

**Intelsat License LLC  
Castle Rock, Colorado**

**NEC Cassegrain 12.5 Meter Earth Station**

**1. Background**

This Exhibit is presented to demonstrate the extent to which the Intelsat License LLC ("Intelsat") satellite earth station in Castle Rock, Colorado is in compliance with the Federal Communications Commission ("FCC") Report and Order 96-377. The potential interference from the earth station to U.S. Navy shipboard radiolocation operations ("RADAR") and the National Aeronautics and Space Administration ("NASA") space research activities in the 13.75-14.0 GHz band is addressed in this exhibit. The parameters for the earth station are:

Coordinates (NAD83):	39° 16' 38" N, 104° 48' 26.9" W
Satellite Arc Range for Earth Station:	Intelsat 5 at 33°W to 177°W
Frequency Band:	13.75-14.00 GHz
Polarizations:	Linear & Circular
Emissions:	850KF7D
Modulation:	FM/BPSK
Maximum Aggregate Uplink EIRP:	85dBW for all Carriers
<b>Transmit Antenna Characteristics</b>	
Antenna Size:	12.5 Meters in Diameter
Antenna Type/Model:	NEC Cassegrain
Gain:	63.68 dBi
RF Power into Antenna Flange:	21.32 dBW or -2 dBW/4kHz
Minimum Elevation Angle:	5.32° @ 101.75° Azimuth 5.03° @ 258° Azimuth
Side Lobe Antenna Gain	FCC Reference Pattern

Because the above uplink spectrum is shared with the Federal Government, coordination in this band requires resolution data pertaining to potential interference between the earth stations and both U.S. Navy Department and NASA systems. Potential interference from the earth station could impact the U.S. Navy and/or NASA systems in two areas. These areas are noted in GCC Report and Order 96-377 dated September 1996, and consist of (1) Radiolocation and Radio Navigation, (2) Data Relay Satellites.

Summary of Coordination Issues:

- a.) Potential Impact to Government Radiolocation (Shipboard Radar)
- b.) Potential Impact to NASA Tracking and Data Relay Satellite Systems ("TDRSS")

## **2. Potential Impact to Government Radiolocation (Shipboard Radar)**

Radiolocation operations ("RADAR") may occur anywhere in the 13.4-14.0 GHz frequency band aboard ocean-going U.S. Navy ships. FCC order 96-377 allocates the top 250MHz of this 600 MHz band to the Fixed Satellite Service ("FSS") on a co-primary basis with the radiolocation operations and provides for an interference protection level of  $-167 \text{ dBW/m}^2/4\text{kHz}$ .

The closest distance to the shoreline from Castle Rock, Colorado earth station is approximately 1350 km. Therefore, there should be no interference to the US Navy RADAR from the Castle Rock, Colorado facility due to distance and terrain between Castle Rock and the shoreline.

## **3. Potential Impact to NASA's Tracking and Data Relay Satellite System**

The geographic location of the Intelsat earth station in Castle Rock, Colorado is outside the 390 km radius coordination contour surrounding NASA's White Sands, New Mexico ground station complex. Therefore the TDRSS space-to-earth link will not be impacted by the Intelsat earth station in Castle Rock, Colorado.

The TDRSS space-to-space link in the 13.772 to 13.778 GHz band is assumed to be protected if an earth station produces and EIRP of less than 71 dBW/6MHz in this band. The 12.5 meter earth station antenna will not transmit in this band. Therefore, there will be no potential interference to the TDRSS space-to-space link.

## **4. Coordination Result Summary and Conclusions**

The results of the analysis and calculation performed in this exhibit indicate that compatible operation between the earth station at the Castle Rock, Colorado facility and U.S. Navy and NASA TDRSS space-to-earth and space-to-space links are possible. No interference to U.S. Navy RADAR or NASA TDRSS operations from the Castle Rock, Colorado site earth station should occur.