

SOFIA  
Program Status

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Program Manager





# Agenda

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- Executive Summary
- Recent and Upcoming Events
- Program Status
  - Schedule (Bar chart and Lego chart)
  - Risks
  - Concerns / Issues
- Program Summary



# Executive Summary

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- Program has made significant progress
  - Cavity Door Drive System (CDDS) final flight test controller and software installed and working
  - Mission Control & Communication System (MCCS) open door software and hardware checked and working
  - Cavity Environmental Control System (CECS) experiencing failures, but is repaired and working
    - Provides drying and some heating to cavity prior to and during descent
  - 100% door open flight accomplished December 18th
  - Science preparation on track for first science (instruments, labs, etc)
- Other status
  - JSPP II signed
    - Agreement on German workforce for operations
    - ***German Science Data archiving agreement is TBD***
  - Segment 3 planning underway
  - FIFI lost funding
  - Limited slack to ISF milestone
    - Program and Center's working recovery strategies





# Door Full Open Flight, Dec 18, 2009





# Recent and Upcoming Events

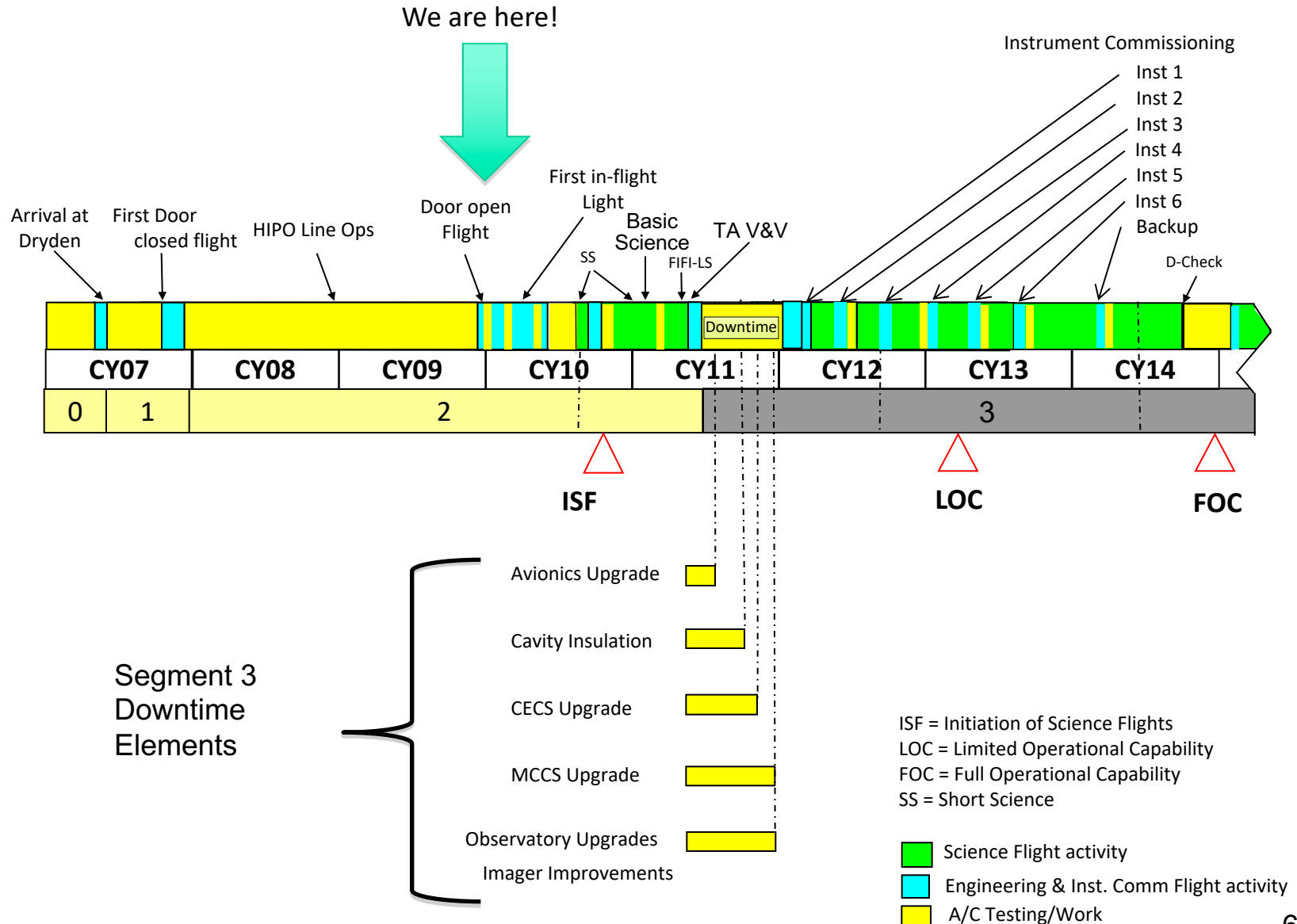
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- ✓ AFSRB part 2 at DAOF; November 19, 2009
- ✓ Combined Systems Test; November 16-20, 2009
- ✓ Mission Readiness Brief at HQ; November 30, 2009
- ✓ SSPC at DSI in Stuttgart, Germany; December 3-4, 2009
- ✓ Functional Check Flight; December 4, 2009
- ✓ 10% Door Open Flight; December 11, 2009
- ✓ 100% Door Open Flight; December 17, 2009
- ✓ American Astronomical Society Meeting in Washington D.C.; January 3-7, 2010
  - ✓ SOFIA Splinter Session; January 4, 2010
- SRB; Late-March 2010
- DPMC; Mid-April 2010
- APMC; Late-April 2010
- TA Characterization/First light; spring 2010
- Instrument workshop, June 2010, Asilomar, CA
- First science; fall 2010



# Schedule Overview

(Bar Represents Tracking Schedule and red triangles represent our commitment)











# Segment 3 – Tracking

	~ 30 SFH		~ 128 SFH - 2 flts/wk				~ 30 SFH																			
2012	A/C Sys Funct & TA flts		FORCAST Com		Observing Flights #1				FLITECAM com				Plat Wk													
	9	16	23	30	6	13	20	27	5	12	19	26	2	9	16	23	30	7	14	21	28	4	11	18	25	2
	January		February		March		April				May		June													

← LOC

	~ 128 SFH - 2 flts/wk				~ 30 SFH				~ 128 SFH - 2 flts/wk																	
2012	Observing Flights #2				HIPO/FLITECA				Observing Flights #3				Plat Wk													
	16	23	30	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7
	July		August		September		October				November		December													

	~ 30 SFH		~ 128 SFH - 3 flts/wk				~30 SFH								~192 SFH - 3flts/wk											
2013	CASIMIR		Observing Flights #4				EXES Com				Platform Wk				Obs Flts #5											
	21	28	4	11	18	25	4	11	18	25	1	8	15	22	29	6	13	20	27	3	10	17	24	1	8	15
	Januar		February		March		April				May		June		July											

	~192		~ 30 SFH								~ 288 SFH - 3 flts/wk															
2013	HAWC Com		Platform Wk				Observ Flts #6																			
	29	5	12	19	26	2	9	16	23	30	7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20
	August		September		October				November		December		January													

← FOC

	~ 30 SFH		~ 336 SFH - 3.5 flts/wk								~ 336 SFH															
2014	Plat wk		Reserve com				Observing Flights #7				Platform Wk				Observing											
	3	10	17	24	3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	7	14	21	28
	February		March		April				May		June		July													

	~ 336 SFH - 3.5 flts/wk																									
2014	Observing Flights				D Check																					
	11	18	25	1	8	15	22	29	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26	2
	August		September		October		November		December		January															

- Observing Flights
- Instrument Commissioning
- Aircraft maintenance/Observatory upgrade
- Platform flights

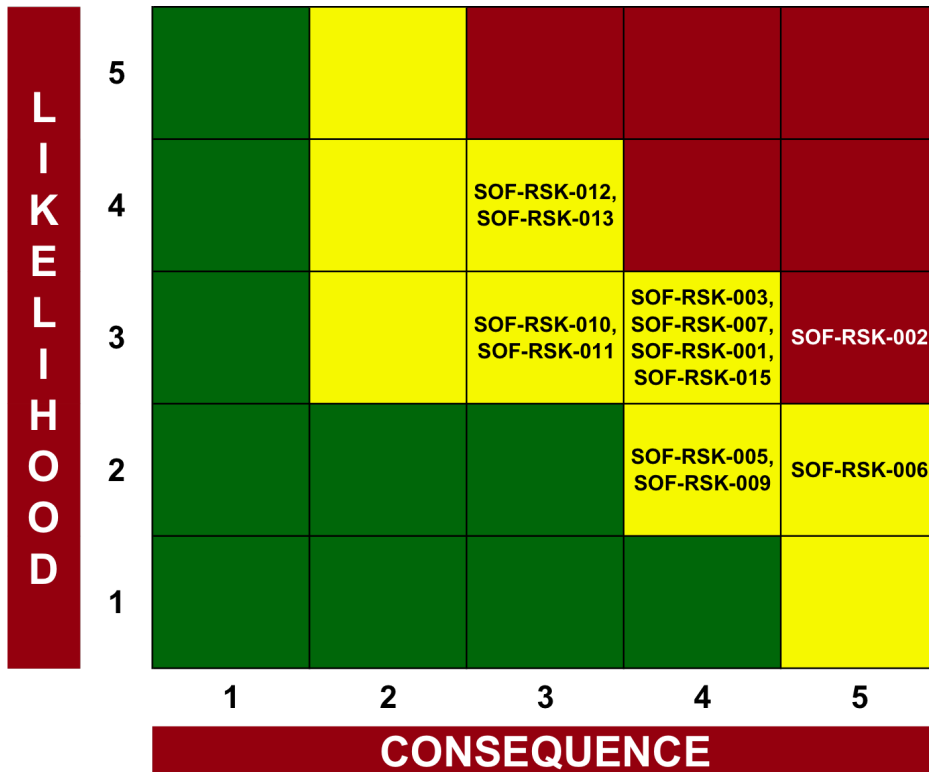


# Program Key Milestones

Milestone	Program ID	Tracking Dates	70% JCL Risk	Current PCA Milestone
1 <sup>st</sup> Flight (Aircraft Functional Checks)	L1-032	12/4/09	11/19/09	
Segment 3 SRR	L1-107	2/16/10	12/16/09	
1 <sup>st</sup> Open Door Flight	L1-101	12/18/09	1/28/10	
FORCAST Line Ops	L1-102	4/2/10	3/30/10	
First Light Opportunity	L1-103	4/8/10	4/29/10	
ISF – Short Science 1 Flights	L1-037	8/17/10	10/26/10	8/2009
Envelope Expansion #2	L1-106	9/29/10	12/17/10	
Segment 3 Progress Review	L1-108	11/30/10	3/31/11	
GREAT Line Ops	L1-104	12/8/10	4/12/11	
Short Science 2 Flights	L1-105	1/11/11	5/11/11	
Basic Science Flights	L1-046	2/9/11	6/10/11	
FIFI-LS Line Ops	L1-110	4/26/11	8/30/11	
FIFI-LS Science Flights	L1-109	5/10/11	9/14/11	
TA V&V / Aircraft Performance Flights	L1-047	6/2/11	10/6/11	
Open Door Flight Test Complete	L1-052	6/29/11	11/10/11	9/2010
Limited Operation Capability (LOC)	L1-055	8/31/12	3/18/13	
Full Operational Capability (FOC)	L1-056	6/19/14	12/16/14	12/2014



# Program Risk Management Matrix



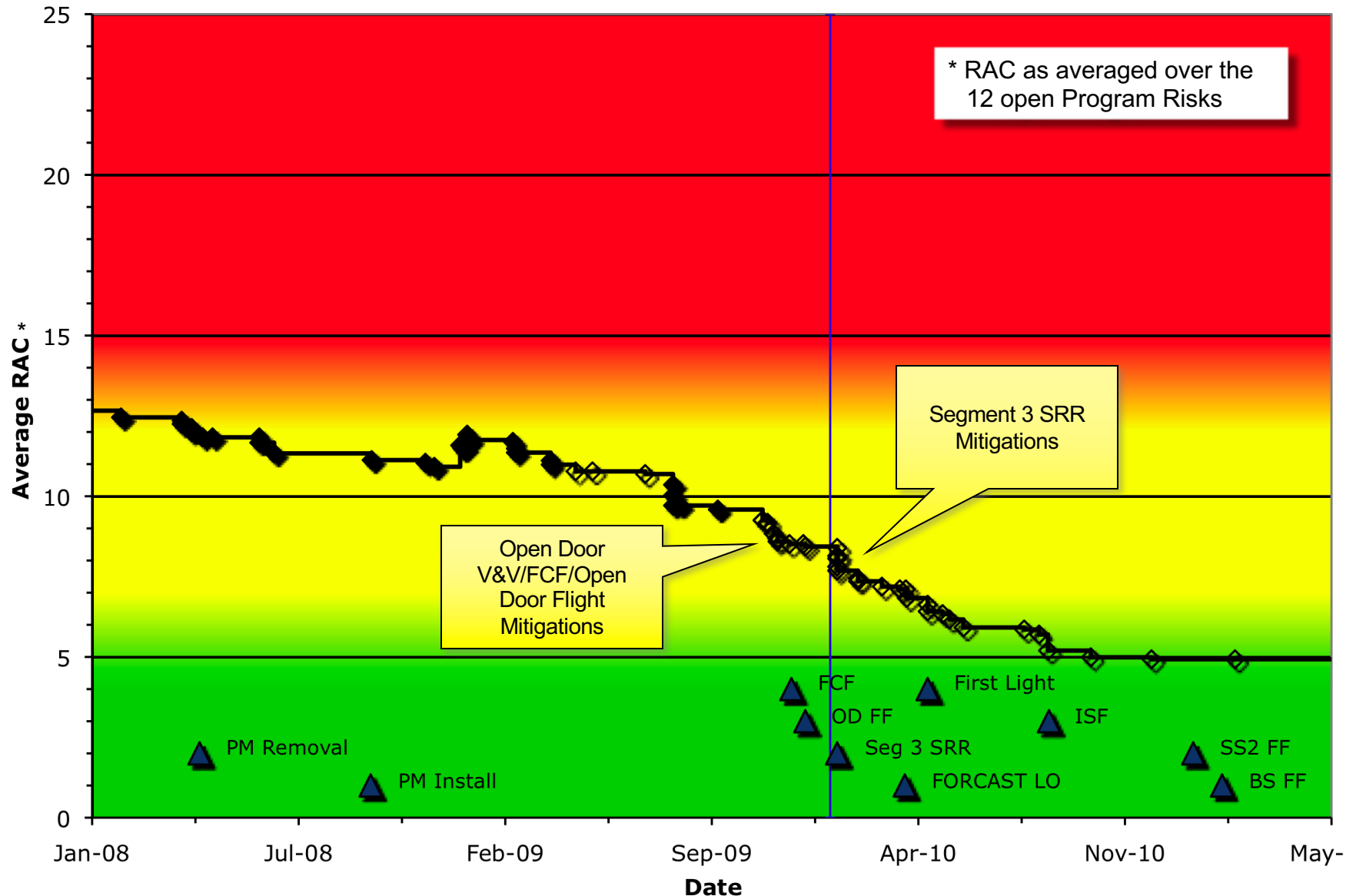
Trnd	Rnk	LxC	Risk ID	Aprch	Title
▶	1	(3x5)	SOF-RSK-002	M	Loss of Science Community and DLR Support, Due to Late Science
▶	2	(3x4)	SOF-RSK-003	M	Cavity Door System Failure (Loss of Science/TA Damage)
▶	3	(3x4)	SOF-RSK-007	M	Schedule and Cost Growth Due to Schedule Uncertainty
▶	4	(3x4)	SOF-RSK-001	M	MCCS Development
▶	5	(3x4)	SOF-RSK-015	M	Delays to Segment 2 due to inadequate System Performance
▶	6	(4x3)	SOF-RSK-012	M	Delays/Changes/Inefficiencies due to unknown IT Security Requirements
▶	7	(4x3)	SOF-RSK-013	M	Inadequate Planning for Segment 3 Execution
▶	8	(2x5)	SOF-RSK-006	M	Handling Damage to Primary Mirror
▶	9	(3x3)	SOF-RSK-010	W	Unacceptable Cavity Acoustics
▶	10	(3x3)	SOF-RSK-011	M	Telescope performance falls short of Early Science Image Quality Requirement
▶	11	(2x4)	SOF-RSK-009	W	Limited Flight Envelope Due to Technical Issues
▶	12	(2x4)	SOF-RSK-005	M	Lack of Requirements Definition (System Engineering)

Criticality	L x C Trend	Approach
High	▼ Decreasing (Improving)	M - Mitigate
Med	▲ Increasing (Worsening)	W - Watch
Low	▶ Unchanged	A - Accept
	▷ New Since Last Period	R - Research

*[Risks are identified and trended from last review to current review]*



# SOFIA Program Risk Waterfall





# Program Summary

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- Program has made significant progress
  - Achieved 100% door open flight on December 18th
  - Program successfully implemented recovery plan to achieve FCF and 100% door open flight prior to end of calendar year
- On-track to ship FORCAST soon
  - Integration and line ops late winter
- TA characterization (door open and TA unlocked) and first light expected early April.
- Program has a concern with limited slack to Initiation of Science (ISF)
  - Working recovery options





# Back-up

# Segment 2 SS1 – Test Build-up Approach

TYPICAL SOFIA SEGMENT 2 SHORT SCIENCE 1 OPENDOOR ENV. EXPANSION APPROACH

