

Description of Request for Special Temporary Authority

GeoEye License Corp. (“GeoEye”) requests special temporary authority (“STA”) for up to 60 days to operate its non-geostationary satellite orbit (NGSO”) GeoEye-1 space station at an orbital altitude of 770 kilometers, which represents an 89 kilometer increase over the existing authorized altitude of 681 kilometers.¹ GeoEye-1 is one of two space stations comprising GeoEye’s non-geostationary satellite orbit (“NGSO”) Earth Exploration-Satellite Service (“EESS”) system authorized under Call Sign S2348.² GeoEye respectfully requests STA commencing on or before November 12, 2013 – the date on which the proposed GeoEye-1 altitude raise has been scheduled to take place.

This request for STA is preparatory to an application that will be submitted at the earliest available opportunity requesting modification of the NGSO EESS constellation under Call Sign 2348 in two respects: (1) to request permanent authority to operate GeoEye-1 within an altitude range of between 590 and 830 kilometers but at a nominal altitude of 770 kilometers; and (2) to consolidate into a single constellation the space stations authorized to GeoEye under Call Signs S2348 and S2144 and the NGSO EESS space stations authorized to DG Consents Sub, Inc. (“DG Consents”) under Call Sign S2129.³ GeoEye planned to submit this two-part modification in time to permit operations at the new nominal 770 kilometer orbital altitude by the scheduled November 12, 2013 implementation date. However, the nearly three-week long shutdown of the federal government unavoidably delayed that effort. Moreover, an erroneous “red light” designation of DG Consents as delinquent on an FCC regulatory fee payment – an error that took several days to correct – delayed the effort to seek consolidation of the GeoEye and DG Consents constellations. Consequently, GeoEye is submitting the instant request

¹ See 47 C.F.R. § 25.120(b)(2). Although the application for permanent modification of license to implement this change in orbital altitude has not yet been filed, GeoEye expects that such an application will be filed within the next 15 days.

² This application does not request any special temporary authority as to GeoEye-2, the second satellite comprising GeoEye’s NGSO EESS system. The license under Call Sign S2348 was granted in 1999 and initially authorized the operation of the OrbView-3 and OrbView-4 satellites. See SAT-LOA-19980203-00012. OrbView-3 was successfully launched in 2003 and de-orbited in 2010; OrbView-4 failed to reach its intended orbit and was never put into operation. In 2005, GeoEye requested and received modification of its license to authorize the operation of the OrbView-5 satellite, which was launched in 2008 and later renamed GeoEye-1. See SAT-MOD-20050511-00097. GeoEye is a subsidiary of DigitalGlobe Inc. (“DigitalGlobe”) following the merger of DigitalGlobe and GeoEye’s then-parent company, GeoEye Inc., earlier this year. See SAT-T/C-20120817-00139. The transfer of control was consummated on January 31, 2013.

³ Like GeoEye, DG Consents is a subsidiary of DigitalGlobe. To permit the planned consolidation to take place, an application will first be filed requesting the pro-forma assignment to the two EESS space station licenses under Calls Signs S2144 and S2348 from GeoEye to DG Consents.

for STA in advance of the forthcoming request for permanent authority/consolidation in order to meet the planned November 12, 2013 date for the orbital raise.

Operations of GeoEye-1 should not have any impact on other spectrum users. Indeed, the proposed increase in altitude will mean a reduction in power flux density (“PFD”) at the Earth’s surface. To the extent that the altitude change may make GeoEye’s EESS system more susceptible to interference, GeoEye commits not to claim any greater protection from harmful interference than it is entitled to claim with GeoEye-1 at an orbital altitude of 681 kilometers.

In support of its STA request, GeoEye provides the following technical specifications for the proposed new orbital altitude:⁴

Schedule S

The technical characteristics of the modified GeoEye-1 satellite are detailed in the Schedule S portion of this Application, a copy of which is included as Exhibit A hereto. GeoEye completed the Schedule S to the best of its ability and the limitations of the Commission’s software. However, certain data fields in Microsoft Access Database file would not accept GeoEye data, which, in turn, caused errors in the database. To rectify this, GeoEye was forced to input generic information into the electronic database file in order to maintain the integrity of the system. For example, tabs S6 (Service Area Characteristics) and S13 (Typical Emissions) are tailored to geostationary communication satellites and are not readily applicable to GeoEye’s low earth orbit remote sensing satellite. Generic data (e.g., zeroes) was therefore entered. Further, footnotes and comments are necessary to provide a complete and unambiguous data suite in some areas, such as tab S4 (Orbital Information). Any discrepancies between the data in the electronic version of Schedule S and the version included in the print out in Exhibit A should be resolved in favor of the print version in Exhibit A.

Link Budgets and Power Flux Density Calculation

The modified satellite’s link budgets and PFD limits at the surface of the Earth are included as Exhibit B hereto. The PFD at the Earth’s surface produced by GeoEye-1 data

⁴ GeoEye does not include a showing on the orbital debris mitigation elements of Section 25.114(d)(14) of the Commission’s rules as such information is not relevant for an STA grant of 60-days’ duration. The existing orbital debris mitigation showing on record for GeoEye-1 will be revised as necessary in the forthcoming application requesting permanent authority to operate GeoEye-1 within the new altitude range.

and telemetry transmissions satisfy the PFD limits in Table 21-4 of the ITU Radio Regulations.⁵

Predicted Gain Contours

All radio frequency communications between the modified GeoEye space station and the U.S. will be via Remote Ground Terminals in Prudhoe Bay, Alaska (Call Sign E040264), Fairbanks, Alaska (Call Sign E950499), and Dulles, Virginia (Call Sign E980375). Exhibit B hereto shows the predicted gain contours required by Section 25.114(d)(3) of the Commission's rules at these three U.S. earth station sites. The Exhibit B showing depicts the contours from a 90° elevation angle.

Public Interest Considerations

The grant of this application will serve the public interest by permitting GeoEye to optimize its NGSO EESS constellation by increasing the area coverage of GeoEye-1, which will provide for a more consistent "revisit" time (i.e., the time between imaging opportunities available to GeoEye-1). The orbit raise will also place GeoEye-1 in the same orbital altitude as WorldView-2, a NGSO EESS space station licensed to DG Consents under Call Sign S2129. Operations of these two satellites in the same orbital altitude will allow for better coordinated imagery collection and decreased revisit times. The optimized service overall will in turn result in higher operational efficiencies and reduced customer costs.

In summary, and on the basis of the information provided above, GeoEye respectfully requests, for a period of 60 days commencing on or before November 12, 2013.

⁵ Section 25.208 of the Commission's Rules does not contain PFD limits at the Earth's surface produced by emissions from NGSO EESS space stations operating in the 8025-8400 MHz band.

EXHIBIT A

**FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
(Technical and Operational Description)**

S1. GENERAL INFORMATION Complete for all satellite applications.

a. Space Station or Satellite Network Name: GEOEYE-1	c. Estimated Date of Placement into Service: 2/20/2009	i. Will the space station(s) operate on a Common Carrier basis? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
b. Construction Commencement Date: 9/29/2004	f. Estimated Lifetime of Satellite(s): 7 Years	j. Number of transponders offered on a Common Carrier basis: 0
c. Construction Completion Date: 1/3/2007	g. Total Number of Transponders: 0	k. Total Common Carrier Transponder Bandwidth: 0 MHz
d. Estimated Launch Date: 9/6/2008	h. Total Transponder Bandwidth (No. Transponders x Bandwidth): 0 MHz	l. Orbit Type: Mark all boxes that apply. <input type="checkbox"/> GSO <input checked="" type="checkbox"/> NGSO

S2. OPERATING FREQUENCY BANDS Identify the frequency range and transmit/receive mode for all frequency bands in which this station will operate. Also indicate the nature of service(s) for each frequency band.

Frequency Band Limits				e. T/R Mode	f. Nature of Service(s): List all that apply to this band
Lower Frequency (Hz)		Upper Frequency (Hz)			
a. Numeric	b. Unit (K/M/G)	c. Numeric	d. Unit (K/M/G)		
8025	M	8400	M	T	Earth exploration satellite service
2025	M	2110	M	R	Earth exploration satellite service

S3. ORBITAL INFORMATION FOR GEOSTATIONARY SATELLITES ONLY:

a. Nominal Orbital Longitude (Degrees E/W):			b. Reason for orbital location selection:		
Longitudinal Tolerance or E/W Station-Keeping:		c. Inclination Excursion or N/S Station-Keeping Tolerance:	Range of orbital arc in which adequate service can be provided (Optional):		
c. Toward West: _____ Degrees			_____ Degrees	E/W	
d. Toward East: _____ Degrees		_____ Degrees	f. Westernmost: _____	_____	
h. Reason for service arc selection (Optional):			g. Easternmost: _____	_____	

**FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)**

S14. Is the space station(s) controlled and monitored remotely? If YES, provide the location and telephone number of the TT&C control point(s). YES NO

Remote Control (TT&C) Location(s):

S14a. Street Address 1601 Dry Creek Drive, Suite 260			
S14b. City Longmont	S14c. County Boulder	S14d. State / Country CO	S14e. Zip Code 80503
S14f. Telephone Number 303-684-4000		S14g. Call Sign of Control Station (if appropriate)	

S14a. Street Address			
S14b. City	S14c. County	S14d. State / Country	S14e. Zip Code
S14f. Telephone Number		S14g. Call Sign of Control Station (if appropriate)	

S14a. Street Address			
S14b. City	S14c. County	S14d. State / Country	S14e. Zip Code
S14f. Telephone Number		S14g. Call Sign of Control Station (if appropriate)	

S14a. Street Address			
S14b. City	S14c. County	S14d. State / Country	S14e. Zip Code
S14f. Telephone Number		S14g. Call Sign of Control Station (if appropriate)	

S14a. Street Address			
S14b. City	S14c. County	S14d. State / Country	S14e. Zip Code
S14f. Telephone Number		S14g. Call Sign of Control Station (if appropriate)	

S14a. Street Address			
S14b. City	S14c. County	S14d. State / Country	S14e. Zip Code
S14f. Telephone Number		S14g. Call Sign of Control Station (if appropriate)	

**FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)**

S15. SPACECRAFT PHYSICAL CHARACTERISTICS

S15a. Mass of spacecraft without fuel (kg) 1722	Spacecraft Dimensions (meters)	Probability of Survival to End of Life (0.0 - 1.0)
S15b. Mass of fuel & disposables at launch (kg) 180		
S15c. Mass of spacecraft and fuel at launch (kg) 1902	S15f. Length (m) 6.15	S15i. Payload 0.933
S15d. Mass of fuel, in orbit, at beginning of life (kg) 173.5	S15g. Width (m) 2.38	S15j. Bus 0.769
S15e. Deployed Area of Solar Array (square meters) 18.2	S15h. Height (m) 4.09	S15k. Total 0.717

S16. SPACECRAFT ELECTRICAL CHARACTERISTICS

Spacecraft Subsystem	Electrical Power (Watts) At Beginning of Life		Electrical Power (Watts) At End of Life	
	At Equinox	At Solstice	At Equinox	At Solstice
Payload (Watts) (a)	318	(f) 318	(k) 318	(p) 318
Bus (Watts) (b)	1306	(g) 1306	(l) 1306	(q) 1306
Total (Watts) (c)	1624	(h) 1624	(m) 1624	(r) 1624
Solar Array (Watts) (d)	4559	(i) 4413	(n) 3911	(s) 3786
Depth of Battery Discharge (%) (e)	27 %	(j) 27 %	(o) 27 %	(t) 27 %

S17. CERTIFICATIONS

a. Are the power flux density limits of § 25.208 met?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> N/A
b. Are the appropriate service area coverage requirements of § 25.143(b)(ii) and (iii), or § 25.145(c)(1) and (2) met?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" type="checkbox"/> N/A
c. Are the frequency tolerances of § 25.202(e) and the out-of-band emission limits of § 25.202(f)(1), (2), and (3) met?	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input type="checkbox"/> N/A

In addition to the information required in this Form, the space station applicant is required to provide all the information specified in Section 25.114 of the Commission's rules, 47 C.F.R. § 25.114.

EXHIBIT B

GE1

370 Mbps DATA RATE DOWNLINK ANALYSIS Dulles, VA

Fo = 8.210 GHz OQPSK Modulation 770 km Altitude

DOWNLINK PARAMETERS:

Frequency	8.21	GHz
Orbit height in km	770	km
Local elevation above hor.	5	degrees
Data rate	370	Mbps
Bandwidth (baseband)	185	MHz
Spacecraft ant. EIRP at max scan	55.8	dBm
Slant range	2718.88	km
Ground ant. G/T	27.9	dB/K
BER	5.00E-04	
Required Eb/No (without coding)	8.3	dB
Hardware imp. BER loss	-2.5	dB

LINK CALCULATION:

TOTAL POWER TO

GROUND:

Satellite EIRP	55.8	dBm
Path loss	-179.4	dB
Total loss (rain, polarization, etc.)	-3.8	dB

RECEIVER SENSITIVITY:

Required Eb/No	8.3	dB
Available Eb/No	10.0	dB

DOWNLINK MARGIN 1.7 dB

ANTENNA SIZES:

Spacecraft Antenna

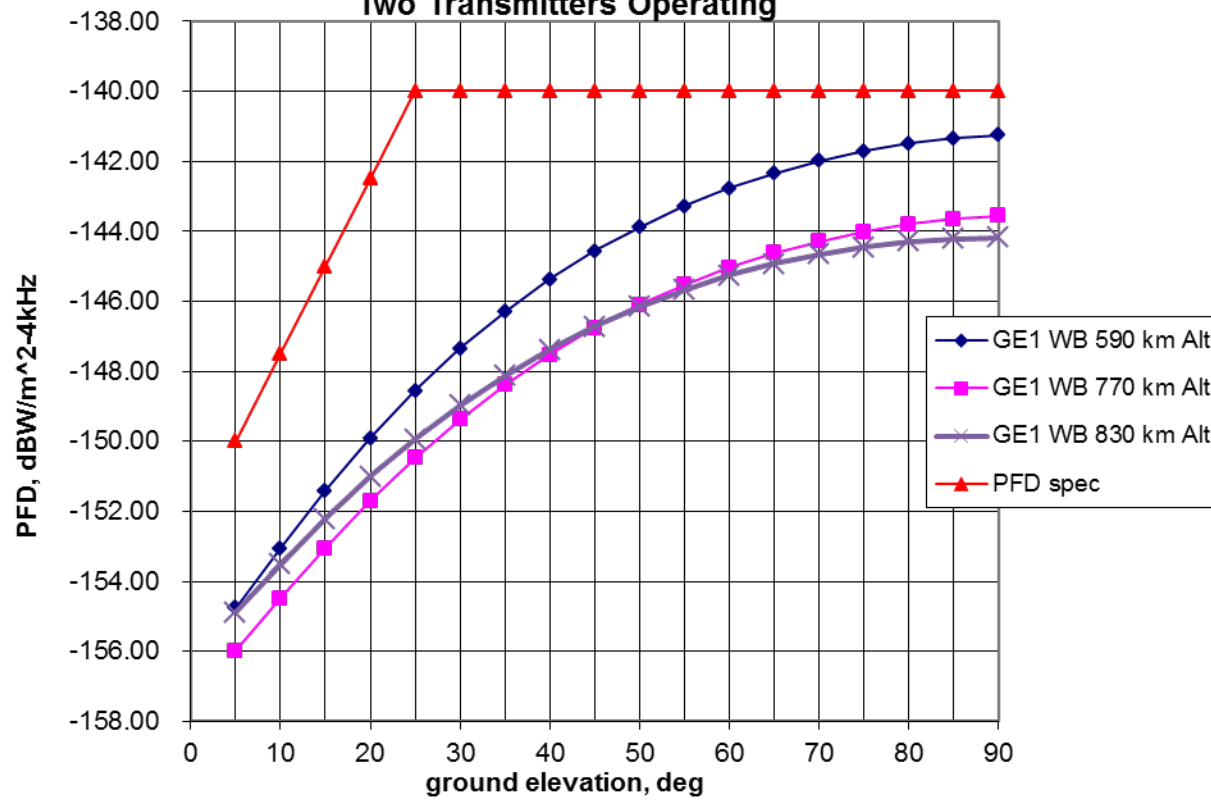
Segment

Spacecraft dish diameter	19.7	inches
Approx. HPBW	9.0	degrees
Gain of spacecraft antenna	26.0	dBic
Loss between HPA out and ant. output	-9.0	dB
Transmitter Po	7.5	watts
EIRP of satellite system	55.8	dBm

Ground Antenna Segment

Ground antenna	
G/T	27.9 dB/K
System noise temperature	171.6 K (referenced at aperture)
Directivity gain ground antenna	52.3 dBic
Ground dish diameter	5.4 meters
Approx. HPBW	0.5 degrees

**GE-1 Wideband PFD as a Function of Ground Elevation
Minimum, Nominal, and Maximum Altitudes
Two Transmitters Operating**



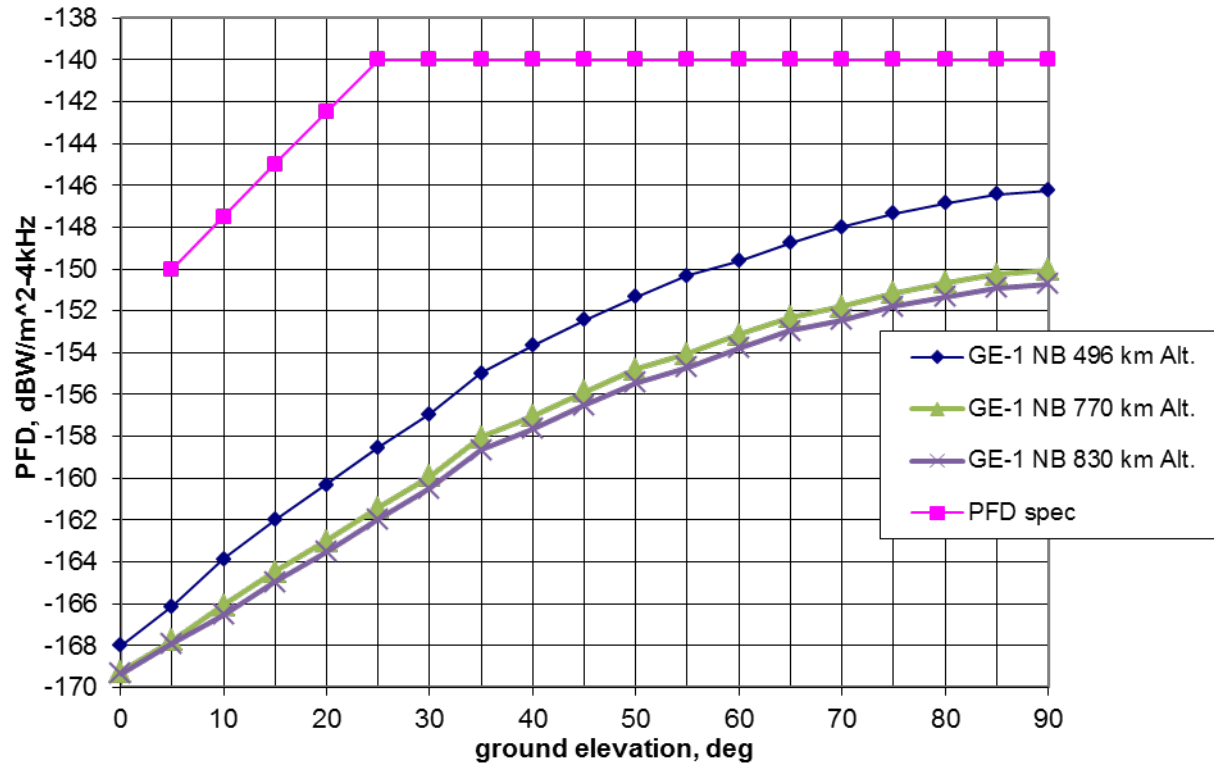
GE-1**TELEMETRY DOWNLINK****NADIR ANTENNA**

FREQUENCY	8.394 GHz	WAVELENGTH	0.04 METERS
POWER	2.0 WATTS	5 DEG SLANT RANGE	2718.88 KM
ALTITUDE	770.0 KM	DATA RATE	59.7 KBPS
		MARGIN DATA	4.5 dB

ANTENNA: NADIR

PARAMETER	UNITS	VALUE
TOTAL TRANSMIT POWER	dBm	33.0
PASSIVE LOSS	dB	-15.5
S/C ANTENNA GAIN > +/-108 DEG	dBic	0.0
FREE SPACE DISPERSION LOSS	dB	-179.6
ATMOSPHERIC LOSS	dB	-2.9
GROUND STATION G/T	dB/K	27.6
TOTAL RECEIVED POWER/T	dBm/K	-137.4
BOLTZMANN CONSTANT	dBm/Hz-K	-198.6
TOTAL RECEIVED POWER/KT	dB-Hz	61.2
DATA CHANNEL		
DATA POWER/KT	dB-Hz	61.2
INFORMATION RATE 32 KBPS	dB-Hz	47.8
AVAILABLE S/N	dB	13.4
REQUIRED Eb/No 1.00E-6 BER	dB	13.1
CODING GAIN	dB	4.2
AVAILABLE SIGNAL MARGIN	dB	4.5

GE-1 Narrowband PFD Performance as a Function of Ground Elevation Angle
Minimum, Nominal, Maximum Altitudes



GE-1**COMMAND****UPLINK**

OMNI ANTENNA NOMINAL

DigitalGlobe

FREQUENCY	2.0920000	GHz			
UPLINK	51.3	dBW EIRP	WAVELENGTH	0.14	METERS
			5 DEG SLANT		
ALTITUDE	770.0	KM	RANGE	2718.9	KM
			DATA RATE	64	KBPS
CMD MOD INDEX	1.57	RAD	MARGIN	5.7	dB

ANTENNA: OMNI NOMINAL +/- 75 DEG

PARAMETER	UNIT	VALUE
UPLINK EIRP	dBW	51.3
FREE SPACE DISPERSION LOSS	dB	-167.5
POINTING LOSS	dB	0.0
ATMOSPHERIC LOSS	dB	-1.1
S/C ANTENNA GAIN < +/- 75 DEG	dBi	-10.0
POLARIZATION LOSS	dB	-0.5
S/C LINE LOSS	dB	-4.7
TOTAL S/C RECEIVED POWER	dBm	-102.6
SYSTEM TEMPERATURE	dB-K	29.7
G/T	dB/K	-39.7
RECEIVED C/N0	dB-Hz	66.4
		1.00E-
REQUIRED BIT ERROR RATE		06
RECEIVED EB/N0	dB	18.3
IMPLEMENTATION LOSS	dB	-2
REQUIRED EB/N0	dB	10.6
MARGIN	dB	5.7

EXHIBIT C

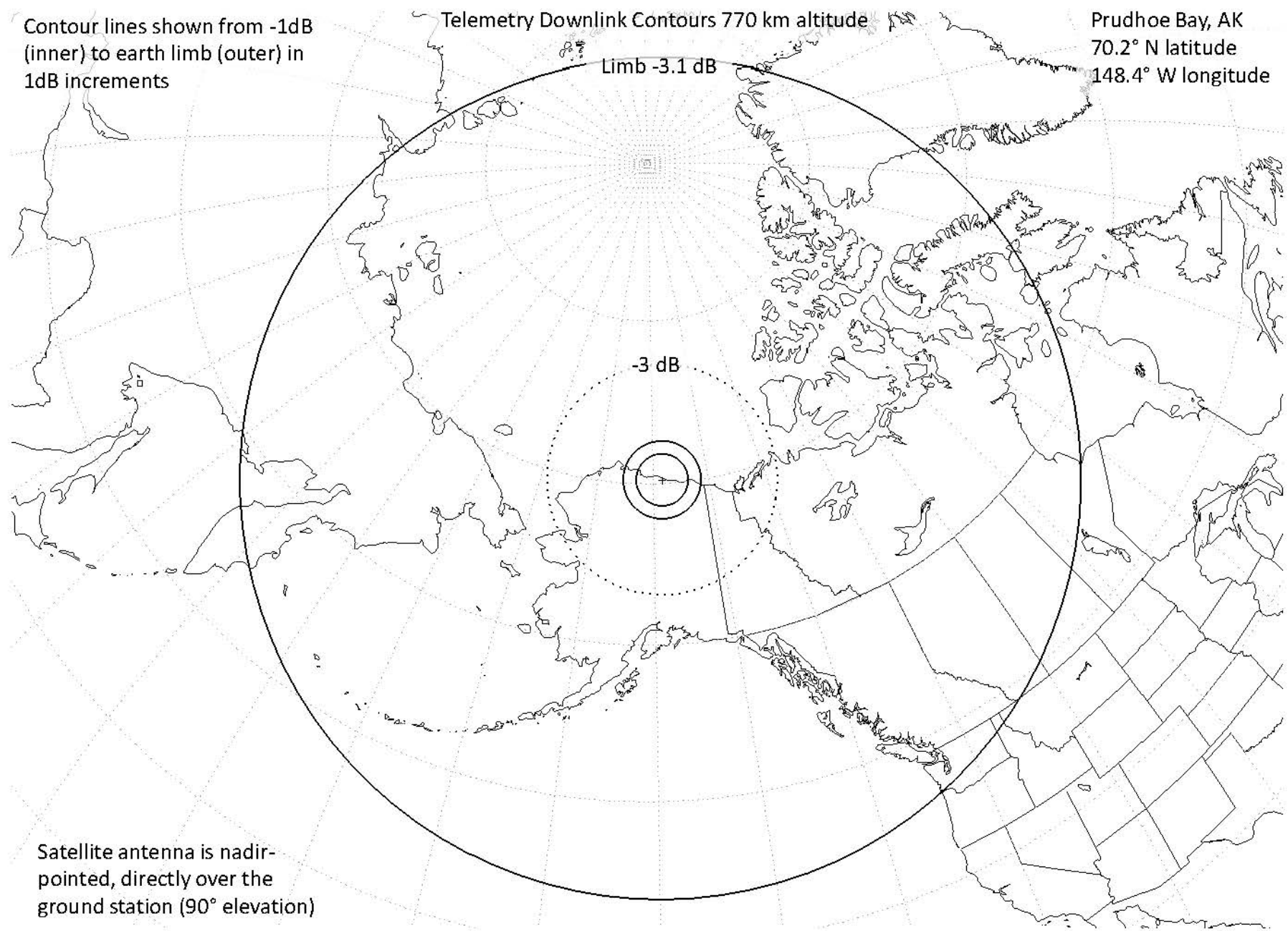
Contour lines shown from -1dB (inner) to earth limb (outer) in 1dB increments

Telemetry Downlink Contours 770 km altitude

Prudhoe Bay, AK
70.2° N latitude
148.4° W longitude

Limb -3.1 dB

-3 dB



Satellite antenna is nadir-pointed, directly over the ground station (90° elevation)

Contour lines shown from -1dB (inner) to earth limb (outer) in 1dB increments

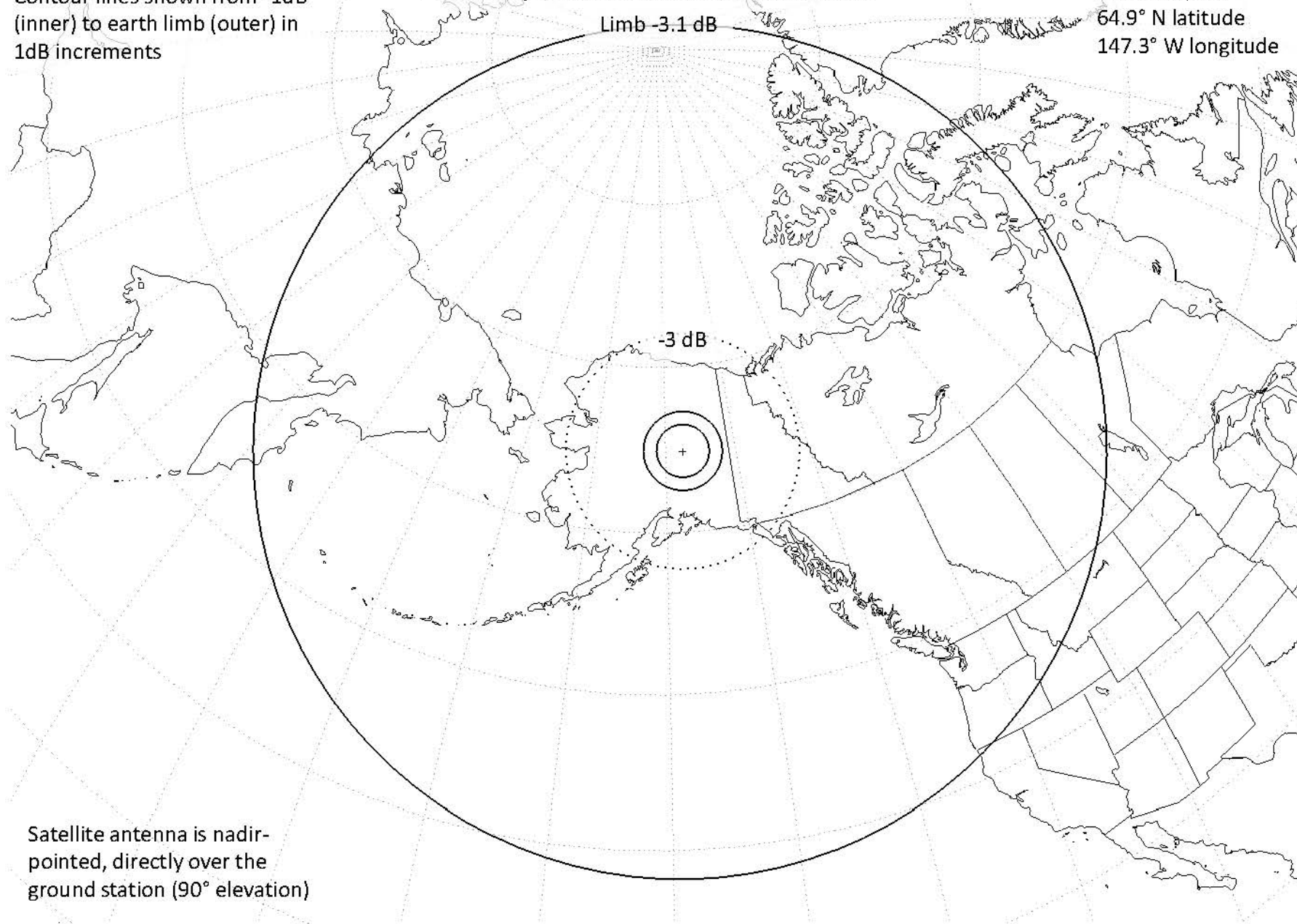
Telemetry Downlink Contours 770 km altitude

Fairbanks, AK
64.9° N latitude
147.3° W longitude

Limb -3.1 dB

-3 dB

Satellite antenna is nadir-pointed, directly over the ground station (90° elevation)



Contour lines shown from -1dB (inner) to earth limb (outer) in 1dB increments

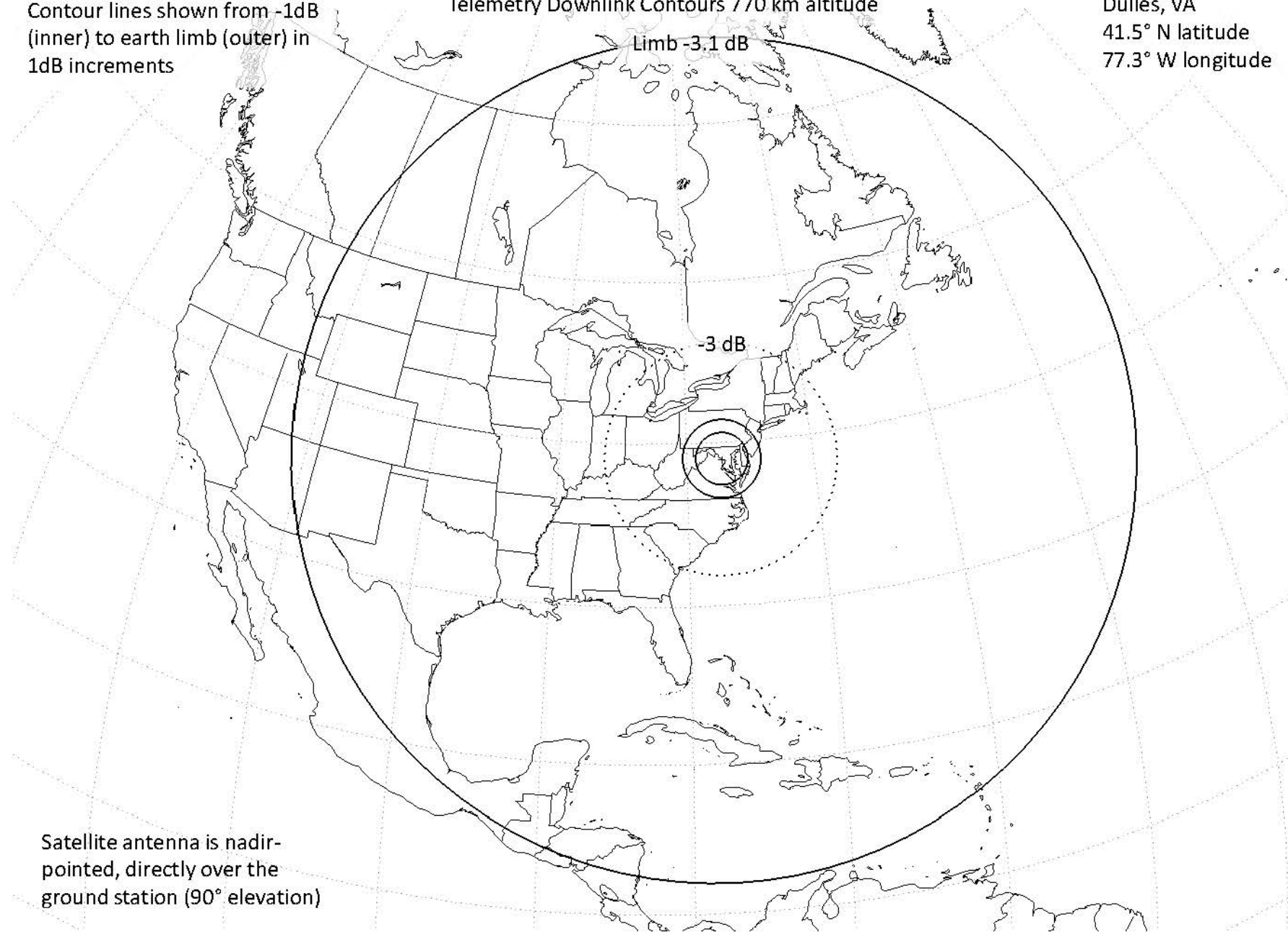
Telemetry Downlink Contours 770 km altitude

Dulles, VA
41.5° N latitude
77.3° W longitude

Limb -3.1 dB

-3 dB

Satellite antenna is nadir-pointed, directly over the ground station (90° elevation)



Payload Downlink Contours 770 km altitude

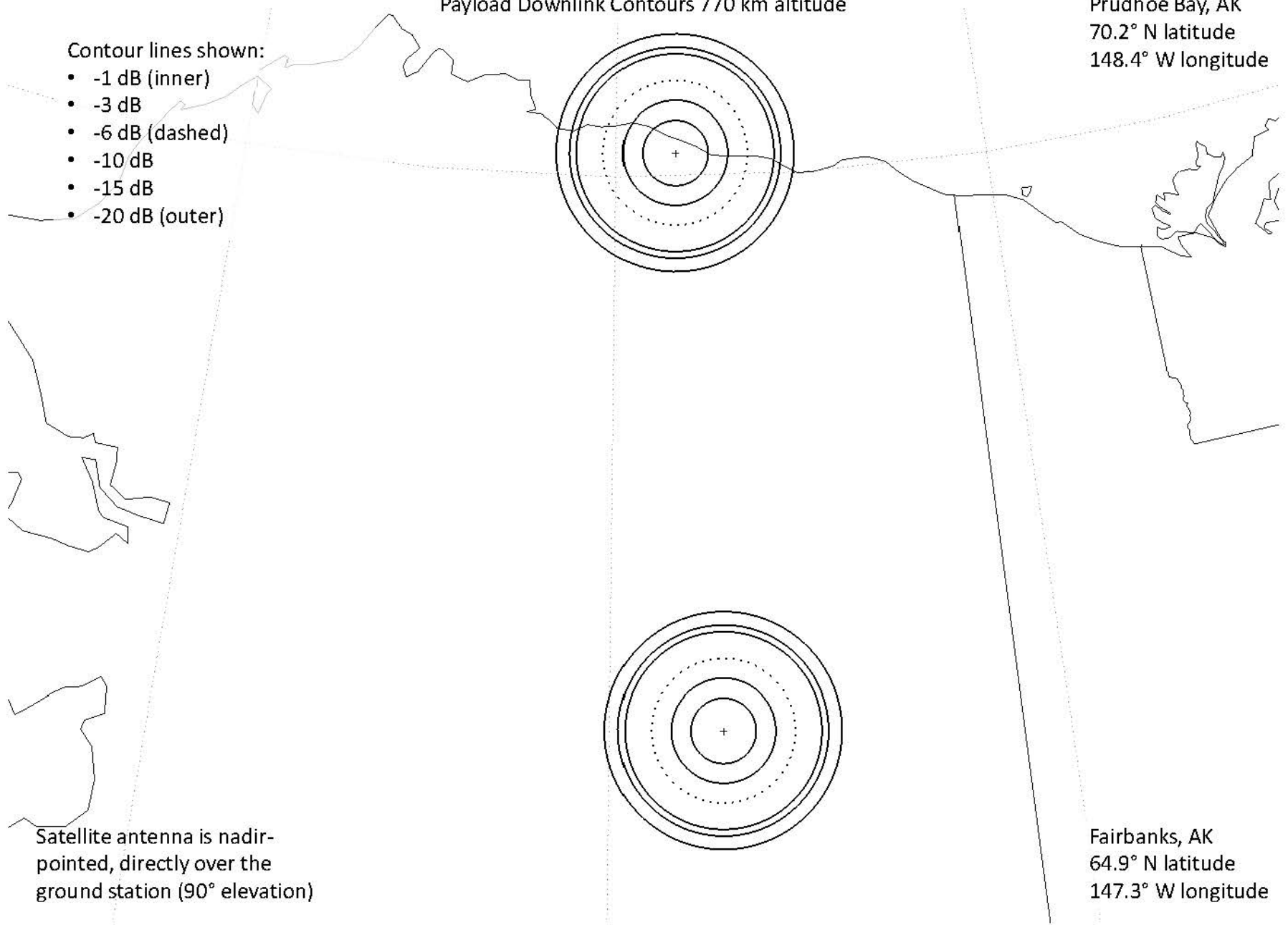
Contour lines shown:

- -1 dB (inner)
- -3 dB
- -6 dB (dashed)
- -10 dB
- -15 dB
- -20 dB (outer)

Prudhoe Bay, AK
70.2° N latitude
148.4° W longitude

Fairbanks, AK
64.9° N latitude
147.3° W longitude

Satellite antenna is nadir-pointed, directly over the ground station (90° elevation)

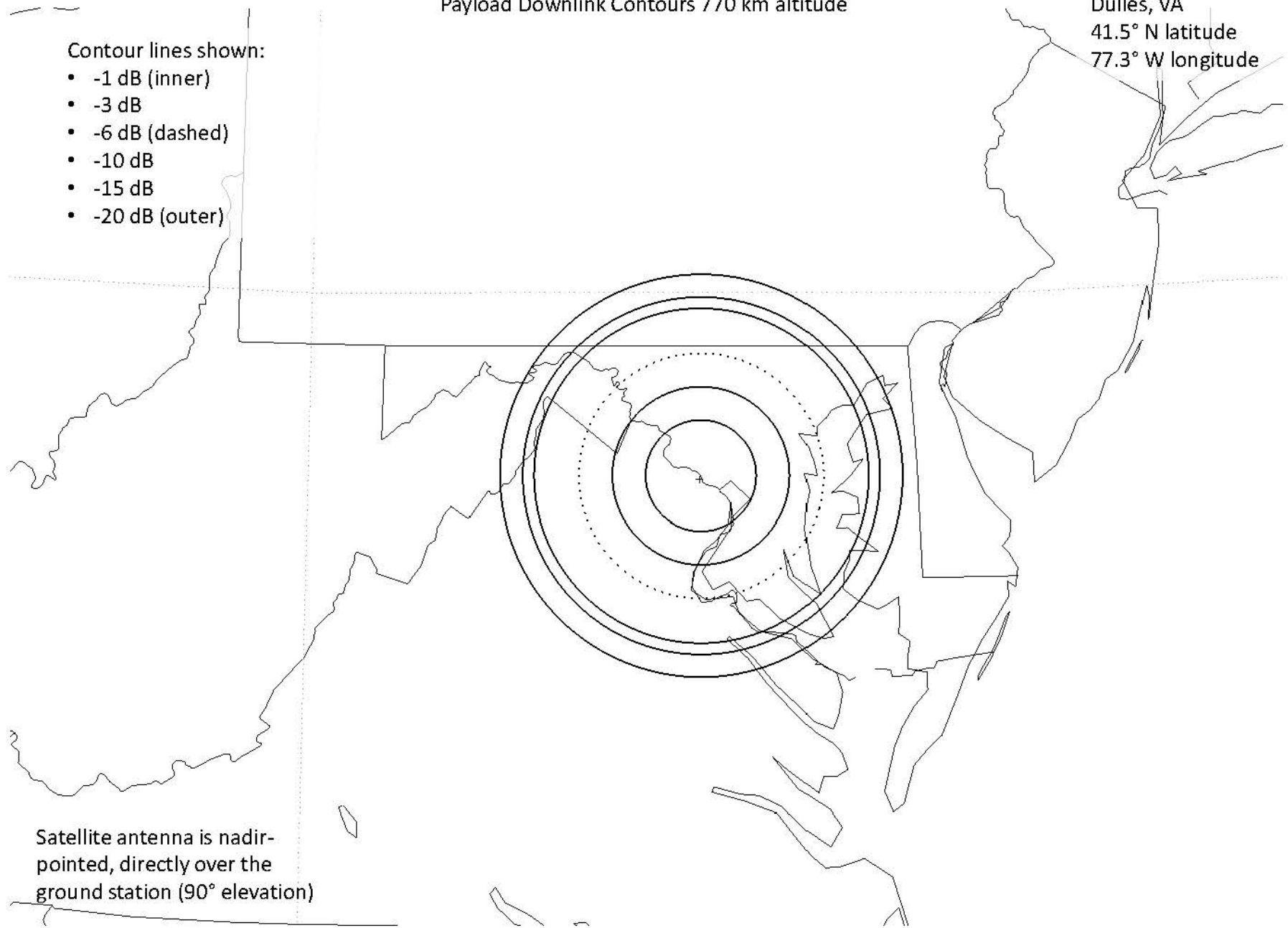


Payload Downlink Contours 770 km altitude

Dulles, VA
41.5° N latitude
77.3° W longitude

Contour lines shown:

- -1 dB (inner)
- -3 dB
- -6 dB (dashed)
- -10 dB
- -15 dB
- -20 dB (outer)



TECHNICAL CERTIFICATE

I, Jeff Culwell, hereby certify, under penalty of perjury, that I am the technically qualified person responsible for the preparation of the engineering information contained in the technical portions of the foregoing request for special temporary authority and the related attachments, that I am familiar with Part 25 of the Commission's Rules, and that the technical information is complete and accurate to the best of my knowledge and belief.

Jeff Culwell /s/
Jeff Culwell
VP Operations
DigitalGlobe, Inc.

Dated October 31, 2013