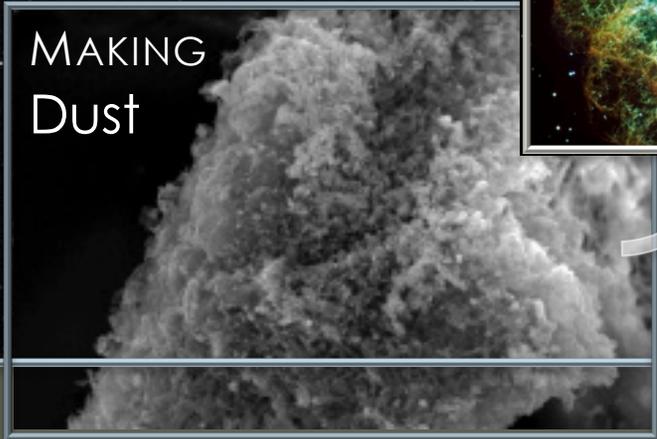
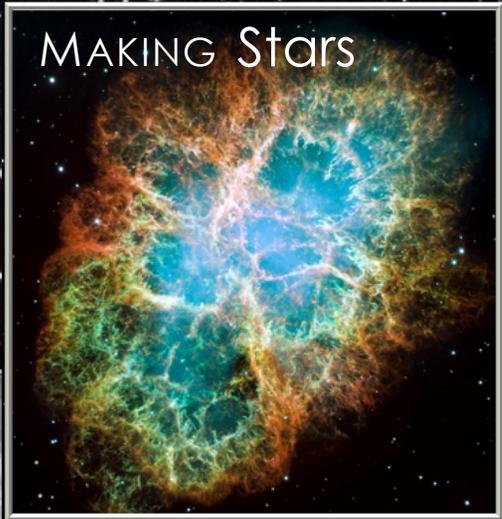
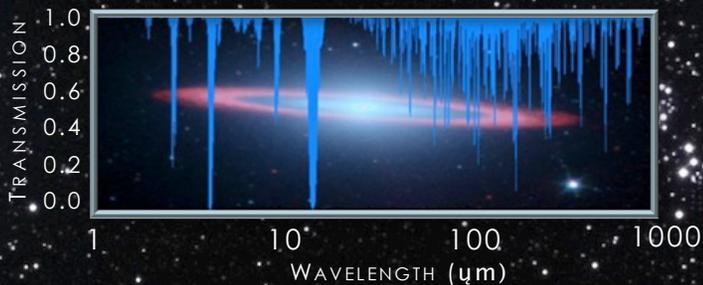
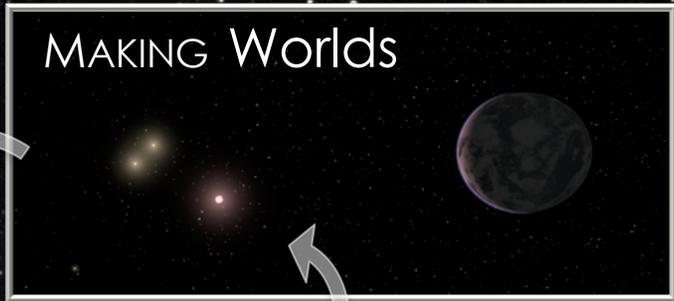


# OBSERVING THE CYCLING OF Matter IN THE INFRARED



March 2017  
Joint Program  
Office Status  
NASA/DLR

## **SOFIA**

*Stratospheric Observatory  
for Infrared Astronomy*



Presented to:  
SOFIA International  
Summit (SIS) Members

Presented by:  
SOFIA Joint Program  
Managers : E. Zavala and  
H. Hammes

*The SOFIA Observatory  
studies astronomical  
observations at  
wavelengths between  
0.3 and 1000 microns*

# Joint Program Office Status (1 of 3)



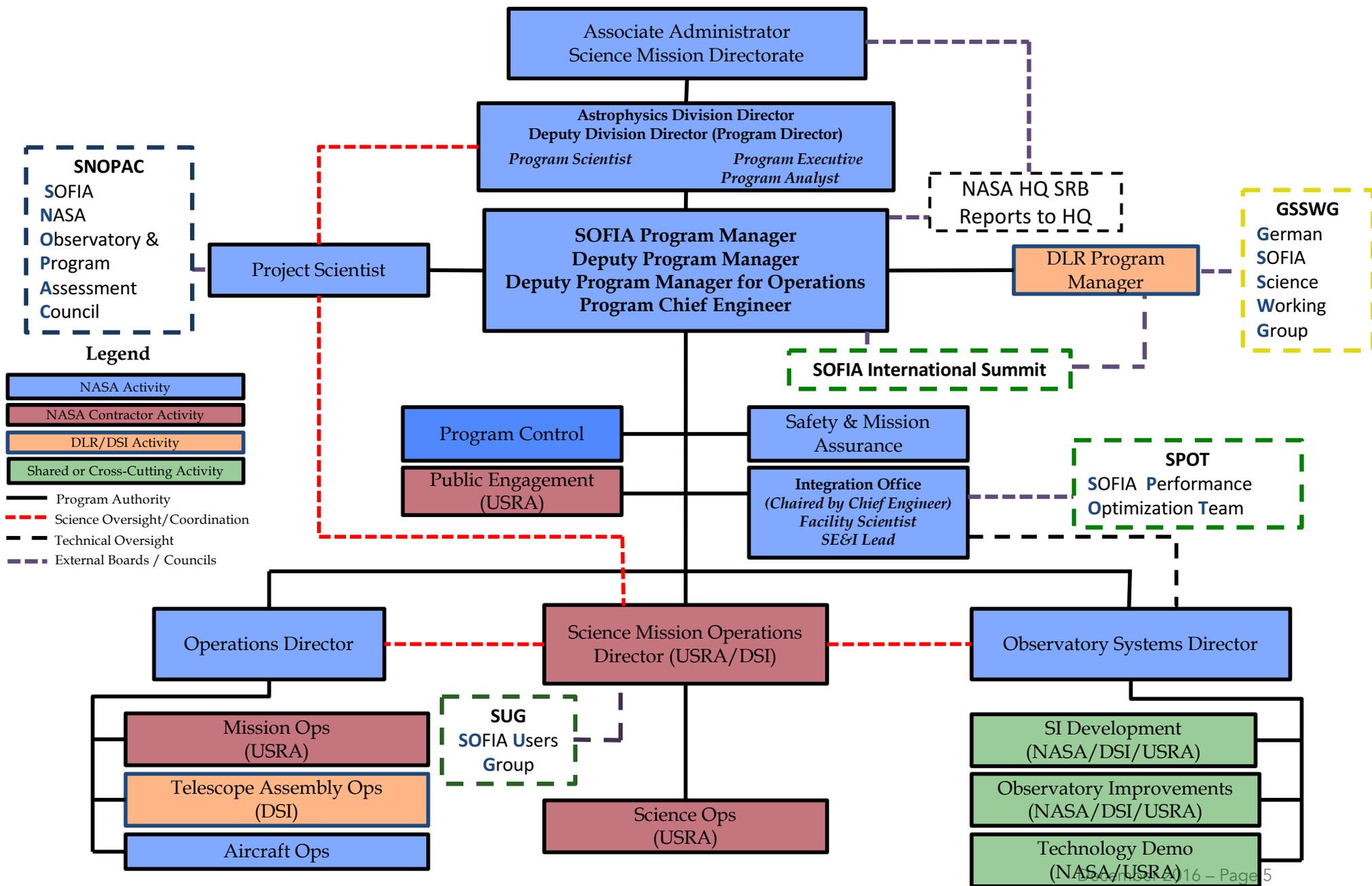
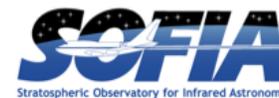
- The NASA/DLR SOFIA Program partnership is working extremely well
  - Established a seamless, highly collaborative, international team at NASA ARC and NASA AFRC
  - Highly effective in conducting Science Center Operations and Science Flight Operations
  - Badgeless team environment (Science Ops, Mission Ops, Engineering, Aircraft Operations) that is fully prepared to support the Program direction and priorities as determined by Science leadership
  
- Program Completed Science Cycle 4 on February 3, 2017
  - Satisfied Level 1 Requirement to provide 80% of planned research hours (646 RHs)
  - Completed commissioning and initiated observations with new science capability
    - upGREAT High Frequency Array (HFA); October 3, 2016
    - HAWC+ science instrument December 15, 2016
    - Completed planned Observatory Maintenance/Upgrades to support new capability
      - Observatory System Software updates, including Telescope Assembly Systems
      - Avionics Communication System Upgrade – required for international operations
  
- Program Started Science Cycle 5 on February 7, 2017

## Joint Program Office Status (2 of 3)



- The 2018 Senior Review is a new opportunity to describe SOFIA's scientific future
  - The Senior Review is part of the normal review process for all NASA missions in operations
  - Presents a unique opportunity to propose SOFIA for continued extended mission operations; i.e. post-prime mission
  - Central to the proposal should be a unified, integrated U.S. / German science proposal that will serve as the new science vision for the future.
  
- NASA/DLR Program Management is ready to transform the SOFIA Program, revitalize, rebrand, and re-energize our team. Let's chart the future!
  - The proposal will "set a new course" according to the "science map" that is charted by our science leadership.
  
- New/Current Science Leadership
  - Kartik Sheth / NASA HQ Program Scientist
  - Kimberly Ennico-Smith / NASA Project Scientist
  - Harold Yorke / SMO Director
  - Dietmar Lilienthal / DLR Science Representative
  - Holger Jakob / DSI Acting Deputy SMO Director

# SOFIA Organization w/ External Councils



## Joint Program Office Status (3 of 3)



- The SIS plays a key role in SOFIA's transformation
  - International science community collaboration is critical to “chart the course” and transform SOFIA for extended operations
  - The SOFIA International Summit is the forum where collaboration from all science councils (GSSWG, SNOPAC, SUG) and other international science community members engage to help transform SOFIA's science future
  - The seamless model for SOFIA operations needs to extend to the international science community base. Strategies and approaches must be developed that lead to an integrated, unified, high-caliber science proposal for the 2018 Senior Review.
  
- The Joint Program Managements is eager and ready to put this in motion. We need the SIS to help foster collaboration that leads to success!!

# Back-up Charts



March 2017

***SOFIA***

*Stratospheric Observatory  
for Infrared Astronomy*

# Cycle 5 Daily Overview – Page 1 of 2



OC#4 N (upGREAT)

Cycle 5 Start

OC#5 A (upGREAT LFA)										
7 Flights										
S	S	M	<b>★</b> T	<b>★</b> W	<b>★</b> T	<b>★</b> F	S	S	S	S
4	5	6	7	8	9	10	11			
February -- 2017										

OC#5 A (upGREAT LFA)																	OC#5 B (FIFI-LS)										OC#5 C (EXES)							
7 Flights																	7 Flights										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							
12	13	14	15	16	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
February -- 2017																	March -- 2017																	

Maintenance / Upgrades #13																	Safety										MS						OC#5 D (FORCAST)					
Eng LO																	Day										CR						Eng LO					
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				
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				
March -- 2017																	April -- 2017																					

OC#5 E (HAWC+)																	OC#5 F (EXES)																	
9 Flights																	3 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							
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
April -- 2017																	May -- 2017																	

OC#5 F (EXES)																	OC#5 G (upGREAT HFA/LFA)										OC#5 H (upGREAT)									
7 Flights																	Aircraft Prep										Ferry - 2 fts									
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		
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	1		
May -- 2017																	June -- 2017																			

OC#5 H (upGREAT)																	OC#5 I (FIFI-LS)										OC#5 J (FORCAST)							
4G/HFA																	6 Flights										6 Flights							
Prep	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
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
July -- 2017																	August -- 2017																	

**Key** Observing Cycle: 5 Baseline Science Flights: 102 Baseline RHs: 758 Planned Science Flights: 104 Estimated RHs\*: 766 (\*Year to date + Estimate) *PMB sequence approval: 2/13/17*

<b>S</b> 7 (black text with no fill)	<b>H</b> 4 (day of week box H or GH w/ red fill)	<b>F</b> 6 (bold white text, purple fill, bold border)	<b>F</b> 6 (bold white text, blue fill, bold border)	<b>F</b> 6 (bold white text, green fill, bold border)	<b>★ F</b> 6 (white star on day of week)	<b>F</b> 6 (single slash through day and date)
<b>F</b> 6 (black text w/ day box grey fill)	<b>F</b> 6 (bold border)	<b>F</b> 6 (day box with purple fill)	<b>F</b> 6 (day box with blue fill)	<b>F</b> 6 (day box with green fill)	<b>F</b> 6 (yellow star on date)	<b>F</b> 6 (x through day and date)
<b>F</b> 6 (day and date shown in red)	<b>F</b> 6 (day and date box filled with lt. green)	<b>F</b> 6 (bold white text, light blue fill, bold border)	<b>S</b> 28 (colored fill only lower half, bold bdr.)	<b>S</b> 13 (two colored fill)	<b>✓</b> 6 (check mark below day)	<b>F</b> 6 (orange fill on day of week)
<b>Weekend day</b>	<b>US or German Holiday</b>	<b>Instr. Commissioning Flight</b>	<b>Observing Flight</b>	<b>Ferry/Maint./Non-Sci Flight</b>	<b>Educator on Flight</b>	<b>Return to Base (RTB) Flight</b>
<b>Work day</b>	<b>Line Operations</b>	<b>Contingency Instr. Comm. Flight</b>	<b>Contingency Obser. Flight</b>	<b>Contingency Ferry/Maint./Non-Sci Flt</b>	<b>Media/VIP on Flight</b>	<b>Canceled Flight</b>
<b>AFRC Regular Day Off</b>	<b>Possible Maint/Up. Check Flt</b>	<b>Deployment Observing Flights</b>	<b>Short Flight</b>	<b>Half Sci. &amp; Half Ferry/Maint./Non-Sci</b>	<b>Restored Flight</b>	<b>Strategic Capacity</b>



# Program Priorities



- Program goals, priorities, and metrics are focused on ensuring scientific production
  - Preparations for the 2018 Senior Review
  - Complete final planning and preparations to start of Cycle 5 science observation schedule
  - The publication and dissemination of unique / impactful science results
  - Rapid production of science ready data from reliable and accurate pipeline software
  - Increased and sustained funding to investigators for the analysis of the results
  - Availability of relevant scientific instruments and observatory capabilities
  - Safe, efficient, and reliable science flight opportunities
  - Improved response to annual call for proposals

## Senior Review is a Normal NASA Review for all missions in operations

- NASA Authorization Act of 2005 established a requirement for NASA to conduct reviews of “missions in extended phase” every 2 years.
- The NASA Science Mission Directorate (SMD) undertakes a Senior Review process for astrophysics and planetary science missions in even-numbered years and Earth science and heliophysics missions in odd-numbered years.
- “Senior Review is a valuable peer review process for recommending future support based on assessments of the scientific accomplishments and future projections, as well as the practical utility in meeting national and related interagency needs.” – National Academy of Sciences, Review 2016
- Anticipating a written science & technical proposal (with budget) due in late 2017, with a “site visit” and/or panel presentation in early 2018.

## ■ Purpose

- Discusses, evaluates, and comments on SOFIA scientific performance
- Provides feedback to NASA and DLR Program Management
- SIS consensus opinion is not required
- Review charter
  - Scientific operation and associated policies to ensure SOFIA realizes maximum scientific productivity, efficiency, and performance
  - Provide input on strategic considerations in addressing general scientific and programmatic priorities
  - Discuss issues that are of special interest and relevance within the bi-national context of SOFIA
- Fulfills Program requirement for engagement with international science community, as specified in Program MOU and Joint SOFIA Program Plan II

## ■ Membership

– 10 representatives

- SNOPAC Chair (Summit Co-Chair): Andy Boden
- GSSWG Chair (Summit Co-Chair): Juergen Stutzki
- SUG Chair: Matthew Greenhouse
- One representative from German astronomical community: Karl Menten
- SNOPAC and SUG representatives
  - Andy Harris
  - Jay Lockman
  - John Nousek
  - Lisa Storrie-Lombardi
  - 2 other members

## ■ Meetings

- Agenda jointly developed by Co-chairs with NASA/DLR concurrence
- Twice a year either in person or by teleconference
- Open attendance

# SIS Charter



## ■ Reporting

- Summit is convened by, and formally reports to, the NASA SOFIA Program Manager and the DLR SOFIA Project Manager (convening authorities)
- Co-chairs will submit a written report summarizing the discussion of the summit to the convening authorities 30 days of the conclusion of the meeting.

## ■ External Community Groups

<b>Group</b>	<b>Chartered by:</b>	<b>Primary responsibility:</b>
SOFIA Program Assessment Group (SNOPAC)	U.S. SOFIA Program (NASA)	Provide independent assessment of SOFIA to NASA SOFIA Program Office, from a U.S. community perspective.
SOFIA Users Group (SUG)	SMO Director (USRA)	Advises the SMO Director on matters related to data quality, observatory performance, and SMO policies.
German SOFIA Science Working Group (GSSWG)	German SOFIA Program (DLR)	Advises DLR management on SOFIA policies and activities from a German community perspective.

## Level 1 Requirements

- Technical Performance Commitment (1 of 2)
  - 4.1 **SOFIA shall carry out a science program defined by annual peer review of community-based observing proposals.** Additionally, SOFIA will fulfill guaranteed observations for instrument developers and conduct a limited number of discretionary investigations defined by the SOFIA Science Mission Operations Director.
  - 4.2 **SOFIA shall maintain a diverse suite of instruments,** installing various instruments as required to conduct the science program defined in paragraph 4.1
  - 4.3 **SOFIA shall maintain the capacity to carry out a minimum of three flights per week** during routine science data acquisition campaigns and/or instrument commissioning campaigns.
  - 4.4 **SOFIA shall maintain the capability of providing 8 or more research hours per flight** during routine science data acquisition campaigns and/or instrument commissioning campaigns.
  - 4.5 **Mandatory downtimes associated with routine maintenance and system integration shall not exceed three months per year.** Special operations such as primary mirror recoating and heavy maintenance are not counted against this three month limit.

## Level 1 Requirements

- Technical Performance Commitment (2 of 2)
  - 4.6 SOFIA shall maintain system availability and reliability sufficient to achieve at least 80% of the research hours planned for any given year.
  - 4.7 The research hours planned for any given year may or may not utilize the entirety of the operational capacity defined by 4.3- 4.6 above. **The optimized SOFIA program may balance the quantity of science data acquisition against other activities such as science data analysis and development of new capabilities.**
  - 4.8 SOFIA's prime mission duration shall be defined as five years from the end of the fiscal year during which SOFIA entered Phase E (i.e. the prime mission phase ends September 30, 2019).
  - 4.9 Long term plans for sustainment of the observatory shall preserve the capability for 20 years of operations (i.e., through May 2034).