Exhibit 1
to
Application for use of the ACTS Spacecraft

Statement of Purpose and Proposed Activities

Overview

Ohio University as the Managing Member of the Ohio Consortium for Advanced Communications Technology (OCACT) hereby applies for authority to operate the communications payload of the NASA-owned ACTS spacecraft at 105° West for experimental use. The experimental license sought here complements the NTIA authorization granted to the NASA Glenn Research Center for the operation of ACTS telemetry, command, and control links as well as the limited use of ACTS and various ground terminals for NASA's internal use.

Background

The ACTS Spacecraft was retired from NASA use on May 31, 2000. Due to a lack of fuel for a super-orbit maneuver, ACTS was moved a final parking position at 105° West. In January, 2001, a Space Act Agreement[1] was signed between NASA, the Ohio Board of Regents, and Ohio University. The agreement gave Ohio University control over the ACTS communications payload, and a mandate for form OCACT to promote the use of ACTS in education and for the economic vitalization of the Ka band satellite communications industry.

OCACT assumed full control over the ACTS payload May 1, 2001. OCACT was formed using a series of bilateral agreements[2] between Ohio University and the consortium members. These members were[3]

1. Ohio University (Managing Member)
2. Andrew Corp. (Voting Member)
3. ComputerSat, Inc. (Voting Member)
4. The Naval Postgraduate School (Non-Voting Member)
5. The SchoolTone Alliance (Non-Voting Member)
6. The Space and Naval Warfare Systems Center, US Navy (Non-Voting Member)
7. Texas A&M University, (Voting Member)

In July, 2001, ComputerSat made public its intent to use ACTS to deliver for-fee services, leading to a series of discussions with the FCC regarding the proper license structure. It was agreed at that time that

1. NASA would seek NTIA authority to continue ACTS operations
2. ComputerSat would seek an operational license for the for-fee service
3. Ohio University would seek an experimental license to cover all other OCACT activities.

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[1] See Exhibit 2.
[2] See Exhibit 3 for a blank consortium agreement.
[3] In addition to the members listed, the US Air Force has contracted with Ohio University for the use of ACTS on an hourly basis, without becoming a consortium member.

Before any of these steps could be completed, a series of internal management disputes led to the withdrawal of ComputerSat from OCACT[4]. Absent the financial contribution to OCACT expected from ComputerSat, OCACT was unable to cover ACTS operating expenses from September, 2001 forward.

NASA chose to continue ACTS operations, and continued to use OCACT personnel to carry out the management functions the had been transferred to OCACT in May. However, the financial risk, and control over the ACTS and LET transmitters at that time effectively reverted to NASA. NASA did obtain NTIA approval for continued ACTS operation as agreed. ComputerSat, to our knowledge, never did start the operational licensing process. OCACT, in our analysis, lacked the legal standing at that time (post-September) to file for an experimental license, since Ohio University could not demonstrate legal control over the transmitters in question.

On January 11, 2002, Ohio University presented to NASA a plan to re-constitute OCACT and to resume financial responsibility for ACTS operations. NASA has accepted this plan beginning with an initial transfer of funds on February 15, 2002. At this time, Ohio University has enough confidence in these plans to submit this license request; we plan to finalize the needed agreements in February and resume ACTS payload operations on or about March 1, 2002.

Planned Activities

The plan presented to NASA establishes the following categories for the use of ACTS by OCACT:

1. Education of Engineering and Communication students. This is envisioned to be the primary use of ACTS, as stated in the Space Act Agreement. Students at OCACT member institutions will be able to study all aspects of spacecraft operations in unprecedented detail since OCACT can chose to vary operational strategies as needed[5]. Communication students will be able to install and operate experimental ground stations and examine the effect of link margins, spacecraft attitude, coding techniques, etc., on network performance. Student and faculty researchers will conduct protocol and ground station design research in support of future Ka band applications.
2. Service Development. OCACT members will use ACTS to test all aspects of new Ka band satellite network services. Tests will be conducted on antennas, hardware, software, ground station integration, network management systems, and any other aspect of a proposed system that requires testing on an actual Ka band space segment. These tests will be strictly experimental and will not involve actual service deployment. While any OCACT member would be free to request market trial authority in the future, there are no known plans for this type of activity, and no such authority is requested in this license application.
3. Content Delivery Demonstrations. From time to time, ACTS will be used to demonstrate the capabilities of a Ka band system with high-gain spot beams for

[4] All information available at Ohio University suggests that ComputerSat has ceased its business activities.
[5] Subject to the NASA requirement that the present parking orbit of the spacecraft must not altered; this restriction is included in the Space Act Agreement.

the symmetric delivery of broadband interactive content. These tests will typically be conducted in conjunction with the activities described in 1. and 2. above, i.e. they will mostly be part of a research project or a service development test. Demonstrations of this type are important since ACTS, like its planned commercial successors, combines the very high EIRP and G/T associated with spot beams, with the high bandwidth available in the Ka band. We can therefore show a combination of very high data rates with small terminal sizes unavailable on current CONUS coverage Ku band satellites. In those rare cases where these demonstrations are not part of other activities under 1. or 2. above, OCACT will take appropriate care to conduct these tests only if they do not constitute for-fee service, nor will these demonstrations be conducted when equivalent commercial services are readily available.

We reiterate here that no for-fee services are planned on ACTS under any license. All activities on ACTS will be experimental in nature. Given the legal structure of the agreements that give OCACT access to ACTS, we suspect that these activities could be conducted under NASA's NTIA authorization for the operation of ACTS. However, in keeping with the understanding reached last summer, we do hereby respectfully request that an experimental license be granted giving Ohio University FCC approval to conduct the activities described above[6].

Technical Notes

FCC Form 442 is not ideally suited to the description of a space station. In addition, since we are seeking a license for a system already in operation under NTIA authority, we do not have access to the level of design detail one would expect to have for ones own design. Data for this application was taken primarily from the NTIA authorizing documents and from various NASA publications. We believe this data to be accurate to the best of our ability to make such a determination. Exhibit 5 collects all notes pertaining to the specific fields in form 442.

[6] Exhibit 5 presents our analysis as to how the agreements in place now may be interpreted to give OCACT sufficient control to warrant the granting of an experimental FCC license separate from the NTIA authority given to NASA.

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List of Exhibits

1. This document
2. SAA
3. Consortium Agreement blank
4. A note on control over the transmitters in question, and on federal government users.
5. Technical data and clarifications by field in form 442.