

National Aeronautics and
Space Administration

Goddard Space Flight Center
Wallops Flight Facility
Wallops Island, VA 23337-5099



Reply to Attn of: 810

March 6, 2000

TO: 810/Chief, Sounding Rockets Program Office

FROM: 810/Assistant Chief, Sounding Rockets Program Office

SUBJECT: Mission Initiation Conference (MIC) for Black Brant X 35.033 GE
(Pfaff/GSFC/Svalbard/Winter 2002)

The MIC for the subject mission was held on March 1, 2000 at NASA's Goddard Space Center's Wallops Flight Facility. The Principal Investigator is Dr. Robert Pfaff of the Goddard Space Flight Center (GSFC), Greenbelt, MD. Dr. Pfaff led the presentation and discussion of the experimenter's data packages for the Mission. These data packages are included as enclosures. The following individuals were in attendance:

<u>Name</u>	<u>Organization/Code</u>	<u>Responsibility</u>
Dr. Robert Pfaff	GSFC/696	Principal Investigator
Dr. James Clemmons	Aerospace Corp.	Project Scientist
David Knudsen	University of Calgary	Project Scientist
Jack Moore	University of Maryland	Project Scientist
Bobby Flowers	NASA/810	Chief, SRPO
John Brinton	NASA/810	SRPO
William Johnson	NASA/810	Grant Manager, SRPO
Frank Lau	NASA/810	SRPO
Emmett Ransone	NASA/810	MIC Chairman
Charles Lankford	NSROC	Electrical Engineering
Gordon Marsh	NSROC	Electrical Engineering
Thad Sterling	NSROC	Electrical Engineering
Charlie Kupelian	NSROC	Electrical Engineering
Mark Simko	NSROC	GNC
Steve Barthelson	NSROC	GNC
Bob Shendock	NSROC	Mechanical Engineering
Alfred Halter	NSROC	Vehicle Systems
Chris Bradley	NSROC	Vehicle Systems
Tracy Gibb	NSROC	Mission Manager
Randy Carrier	NSROC	Mission Operations
Tim Bowser	NSROC	Safety & QA
Ben Robbins	NASA/803	Ground Safety
Tony Kawano	CSC/803	Flight Safety

The 35.033 GE mission will be launched along a south to southwesterly azimuth from Ny Ålesund, Svalbard during the winter of 2002. The experiment will utilize an instrumented payload to study pulsations and Acceleration physics in the low altitude cusp and boundary layer region. The complete experiment will combine these in-situ measurements with ground based observations made by cameras, photometers, spectrometers, Magnetometers, and radars and a variety of satellite data as feasible.

Scientific Objectives

The overall objective of the proposed investigation is to study the electrodynamics of the cusp and boundary layer, the associated plasma processes within this region, and their effect on energy and momentum coupling between the cusp ionosphere and the magnetosheath/solar wind. This investigation will focus on three scientific areas of interest that include cusp pulsations, cusp/boundary layer electrodynamics, and acceleration processes in the cusp.

Mission Success Criteria

Comprehensive:

Apogee of at least 800 km.

All electric field booms deployed and 80% of the electric field and wave data (electric, search coil, and HF probe) telemetered to the ground.

All particle detectors deployed and successfully taking data with 80% of these data telemetered to the ground.

Data obtained from the GSFC fluxgate magnetometer and Langmuir probe with 80% successfully telemetered to the ground.

Data obtained from the French search coil and current loops with 80% successfully telemetered to the ground.

Pointing of the payload to within 5° of the magnetic field direction throughout at least 50% of the flight time above 100 km. No ACS firing for at least 50% of the time spent above 250 km.

Good trajectory and attitude data (with attitude knowledge determined to within 1°).

Rocket fired while the ground photometers are taking data.

Minimum:

Apogee of at least 650 km.

At least one pair of electric field booms deployed with usable electric and wave field data gathered and telemetered to the ground during at least 50% of the time above 100 km.

At least one particle detector successfully gathering good data and telemetered to the ground during at least 50% of the time above 100 km.

Pointing of the payload to within 5° of the magnetic field direction throughout at least 50% of the flight time above 100 km or good attitude data (within 3°) obtained throughout at least 50% of the time spent above 100 km.

Usable trajectory data (determined to within 10 km) obtained.

Responsibility

The Principal Investigator will be responsible for providing the detectors, experiment electronics, and associated Booms. This includes the deployment mechanism for the Energetic Particle Detector as supplied by the Aerospace Corporation. A complete description of this instrumentation is provided in the experimenter's data Package.

NASA, through the NSROC will be responsible for providing the payload nose cone, skins, and doors; internal Experiment support structures; separation and deployment systems; power systems; payload support Instrumentation including the telemetry system and timer and pyrotechnic events; ACS pointing system; payload Experiment electrical interfaces; and expendables for testing and field operations.

NASA, through the NSROC will be responsible for providing all required engineering designs and analyses Associated with their areas of responsibility; all rocket motors and associated vehicle support systems; payload Integration and environmental testing activities; and for conducting the field launch operations.

Actions

NSROC, in conjunction with the appropriate safety organizations, will investigate the feasibility of launching the proposed mission along a southern azimuth as desired by the Principal Investigator. They will investigate the ramifications of utilizing a MK-70 Terrier motor in the Black Brant X configuration. They will provide Dr. Clemmons with information regarding maximum cable sizing for a Horex 2801 cutter to be utilized in the Energetic Particle Detector deployment mechanism. A larger cable than previously used for this mechanism is desirable to compensate for the historical potential of Nihka motors developing spin rates at burnout in excess of the predicted 4 hz. They will also take the lead for coordination of any actions required to conduct operations utilizing the proposed Black Brant X vehicle with the existing launcher and shelter complex at Ny Ålesund, Svalbard.

The Principal Investigator will coordinate mission requirements with all co-investigators and refine the success criteria, in conjunction with the assigned NSROC payload team, to be consistent with the capabilities of the flight hardware systems available to support this mission.

A Requirements Definition Meeting (RDM) will be scheduled and conducted by the NSROC contractor within 45 days of the date of this MIC. Additional mission definition elements (including technical requirements and approach, schedule, and cost information) will be determined in the interim period, presented at the RDM, and documented in the Requirements Definition Meeting Memorandum (RDMM).

Emmett Ransone

Enclosure

cc: (w/o encl.)

452/Mr. S. Currier

500/Mr. S. Nelson

565/Mr. D. Price

567/Mr. A. Selser

571/Mr. J. Simpson

584/Mr. J. Pittman

803/Mr. C. Purdy

810/Mr. W. Johnson

810/Mr. F. Lau

810/Mr. N. Schultz, Jr.

NSROC/Mr. R. Cutler

NSROC/Mr. W. Koselka

NSROC/Mr. D. Krause

NSROC/Mr. F. Lewis

Attendees