

STATEMENT OF THE NASA SOUNDING ROCKET WORKING GROUP
REGARDING COMMERCIALIZATION OF SUBORBITAL LAUNCH SERVICES

We, the members of the working group, are aware of current sentiment in the U.S. Congress, as expressed in a hearing before the House Subcommittee on Space, Science, and Technology and in bills subsequently introduced, to extend the use of commercially-provided launch services to suborbital flights of scientific sounding rockets. The present suborbital program provides excellent service to the scientific community, with very reliable launch performance of vehicles at low cost to the taxpayer. We are concerned that transfer of launch service responsibilities to commercial vendors, if carried out as proposed in introduced legislation, would severely impact unique attributes of the suborbital program that make it an important element of NASA's scientific research program.

Our concerns include the following:

1. Any transfer of launch services to commercial vendors must provide a means for maintaining the current reliability of the program while also keeping the capabilities of launch systems needed to satisfy the program's scientific objectives. The suborbital program is unique among NASA programs in supporting the training of graduate students in the skills of space hardware design, construction, and use for scientific research, in contrast to programs in which data are obtained via operation of observatory-class instruments. The opportunity for hands-on training holds the risk that the scientific payload and therefore a student's personal investment in time and effort can be lost through a launch failure. The present suborbital program achieves high reliability not through expensive formal quality assurance requirements but through a cadre of people who have developed skills and experience with specific rocket motor systems over many years with the program.
2. The proposed vendor selection process by individual scientific investigators may not be executed in a short enough time to grasp a fleeting scientific opportunity, such as the appearance of a rare supernova or a passing comet, which may be present for only a month or two. In such a circumstance the scientific instrumentation often already exists, and the pacing item is the launch process itself. The current program provides the ability to respond rapidly because of its flexibility in scheduling and executing launches, as directed by NASA Headquarters, under such circumstances. This flexibility must be maintained.
3. A further concern is the potential for added costs that would likely be the result during the transition to commercially-supplied launch services. Maintaining the current flight rate and level of support for developing scientific instruments is especially critical to the continued successful involvement of graduate students in the program. We fear it is unrealistic to expect significant increases in funding that would be required for at least the first several years.

4. Scientific objectives in the suborbital program often require launches from sites remote from the continental U.S. Such operations may require negotiations with foreign governments and experience in establishing and supporting launch facilities under relatively primitive conditions. These circumstances may result in no responses by vendors or in excessively high charges to cover contingencies.

In addition to the unique operational characteristics that must be preserved, the group is also concerned over the potential impact of launch services procurement activity that will become the responsibility of each individual investigator and school. This will be a significant burden on university contract administrators, many of whom will not even have procurement experience in this area. It may also raise serious questions of university liability that could end the activity at many institutions. The universities that use the suborbital program are not profit making business enterprises that derive monetary gain from the use of scientific sounding rockets. The universities are selected and funded by NASA, and NASA is indeed the customer in these transactions. It is in NASA's best interest to expedite the universities' access to launch opportunities rather than placing added procurement burdens on these academic institutions.

NASA, via its Space Science Division within the Office of Space Science and Applications, has recognized the sentiment of Congress by initiating contact with potential vendors of launch services to assess their interests and capabilities. Steps are now being taken to identify those portions of the launch program where industry involvement and responsibility would provide the greatest likelihood of successful commercially-provided operations.

We support the efforts that NASA is currently making and urge that the agency be given the opportunity to demonstrate its approach to satisfying the will of the Congress without the need for specific legislation. We will be happy to assist NASA in defining a workable system incorporating greater industry involvement and urge Congress not to risk serious damage to the suborbital program by requiring commercialization of suborbital launch services before solutions to resultant problems can be worked out.

NASA Sounding Rocket Working Group

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COMMENTS BY THE WORKING GROUP REGARDING THE
POKER FLAT RESEARCH RANGE IMPROVEMENT AND MODERNIZATION PLAN

The NASA Sounding Rocket Working Group supports NASA Headquarter's concept of assigning priorities to projects included in the Poker Flat Research Range (PFRR) Improvement and Modernization Plan. We recognize that launch facilities must meet federal and state safety and environmental regulations and therefore support NASA's decision to give such efforts highest priority.

Equally as important as achieving the safe and accurate launch of the vehicle and payload is the making of a launch decision that will result in the achieving the desired scientific objectives. Data from down-range observatories, rapidly transmitted to the launch decision center, are an indispensable component of the launch operation at the PFRR for current investigations of ionospheric-magnetospheric interactions and must be implemented concurrently with range safety and environmental upgrades. Of the projects identified by NASA Headquarters as Priority 2, Downrange Observatories (on which we have several specific comments), backed by appropriate and reliable communication links, are the single most important item on the list. We urge that a basic system of two downrange observatories be upgraded to a Priority 1 project in NASA's evaluation.

Detailed Comments on the Implementation Plan

Our specific comments on the Implementation Plan are currently based on a reading of the November, 1991 version of the plan that was distributed by the Geophysical Institute of the University of Alaska to working group members. This version may not be consonant with an earlier version submitted by the Geophysical Institute to Headquarters, which we have not seen, but on which NASA's comments to Congress are currently based.

These comments are addressed to those facilities that are of primary importance to missions flying to high altitudes and requiring, for launches from PFRR, auroral activity over the north coast of Alaska. Such activity appears at low elevations as viewed from the PFRR so that such observations have limited usefulness. These same aurora will be at much higher elevations at the higher latitude locations of Barter Island and Arctic Village. Having two observatories at different locations also provides backup coverage, should one of them be clouded out or not in operating condition.

- 1) Identify only two sites, Barter Island and Arctic Village or its operational equivalent, as Downrange Observatories for the purpose of supporting high-flying rocket payloads
- 2) Implement Barter Island as the first downrange site to be upgraded

- 3) Implement Arctic Village (or its equivalent) as the second site to be upgraded
- 4) At each of these two downrange sites:
 - i) Improve the present riometer design to be less sensitive to noise
 - ii) Keep the all sky TV and ring core magnetometer capability outlined in the GI plan
 - iii) Add two-axis (X and Y) induction magnetometers having 5 Hz response
 - iv) Add meridian scan photometer for two wavelengths (6300 A and 4278 A) with three view directions: zenith and 45° on each side of zenith
 - v) Record all data at maximum resolution at the remote sites for later analysis. For launch decision, transmit data back to the PFRR launch decision-making site as rapidly as possible.
- 5) Provide real time magnetometer data from the Alaskan Magnetometer Chain sites of Fort Yukon, Inuvik, and Cape Parry to the launch decision-making site at PFRR to support real time operations

The Implementation Plan provided by the Geophysical Institute identified additional sites as downrange observatory facilities. The Working Group believes that these would be of lesser value in arriving at launch decisions and in providing supporting observations and therefore would place them in a Priority 3 level in NASA's ranking of project implementation.

These comments have not addressed potential requirements for ground-based support of suborbital flights at lower altitudes, i.e., studies of the upper mesosphere-thermosphere. This research area could become more active at the Poker range in the future and could benefit from certain optical facilities and VHF radar proposed by the Institute.