI Rem.										SI Install										SI Install										SI Install										SI Install										SI Install										SI Install										SI Install									
S	M	T	W	T	F	S	S	M	T	S	S	M	T	W	T	F	S	S	M	T	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F			
26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25																		

August -- 2018

5 baseline sci flts removed for leak repair										Leak Repair										SI Install										OC#6 L EXES																										
SI Rem.										SI Install										SI Install										SI Install										SI Install																
S	M	T	W	T	F	S	S	M	T	S	S	M	T	W	T	F	S	S	M	T	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F								
30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25

October -- 2018

Observing Cycle: 6				Baseline Science Flights (all types): 128				Estimated Science Flights (actual + flights to go): 121				Baseline Science Flights To Date (all types): 51			
Baseline RHs (all types): 1020				Estimated RHs (actuals + estimate to go): 979				Flown Science Flights To Date (all types): 47							
S 7	Weekend day (black text with no fill)	H 4	US or German Holiday (day of week box H or GH w red fill)	F 6	Instr. Commissioning Flight (bold white text, purple fill, bold border)	F 6	Core Sci Observing Flight (bold white text, blue fill, bold border)	F 6	Ferry/Maint./Non-Sci Flight (bold white text, green fill, bold border)	F 6	Educator on Flight (white star on day of week)	F 6	Return to Base (RTB) Flight (single slash through day and date)		
F 6	Work day (black text w/ day box grey fill)	F 6	Line Operations (bold border)	F 6	Contingency Instr. Comm. Flight (day box with purple fill)	F 6	Contingency Obser. Flight (day box with blue fill)	F 6	Contingency Ferry/Maint./Non-Sci Flt (day box with green fill)	F 6	Media/VIP on Flight (yellow star on date)	F 6	Canceled Flight (x through day and date)		
F 6	AFRC Regular Day Off (day and date shown in red)	F 6	Possible Maint/Up. Check Flt (day and date box filled with lt. green)	F 6	Deployment Observing Flights (bold white text, light blue fill, bold border)	S 28	Short Flight (colored fill only lower half, bold bdr.)	S 13	Half Sci. & Half Ferry/Maint./Non-Sci (two colored fill)	F 6	Cont./Alternate Flight (blue/orange fill, bold border)	F 6	Deploy P1 Cont/ P2 Alt Flight (lt. blue/ lt. orange fill, bold border)		

Cycle 6 Daily Overview – Page 2 of 2

Schedule as of 5-Oct-2018
 • May use for operations planning
 • Approved by the Program Management Board 7-Sep-2018



24/7 Coverage Required

OC#6 M FIFI-LS										SI Install										OC#6 N GREAT																
3 Flights					SI Rem.	SI Install	LO (H)					15 Flights																								
S	M	T	W	T	F	S	S	H	T	W	T	F	S	S	M	T	W	H	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S		
4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8		
November -- 2018																									December -- 2018											

P46/
Wirtanen

233rd AAS Meeting, Seattle, WA

OC#6 N GREAT										OC#6 O FORCAST										2019 Back in the Saddle														
					SI Rem.						SI Install	SI Install	6 Flights						BFI		AAS Tours				PMD									
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	H	W	T	F	S	S	M	H	W	T	F	S	S	M	T	W	T	F	S
9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12
December -- 2018															January -- 2019																			

OC#6 O FORCAST										OC#6 P EXES										OC#6 Q HAWC+														
					SI Rem.	SI Install						6 Flights										5 Flights												
S	M	T	W	T	F	S	S	H	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
January -- 2019															February -- 2019																			

OC#6 R FIFI-LS										Maintenance / Upgrades #18/19																								
6 Flights										SI Rem.	Eng LO					CR																		
S	H	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	H	T	W	T	F	S
17	18	19	20	21	22	23	24	25	26	27	28	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
February -- 2019												March -- 2019																						

Cycle 7 Start

No Removal

Maintenance / Upgrades #18/19										OC#6 S EXES																								
										Eng LO					6 Flights																			
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
March -- 2019															April -- 2019																			

Observing Cycle: 6				Baseline Science Flights (all types): 128 Baseline RHs (all types): 1020				Estimated Science Flights (actual + flights to go): 121 Estimated RHs (actuals + estimate to go): 979				Baseline Science Flights To Date (all types): 51 Flown Science Flights to Date (all types): 47			
S 7	Weekend day (black text with no fill)	H 4	US or German Holiday (day of week box H or GH w red fill)	F 6	Instr. Commissioning Flight (bold white text, purple fill, bold border)	F 6	Core Sci Observing Flight (bold white text, blue fill, bold border)	F 6	Ferry/Maint./Non-Sci Flight (bold white text, green fill, bold border)	★ F 6	Educator on Flight (white star on day of week)	F 6	Return to Base (RTB) Flight (single slash through day and date)		
F 6	Work day (black text w/ day box grey fill)	F 6	Line Operations (bold border)	F 6	Contingency Instr. Comm. Flight (day box with purple fill)	F 6	Contingency Obser. Flight (day box with blue fill)	F 6	Contingency Ferry/Maint./Non-Sci Flt (day box with green fill)	★ F 6	Media/VIP on Flight (yellow star on date)	F 6	Canceled Flight (x through day and date)		
F 6	AFRC Regular Day Off (day and date shown in red)	F 6	Possible Maint/Up. Check Flt (day and date box filled with lt. green)	F 6	Deployment Observing Flights (bold white text, light blue fill, bold border)	S 28	Short Flight (colored fill only lower half, bold bdr.)	S 13	Half Sci. & Half Ferry/Maint./Non-Sci (two colored fill)	F 6	Cont./Alternate Flight (lt. blue/orange fill, bold border)	F 6	Deploy P1 Cont/ P2 Alt Flight (lt. blue/ lt. orange fill, bold border)		

Cycle 6 Key Description

F
6
Core Sci Observing Flight
(bold white text, blue fill, bold border)

Core Science Observing Flights are science flights planned for the baseline science program containing GO/GTO/DDT observations; lost Core Science Observing flights are re-planned into 'contingency observing flight' or overriding an 'Contingency / Alternate Flight' by turning it into a contingency flight. **Included in baseline science flight calculations**

F
6
Contingency Obser. Flight
(day box with blue fill)

Contingency Observing Flights are flown when an Observing Flight is lost, if a contingency flight is not needed then no flight is flown

F
6
Cont./Alternate Flight
(blue/orange fill, bold border)

Contingency / Alternate flights are flown first as a contingency to missed core science observing flights and then if not needed an alternate flight plan is flown with content directed by the SMO. **Included in baseline science flight calculations.**

F
6
Deployment Observing Flights
(bold white text, light blue fill, bold border)

Core Science Observing Program flights conducted during a remote deployment; lost flights are re-planned by overriding an 'Alternate Flight' by turning it into a contingency flight. **Included in baseline science flight calculations**

F
6
Deploy P1 Cont/ P2 Alt Flight
(lt. blue/ lt. orange fill, bold border)

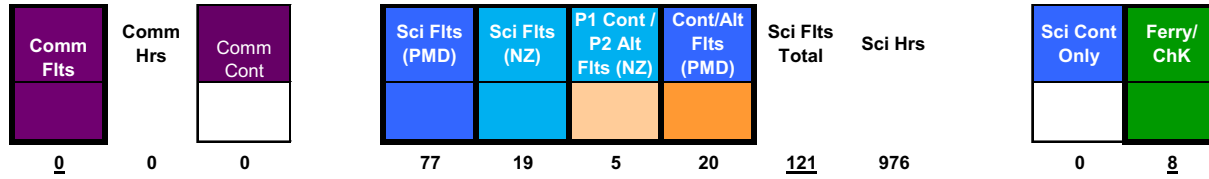
Deployment Priority 1 Contingency / Priority 2 Alternate flights are flown first as contingency to missed core science priority 1 flight plans and then if not needed a priority 2 alternate flight plan is flown. **Included in baseline science flight calculations**

Note: Orange "Alternate Flights" are now all included in baseline science flights total

Observing Cycle: 6			Baseline Science Flights (all types): 128 Baseline RHs (all types): 1020			Estimated Science Flights (actual + flights to go): 121 Estimated RHs (actuals + estimate to go): 979			Baseline Science Flights To Date (all types): 51 Flown Science Flights to Date (all types): 47				
S 7 (black text with no fill)	H 4 (day of week box H or GH w/ red fill)	F 6 Instr. Commissioning Flight (bold white text, purple fill, bold border)	F 6 Core Sci Observing Flight (bold white text, blue fill, bold border)	F 6 Ferry/Maint./Non-Sci Flight (bold white text, green fill, bold border)	★ F 6 Educator on Flight (white star on day of week)	F 6 Return to Base (RTB) Flight (single slash through day and date)	F 6 Work day (black text w/ day box grey fill)	F 6 Line Operations (bold border)	F 6 Contingency Instr. Comm. Flight (day box with purple fill)	F 6 Contingency Obser. Flight (day box with blue fill)	F 6 Contingency Ferry/Maint./Non-Sci Flt (day box with green fill)	★ F 6 Media/VIP on Flight (yellow star on date)	F 6 Canceled Flight (x through day and date)
F 6 AFRC Regular Day Off (day and date shown in red)	F 6 Possible Maint/Up. Check Flt (day and date box filled with lt. green)	F 6 Deployment Observing Flights (bold white text, light blue fill, bold border)	S 28 Short Flight (colored fill only lower half, bold bdr.)	S 13 Half Sci. & Half Ferry/Maint./Non-Sci (two colored fill)	F 6 Cont./Alternate Flight (blue/orange fill, bold border)	F 6 Deploy P1 Cont/ P2 Alt Flight (lt. blue/ lt. orange fill, bold border)							

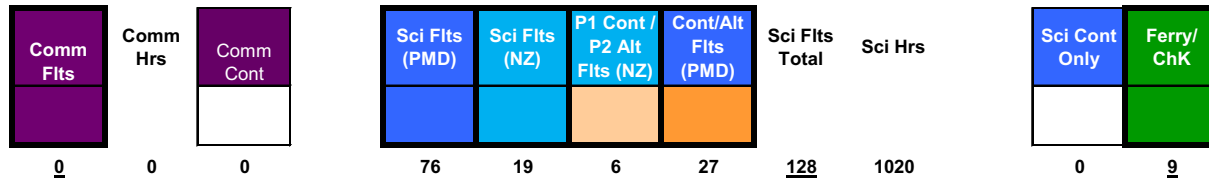
Summary

Current



Estimated RHs (actuals + estimate)	976
Estimated Science Flights (actual + flights to go)	121
Maximum available contingency flights	0
Percent available contingency	0%

Re-baseline 5/21/2018



Baseline C6 Science RHs	1020
Baseline C6 Science Flights	128
Maximum available contingency flights	0
Percent available contingency	0%

Note: Orange "Alternate Flights" are now all included in baseline science flights total

Observing Cycle: 6		Baseline Science Flights (all types): 128 Baseline RHs (all types): 1020		Estimated Science Flights (actual + flights to go): 121 Estimated RHs (actuals + estimate to go): 979		Baseline Science Flights To Date (all types): 51 Flown Science Flights to Date (all types): 47	
S 7 (black text with no fill)	H 4 (day of week box H or GH w/ red fill)	F 6 (bold white text, purple fill, bold border)	F 6 (bold white text, purple fill, bold border)	F 6 (bold white text, blue fill, bold border)	F 6 (bold white text, green fill, bold border)	F 6 (white star on day of week)	F 6 (single slash through day and date)
F 6 (black text w/ day box grey fill)	F 6 (bold border)	F 6 (day box with purple fill)	F 6 (day box with blue fill)	F 6 (day box with green fill)	F 6 (yellow star on date)	F 6 (x through day and date)	F 6 (x through day and date)
F 6 (day and date shown in red)	F 6 (day and date box filled with lt. green)	F 6 (bold white text, light blue fill, bold border)	S 28 (colored fill only lower half, bold bdr.)	S 13 (two colored fill)	F 6 (blue/orange fill, bold border)	F 6 (lt. blue/ lt. orange fill, bold border)	F 6 (lt. blue/ lt. orange fill, bold border)