New York Broadband LLC

September 8, 2020

Mr. Jay Whaley
International Satellite Division Chief
Federal Communications Commission 445
12th street, S.W.
Washington, DC 20554
Jay.Whaley@fcc.gov

CC: Karl.Kensinger@fcc.gov,
Samuel.Karty@fcc.gov

Subject: Response to FCC Questions on Asiastar Drift Application Dated September 4, 2020

Dear Mr. Whaley:

Silkwave Africa LLC ("Silkwave") is submitting the response to the questions from the FCC below.

Questions & Responses:

1. Please provide the estimated remaining operational lifetime of the satellite, at the 21 EL orbital location. See 47 CFR § 25.114 (c) (10).

   Response:
   Based on the Intelsat July Monthly Health Report, the satellite operations contractor, Asiastar is current predicted End of Life / Operational Mission Life (EOL/OML) to be in March 2026.
   If the extension of 6 months for the drift is granted, the maneuver from 105E to 21E the OML expended would be about 0.5 years and the Asiastar would be expected to operate another 4.8 years minimum at 21E longitude.

2. In the Engineering Statement document, page 8, a X1.gxt GIMS file is referenced. This file was not included in the submission. Please identify the nature of this document, and if required, submit the document.

   Response:
   Silkwave is attaching the "X1.GXT" file for the Global X-Band Uplink. As the beam is a view of the earth at 21E, a pictorial was previously provided as a reference.

3. There are two transmit beams identified in the Schedule S as "TM1" and "TM2" that do not appear to have corresponding GIMS plots. Please provide the GIMS plots or identify which of the already submitted plots these apply to.

Response:
Silkwave is attaching the “Asiastar L-Band TM.GXT” data file for the telemetry downlink beam. The telemetry downlink is a global beam transmitted through a dedicated horn and TM1 and TM2 are two frequencies through the same beam.

4. Will there be sufficient fuel remaining following the relocation to 21 EL to retire the satellite consistent with IADC guidelines and ITU Recommendations? Please provide the fuel reserve figure as required per 47 CFR § 25.114 (d) (14) (iv).

Response:
The total reserve is 13.01 kg with 3.2 kg of fuel allocated for 300 km deorbit altitude. The breakdown is 3.2 (deorbit) + 9.81 kg (non-usable + uncertainties + gauging correction) equates to 13.01 kg total reserve.

5. Please provide the calculations performed for deriving the disposal altitude as required per 47 CFR § 25.114 (d) (14) (iv).

Response:
Per the Commission’s Rules, the formula used for the calculation of the disposal altitude is:

$$36{,}021\ \text{km} + (1000 \cdot C_R \cdot A/m)$$

GEO Altitude	35786.06 km
Deorbit Cr	1.1

SC/ID	Effective Deorbit A/M: (m^2/kg)	Deorbit Altitude Above GEO (km)	
		FCC Proposal (Section 25.282)	Intelsat Current Reserve
Asiastar	0.059	299.8	300

As shown, the reserved fuel allocated for disposal maneuver exceeds the FCC requirements.

6. Please provide specifics regarding the actions taken and probability that the space station will become a source of debris as a result of collisions with large debris as required per 47 CFR § 25.114 (d) (14) (iii).

Response:
As the contractor for the operations and a global operator, Intelsat follows the industrial best practices for space operations to ensure safety of flight. Intelsat maintains an active user agreement with the US CSpOC (Combined Space Operation Center) for daily routine close approach screenings with our upload ephemeris data (including the effects of maneuvers) and the US 18th Space SP (special perturbation) data derived from the US

observation network. In addition, Intelsat also works with CSpOC for relocation and during LEOP missions for advance planning screening to identify and mitigate any potential close approaches. Intelsat is also one of the founding members of the commercial Space Data Association (SDA) which is a non-profit organization to work with individual member operators for data exchange to improve safety of flight. Intelsat receives routine close approaches from SDA based on members ephemeris data. Intelsat has also worked with known operators to coordinate all the flybys to avoid RF interference as well as close approaches. This include relocations of Intelsat satellites as well as relocations performed by other operators.

7. Please certify that you meet the power flux density limits for unwanted emissions from geostationary space stations at radio astronomy stations as required by Resolution 739 (Rev. WRC-15) (footnote 5.208B in the table of allocations.)

Response:

The Power Flux Density for the Asiastar satellite is summarized below. The limits are higher than specifications in Resolution 739.

Space Service	Space Service frequency band	Radio astronomy frequency band	Single dish, continuum observations		Single dish, spectral line observations		VLBI		Condition of application: the API is received by the Bureau following the entry into force of the Final Acts of:
			PFD	Reference bandwidth	PFD	Reference bandwidth	PFD	Reference bandwidth	
	(MHz)	(MHz)	(dBW/m^2)	(MHz)	(dBW/m^2)	(kHz)	(dBW/m^2)	(kHz)	
Asiastar performance	1467-1492	1400-1427	-135	27	-150	20	-150	20	

It should be noted that both Afristar-1 and Asiastar spacecraft are identical in design and manufactured by the same manufacturers, team of Matra Marconi and Alcatel, under the same contract. They were launched in 1999 and 2000 respectively and operated without any reported interference in orbit for many years. The satellite hardware was manufactured with protection to radio astronomy stations as best as possible for the technology at that time.

In reviewing the ITU Resolution 739, it should be noted that the AFRIBSS and ASIABSS filings are exempt from the Radio Astronomy requirement per the Condition in the right column of Table 1-1. The Afristar-1 satellite pertained to the AFRIBSS filing, whereas the Asiastar spacecraft operates under the ASIABSS filing. Please see the Table 1-1 from the Resolution 739 in the Appendix 1 for reference.

Please do not hesitate to contact the undersigned should you have any questions.

Respectfully submitted,

Michael Do
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Appendix 1

TABLE 1-1

pfd thresholds for unwanted emissions from any geostationary space station at a radio astronomy station

Space service	Space service frequency band	Radio astronomy frequency band	Single dish, continuum observations		Single dish, spectral line observations		VLBI		Condition of application: the API is received by the Bureau following the entry into force of the Final Acts of:
			pfd[(1)]	Reference bandwidth	pfd[(1)]	Reference bandwidth	pfd[(1)]	Reference bandwidth	
	(MHz)	(MHz)	(dB(W/m²))	(MHz)	(dB(W/m²))	(kHz)	(dB(W/m²))	(kHz)	
MSS (space-to-Earth)	387-390	322-328.6	−189	6.6	−204	10	−177	10	WRC-07
BSS MSS (space-to-Earth)	1 452-1 492 1 525-1 559	1 400-1 427	−180	27	−196	20	−166	20	WRC-03
MSS (space-to-Earth) MSS (space-to-Earth)	1 525-1 559 1 613.8-1 626.5	1 610.6-1 613.8	NA	NA	−194	20	−166	20	WRC-03
RNSS (space-to-Earth)	1 559-1 610	1 610.6-1 613.8	NA	NA	−194	20	−166	20	WRC-07
BSS FSS (space-to-Earth)	2 655-2 670	2 690-2 700	−177	10	NA	NA	−161	20	WRC-03
FSS (space-to-Earth)	2 670-2 690	2 690-2 700 (in Regions 1 and 3)	−177	10	NA	NA	−161	20	WRC-03
	(GHz)	(GHz)	–	–	–	–	–	–	
BSS	21.4-22.0	22.21-22.5	−146	290	−162	250	−128	250	WRC-03 for VLBI, and WRC-07 for other types of observation

NA: Not applicable, measurements of this type are not made in this frequency band.

(1) Integrated over the reference bandwidth with an integration time of 2 000 s.