



# Daily Downlink Tagup

Monday, November 2, 2020 (DOY 307)

**WOY 45**

**“So Long Bennu!”**



**OSIRIS-REX™**  
ASTEROID SAMPLE RETURN MISSION

# Agenda & Logistics

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- Quicklook + Instrument Status
- DSN Schedule
- 3 Month Outlook
- Execution/Downlink Summary
- Need for Retransmit, need for Replay?
- Alarms, Watch items, ISAs, PFRs
- Science / PI Comments
- Go-backs / Additional Comments

Daily Downlink Summaries available shortly after each Tagup at on the OREx Ops Wiki:  
[https://orexwiki.lpl.arizona.edu/wiki/Main\\_Page](https://orexwiki.lpl.arizona.edu/wiki/Main_Page) (LDAP login)

Daily Downlink Slides available shortly after each Tagup at:

OSIRIS-REx Bennu Proximity Operations/Science Implementation/Downlink\_Daily\_Summary/2020



OCAMS Slides available at:

ODOCS at 7.0 Mission Operations System/SPOC/OCAMSFightProducts/Downlink

# Quicklook Status

Team	Status	Comment
<b>Spacecraft</b>	<b>G</b>	No issues
<i>Electrical Power System</i>	<b>G</b>	No issues
<i>Flight Software</i>	<b>G</b>	No issues
<i>Fault Protection</i>	<b>G</b>	No issues
<i>G&amp;NC</i>	<b>G</b>	No issues
<i>Mechanisms</i>	<b>G</b>	No issues
<i>Propulsion</i>	<b>G</b>	No issues
<i>Telecom</i>	<b>G</b>	No issues
<i>Thermal</i>	<b>G</b>	No issues
<i>Payload Interfaces</i>	<b>G</b>	No issues

	Health				Safety		Performance				Powered State	GO/NO-GO
OCAMS											<b>OFF</b>	<b>GO</b>
OLA											<b>OFF</b>	<b>GO</b>
OTES											<b>OFF</b>	<b>GO</b>
OVIRS											<b>OFF</b>	<b>GO</b>
REXIS											<b>OFF</b>	<b>GO</b>
	Thermal	Power	Command Response	Alarms	Trending	Limited Life	Mechanisms	Data Completeness	Pipeline Status	Science Concurrence		

Yellow Performance Status impacts LEFT only

# Downlink Schedule (times in UTC)

- **Current Data Rate: 300 kbps.**

WOY	DOY	Start Date	HGA Start	End Date	HGA End	Duration	Note
45	307	11/2/2020	n/a	11/2/2020	n/a	00:00	
45	308	11/3/2020	n/a	11/3/2020	n/a	00:00	
45	309	11/4/2020	n/a	11/4/2020	n/a	00:00	
45	310	11/5/2020	n/a	11/5/2020	n/a	00:00	
45	311	11/6/2020	17:30	11/6/2020	20:23	02:57	
45	312	11/7/2020	17:03	11/7/2020	19:02	01:59	
46	313	11/8/2020	17:01	11/8/2020	19:02	02:01	
46	314	11/9/2020	17:03	11/9/2020	19:12	02:09	

## NOTES / ISSUES:

None

## SIGNIFICANT EVENTS:

None

## RED EQUIPMENT STATUS:

SPC/DSS	EQUIPMENT	ETRO
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SPC40	TLP15	307/0400z
DSS63	MSI	310/1500z
DSS54	ASD	319/1800z
DSS14	X500kw-R	324/2300z
SPC10	MCD3-3	324/2300z
DSS54	NDA	330/1417z
SPC60	MCD3-1	330/1600z
SPC60	NMC-SR1	350/1530z
DSS63	EAC	365/1600z
SPC60	HMA3	366/1530z

# 3 Month Outlook



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
Week 43						Week 44						Week 45						Week 46						Week 47										
293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327
M	T	W	R	F	Sa	Su	M	T	W	R	F	Sa	Su	M	T	W	R	F	Sa	Su	M	T	W	R	F	Sa	Su	M	T	W	R	F	Sa	Su
x						xx						x						x						x										
4						biased desat						x						x						x										
1D/T1CP/T1MP						Δ Stow Readiness Rev.																		X spacecraft checkout										
T1BO						Δ Samp. Succ. Review																		X OCAMS/OTES checkout a										
TAGSAM						Δ OKDP-3 Stow activities																		New upbl, ocams turn on prior to series of loads according to tin delta ko after p&s power states file in FA up										
TAG						Imaging Decision to Stow																		TAGCAMS Contam checkout										
Spacecraft checkout																																		
TAG sortie constrained by sample temp OSZ						Post-TAG Vehicle Checkout constrained by sample temp OSZ						Sample Stow constrained by sample temp OSZ						Drift Away						Drift Away										

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
Week 48						Week 49						Week 50						Week 51						Week 52										
328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362
M	T	W	R	F	Sa	Su	M	T	W	R	F	Sa	Su	M	T	W	R	F	Sa	Su	M	T	W	R	F	Sa	Su	M	T	W	R	F	Sa	Su
x						x						x						x						x										
												X departure maneuver trade, TAG and 2021 planning discussion																						
ind calibration						poly focus, sequence instead of contingency						neframe in ATF delivery						date																
Drift Away						Drift Away						Drift Away						Drift Away						Drift Away										

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
Week 53						Week 01						Week 02						Week 03						Week 04										
363	364	365	366	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
M	T	W	R	F	Sa	Su	M	T	W	R	F	Sa	Su	M	T	W	R	F	Sa	Su	M	T	W	R	F	Sa	Su	M	T	W	R	F	Sa	Su
x						x						x																						
												OVIRS solar cal in 2021 somewhere																						
												Vega calibration somewhere																						
																		3.0 deg < SEP < 3.1 deg						HGA Temp										
																		SEP < 4 deg																
Drift Away						Drift Away						Drift Away																						

## Up Next:

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- **TAGCAMS Lens Contamination checkout: Nov. 15, 2020**
- **Spacecraft post-TAG Checkout: Nov. 16, 2020**
- **OCAMS and OTES post-TAG health checkouts: Nov. 17, 2020**
  - OCAMS Data may take 2-3 HGA passes to downlink
- **OCAMS RTS and Vega Calibrations: *(date in work)***
  - **SOCR-198 (Status: Information Gathering)**
  - Tentative Execution: Week of January 12<sup>th</sup> (WOY 2021-02)
- **OVIRS Solar Cal and health checkout: *(date in work)***
  - **SOCR-197 (Status: Information Gathering)**
  - Tentative Execution: Week of January 12<sup>th</sup> (WOY 2021-02)
- **Possible OLA health checkout being discussed with OLA team for same timeframe (mid- to late-January)**
- **Transition to monthly Background Sequences beginning Nov. 23 (WOY 2020-48)**
- **Asteroid Departure trades currently in work for a departure between January and March 2021**

# Need for Retransmit? Need for Replay?

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*None*

# List of Unexpected Alarms, Watch Items, ISAs, PFRs

## Unexpected Alarms:

- None

## New or Updated Watch Items, ISA's and PFR's

ISA #	Date	Criticality	Type	Priority	Title	Detailed Description - Action Plan	Status
16775	10/29/2020	3	Ground minor	Normal	TAGCAMS: (10/29/2020) DVR2 Single Uncorrectable ECC error	During the Open SRC image transfer load and go sequence TAGCAMS reported several correctable ECC errors starting at approximately 19:38:20 UTC. At 20:37:55 a single uncorrectable ECC error was reported.	Draft
16759	10/26/2020	3	Ground minor	Normal	Init to dwn_fpt_def sent instead of dwn_fpt_nom_tb	At the beginning of the first pass on DOY 300, the ACE sent an init to dwn_fpt_def instead of dwn_fpt_nom_tb. There was no harmful result on the spacecraft, MM data was simply delayed until the proper init was sent shortly later.	In Progress
16732	10/21/2020	1	Spacecraft Major	High	Overachievement During TAG Sampling Impacts Mylar Flap and Sample Entrainment	Post-TAG, during the Sample Imaging campaign on 10/21/2020 (DOY 295), it was determined that the Mylar flap was prevented from closing as a result of sample entrained in the sampler head.	In Progress
16671	10/21/2020	3	Ground minor	Normal	Network Connection Temporarily Down Between MSA and JPL on 10/20 post-TAG	There was a 10-15 minute JPL network outage the evening of 10/20, and it is under investigation. This affected all connectivity including the VOCA comm boxes, station binding, and access to mmolmweb. Data Control confirmed that telemetry delivery was uninterrupted from the station and can be played back from the DSN CDR.	In Progress
16640	10/18/2020	3	Spacecraft Minor	Normal	TAGCAMS: (10/18/2020) NavCam1 Repeating Pattern	The OpNav team noticed that some of the TAGCAMS images contained a repeating pattern in the images. Other than the pattern, the team indicated the images seemed to have reasonable pixel values and were still usable.	In Progress
16605	10/12/2020	3	Ground minor	Normal	Incorrect Sequence Boundary During Week 2041 DKF Generation	he DSN was late configuring for the DSS-65 pass on DOY 286. The subsequent investigation discovered that the HGA pass was not present in the DKF/SOE at the station.	In Progress
16521	9/29/2020	3	Ground minor	Normal	Bad Drive for ORX/MVN LM/JPL Backup System	LM had an issue on one of the RAID's attached to mvnarchive, which is used for archiving/backing up MVN/ORX data. It started with a bad drive, but when LM replaced it, the new drive wasn't recognized.	In Progress
13071	1/30/2020	3	Ground minor	Normal	STL invalid CRCs problem caught in action	During setup for an interactive test, frames were being rejected by the FEDS for invalid CRCs. The Test Engineer discovered the problem and assembled a group of people to troubleshoot while frames were in the process of being rejected. Please reference ISA #6476 for details on the initial discovery of this problem.	Monitor

# Science Status and/or PI Status

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**One more Science Weekly this Thursday, Nov 5<sup>th</sup>.**

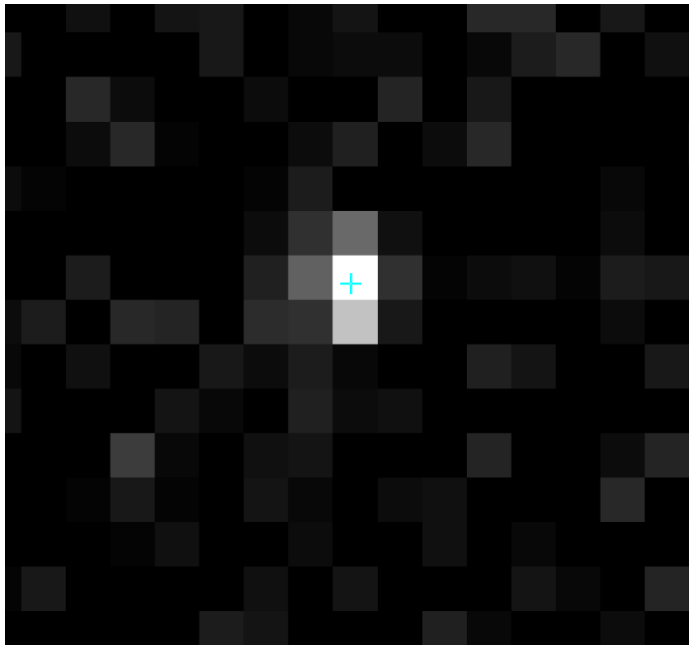
## Reminders, Go Backs...

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*Congratulations go out to the entire team for a successful TAG!*

*Now is the time to reflect and savor all of the teams' many accomplishments throughout the years!*

*And time for some well-deserved R&R!*



**PolyCam OpNav Image  
Observation Date: 2018-08-17  
“First Image of Bennu”**



**MapCam OpNav Image  
Observation Date: 2020-10-23  
“Last Image of Bennu”**

# Backup

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# Instrument Weekly Status

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- **OCAMS - Bashar - Exciting activities recently! But now OCAMS is off and nominal.**
- **OTES – Sara, on behalf of OTES - OTES is off and nominal**
- **OLA - Cam - OLA is still off and still nominal**
- **OVIRS - Amy - OVIRS is still off and still nominal**
- **REXIS – Sara, on behalf of REXIS - Still off and nominal too.**
- **TAGCAMS – off and nominal**



# SPOC Watch Item List

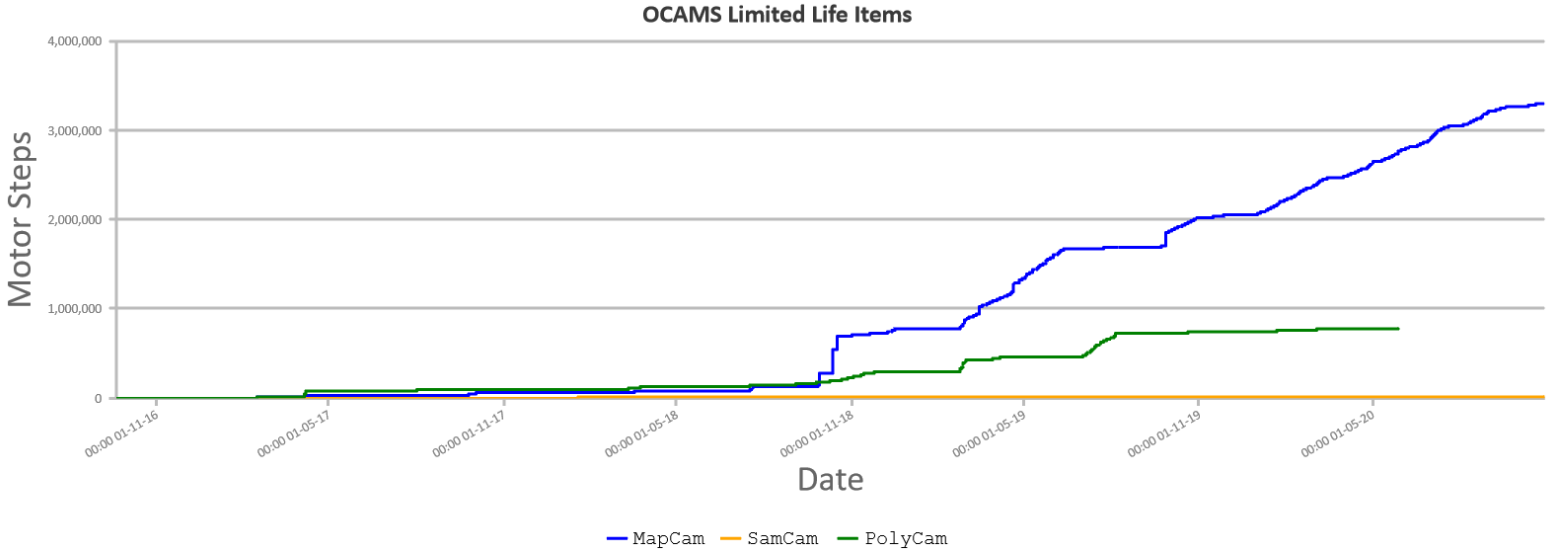
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- None, all watch items now closed.

# OCAMS Mechanism Life Tracking

	Launch (steps)	Flight (steps)	Total (steps)	NTE (steps)
MapCam	1,057,475	3,3063,61	4,363,836	5,000,000
SamCam	738,110	27,025	765,135	958,384
PolyCam	1,775,496	794,981	2,570,477	8,876,160

Status as of November 2, 2020



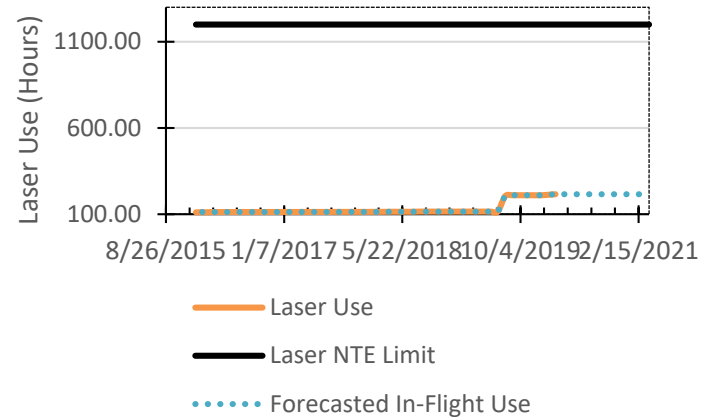
# OLA Limited Life Laser Tracking

	Launch (hours)	Flight (hours)	NTE Margin (hours)
LELT	110.70	215.35	1,085.01
HELT	212.50	333.79	983.80

Status as of June 15, 2020

LELT has failed

### OLA LELT Lifetime Margin



### OLA HELT Lifetime Margin

