SPOT and PEACESAT S-Band Interference Problem: Final Report and Recommendations

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This is an abstract of the final report submitted to the Center for Space Studies (CNES), France, and the National Telecommunications and Information Administration of the U.S. Department of Commerce.

In July 1995, PEACESAT was notified by the National Oceanic and Atmospheric Administration that a French low-earth orbiting (LEO) satellite, SPOT-2, was having problems that may be related to frequency conflicts with PEACESAT over Hawaii. PEACESAT was informed by NOAA that the problem started in March 1995 and was causing the French SPOT satellite to turn off and on.

The initial reaction from PEACESAT was that it was likely that it would not have been the cause of the problem since there was nothing different in its operations since March 1995. Further, it was not clear that transmissions from PEACESAT would turn off/on a satellite. However, as a follow-up to that notification, a teleconference was scheduled between Eric Aubel, Operations Manager for the SPOT spacecraft of the Center for Space Studies in France; and, Norman Okamura, Telecommunications Specialist of the Social Science Research Institute and Lori Mukaida, Director of PEACESAT.

During the teleconference, facilitated by Donald M. Topping, who speaks French, important information was obtained that was not previously communicated to PEACESAT. Specifically, Aubel informed PEACESAT of the frequency that the SPOT satellite utilized and stated that the problem was first noticed in October and November 1994. Aubel also informed PEACESAT that the satellite was not necessarily being turned on or off, but being “locked up,” possibly because of the frequency conflicts for interference. Based on the information provided, Okamura and Mukaida believed that there was a strong possibility that the PEACESAT E/F channel was the cause of the interference. There were two reasons for this suspicion. First, the SPOT receive frequency in S-Band was only .005 KHz from the PEACESAT F channel frequency. Second, “locking up” seemed plausible. Third, PEACESAT initiated a new data service for the Pacific Islands around October 1994 that required the data carriers in E/F channels to be used for data transmissions and to be left on for users to access.

A series of tests were recommended and agreed to by Aubel, Okamura, and Mukaida. The tests ultimately confirmed the suspicions that the E/F full-duplex links of PEACESAT were causing interference. The result was that a new series of frequencies were established for the PEACESAT Program and transmission frequencies were changed at all PEACESAT Sites, after extensive preparation and training.

The analysis and recommendations were accepted by both France and the United States. PEACESAT modified its frequencies, and the issue was resolved. PEACESAT also ceased transmissions in the frequencies requested by CNES during its launch of Telecom 2.