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Rocket Report

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Sounding Rockets Program Office

Celestial Attitude Control System (CACS) test flight June 21, 2007

In Brief...

Discussions with Missile Defense Agency (MDA) regarding target launches are still ongoing.

Two ARAV target vehicles were successfully launched from Barking Sands, HI in June.

Athena launcher is being installed at Andoya Rocket Range in Norway. The launcher will be used to support Robertson missions in August, and Kletzing in December.

Four new sounding rocket missions were selected for flight.

Dr. Alan Stern, NASA AA for Science, visited Wallops.

Phil Eberspeaker attended the 18th European Space Agency (ESA) Symposium on Rocket and Balloon programs in June.

A SRPO/NSROC team set up an exhibit at the Mall in Washington D.C. for the Public Service Recognition Week.

The first test flight of the new CACS took place on June 21, 2007 from White Sands Missile Range. This new, NSROC developed, system provides increased pointing accuracy, multiple targets on a single mission, and uplink support. Currently scheduled operational flights of the CACS are McCandliss and Chakabarti, both flying in 2007.



Photo by Berit Bland

Charlie Kupellian testing the CACS in the lab at Wallops.

Robertson payloads to study Noctilucent clouds scheduled for launch in August



Photo by Berit Bland

Dr. Zoltan Sternovsky and Scott Knappmiller, University of Colorado, LASP with Bill Payne, NSROC working on 41.069.

Scientists from the U.S., Norway and Germany are flying rockets to study high altitude, Noctilucent clouds. These clouds normally occur at high latitudes during the polar summer making Andoya Rocket Range in Norway ideally suited as a launch site. The two week launch window is August 1st through the 15th. Read more on page 2.

Rocket ride to the clouds.

Need a ride to the clouds? Sounding Rockets provide a unique capability to take in-situ measurements in high altitude Noctilucent clouds (NLC). These night shining clouds occur mid-May through mid-August in the polar region, and are of interest because they act as indicators of conditions in the upper atmosphere.

Sounding rockets have been used several times in the past and will be deployed again this summer to carry payloads to study these polar phenomena .

Recently, scientists from Colorado University and University of Washington spent time at Wallops testing and integrating experiments to be flown from Andoya rocket range in Norway in August to study both Noctilucent clouds and another related atmospheric phenomenon, Polar Mesospheric Summer Echos (PMSE). The Principal Investigator is Dr. Scott Robertson/University of Colorado.

Two identical payloads, with instruments from both US and international organizations, will be flown on Terrier Mk12 - Improved Orion sounding rockets. The instruments include the Meteoric Aerosol Sampling Spectrometer (MASS), Colorado University, e-field booms, University of Washington, photometers, Stockholm University, and Faraday antennas, Graz University of Technology.

When the presence of NLCs and/or PMSE are confirmed by radar or lidar, the sounding rocket science team will



Photo by Berit Bland

Michael Shimogawa, University of Washington (left), Shane Thompson, NSROC (right) and Mick Sharpe, NSROC (back) store payload booms after successful deployments.

coordinate the rocket launches with the Aeronomy of Ice in the Mesosphere (AIM) satellite operations and the Norwegian/German, Existence and Charge state Of Meteoric dust grains in the middle Atmosphere (ECOMA) campaign

After lift-off the nose cone separates at 70 seconds after lift-off, at an altitude of about 67 km followed by the Orion motor separation a few seconds later. Science instruments; booms (aft and forward) and the photometer hood are deployed between 74 and 76 seconds. The NLC layer occurs at 82 - 95 km and most of the instruments will acquire data between the 80 km upleg and 80 km downleg portion of the flight. Photometer data is not acquired on the downleg.

When the payload science operations have been completed, at T + 120 seconds, a test of the NIACS with an integrated digital magnetometer will be performed. This allows for payload alignments to actual magnetic field lines.

About NLCs...

The following information about NLCs have been gathered from various web-sites. See list below.

NLCs were first seen in 1885, two years after the Krakatoa volcano eruption.

NLCs are the highest altitude clouds in the atmosphere and form in the mesosphere at approximately 80 km and above.

Until recently the clouds were visible only from latitudes above 50 degrees, now they can occasionally be seen as far south as Utah and Colorado.

The clouds are made of tiny ice crystals. Sunlight scattered by the crystals give the clouds their blue color.



NASA Photo ISS007-E-10974

Image of Noctilucent clouds taken from International Space Station over central Asia, July 27, 2003.

NLC web links

Science at NASA:
http://science.nasa.gov/headlines/y2003/18feb_nlc.htm

Noctilucent Clouds Observer's homepage:
<http://www.kersland.plus.com>

Aeronomy of Ice in the Mesosphere (AIM)
<http://aim.hamptonu.edu/index.html>

NASA's AIM site
http://www.nasa.gov/mission_pages/aim/index.html

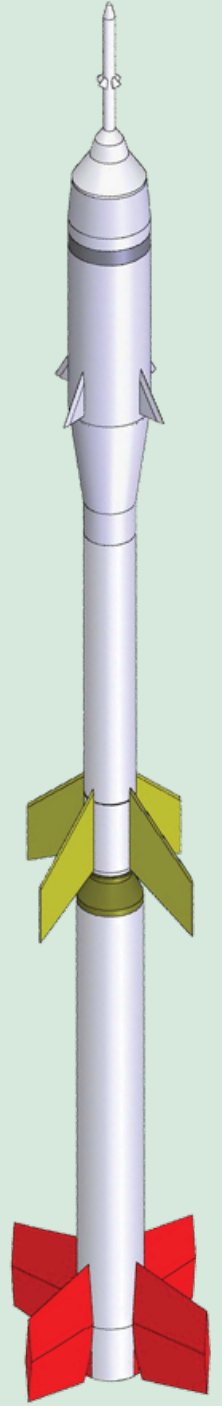
Spaceweather
http://spaceweather.com/nlcs/gallery2007_page1.htm

Aeronomy of Ice in the Mesosphere
<http://aim.hamptonu.edu/index.html>

In the Works...

Aero-acoustics testing of NASA's new Orion crew exploration vehicle may be done using suborbital rockets.

This solid works model shows the crew capsule with a Talos-Oriole motor combination.



More Orion information at:
http://www.nasa.gov/mission_pages/constellation/main/index.html

Seven high energy astrophysics grant procurement actions were initiated.

A Terrier-Brant-Patriot may be a viable BBX replacement. Demo flight may be conducted next year if things continue to look good.

The Automated Flight Safety System (AFSS) team, WFF and Marshall Space Flight Center, has inquired about suborbital test flights. The AFSS has flown on the SpaceX Falcon 1 vehicle.

The Sounding Rocket Working Group (SRWG) held its bi-annual meeting on June 21, 2007.

The electrical section is in production mode on the GLNMAC gyros. Several units have been delivered to outside customer.

Sounding Rocket Working Group briefing included updates on new avionics, high efficiency transmitter, and the new Star Tracker 5000.

Welded aluminium tubes, purchased some time ago, will be used as nose cone skirts on the Kletzing payloads.

The US Air Force Academy successfully launched a student built rocket from Wallops Island on May 21.

The Slotted Compression RAM Probe (SCRAMP) experiment, from NASA Ames, will fly with the Hypersonic Boundary Layer Transition experiment (Hy-BoLT) on a new ATK launch vehicle, ALV X-1 in 2007. Hy-BoLT is sponsored by NASA's Hypersonics Project.

Jet Propulsion Laboratory (JPL) representatives have attended meetings at NASA HQ to advocate use of suborbital platforms for future New Millennium opportunities.

Five new grant packages, four Geospace Science grant proposals and one for Solar and Heliospheric Sciences, are being reviewed by SRPO..

SRPO Reports

The fixture to hold the Hy-BoLT payload has been mounted to the vibration table in the T&E lab. Vibration testing and mass properties measurements will be performed on the payload.

Mesquito parts fabrication has started, with the machining of launch lugs. The interstage, fins and Dart fabrication is scheduled to start in July.

Poker '07 campaign post-flight analyses is nearing completion and shows that the majority of the hardware functioned properly.

Player, 41.055 Inflatable Recovery Vehicle Experiment (IRVE) environmental testing is underway. Launch of this unique aeroshell experiment, designed by NASA Langley and built by ILC Dover is scheduled for late August.

NSROC Reports

Rocket Report

- ① Bill built it! Bill Payne with the Maynard sphere assembled for the Public Service Week.
- ② Kenny Tull working on 41.055 Player payload liner.
- ③ Larry Mannel checking the McCandliss payload.
- ④ Herbie Haugh wiring the Kletzing payload. This is why it takes pros to launch rockets!
- ⑤ Bernita Justis with a different part of Kletzing.
- ⑥ Robertson 41.069 & 41.070 team with payload on vibration table.



Upcoming Launches – FY '07

July

36.220 UG McCANDLISS/JHU WS

August

41.069 UE ROBERTSON/UNIV. OF COLORADO NOR

41.070 UE ROBERTSON/UNIV. OF COLORADO NOR

41.055 NP PLAYER/LARC WI

September

36.218 UE EARLE/UNIVERSITY OF TEXAS–DALLAS WI

36.221 DS MOSES/NRL WS

36.225 UG CHAKRABARTI WS

TBD

36.223 UH MCCAMMON/UNIV. OF WISCONSIN WS

Your Space...

Working on something interesting, or have an idea for a story? Please let us know, we'd love to put it in print!

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Your Thoughts...

Question: "What is the best part of your job at Wallops?"

"A successful launch. It's great to experience the results of all the work going into building the payloads." – Joe McGee, Mechanical Technician/NSROC



Coming Up...

July 6 – Senator Mikulski visits Wallops

July 9 – VA Governor Tim Kaine visits Wallops