Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Satélites Mexicanos, S.A. de C.V.	)	File No.
Petition for Declaratory Ruling	)	Call Sign S2871
To Add Satmex 8 to the	)	
Permitted Space Station List	)	

PETITION FOR DECLARATORY RULING

Satélites Mexicanos, S.A. de C.V. ("Satmex"), a Mexican corporation, respectfully files this Petition for a Declaratory Ruling pursuant to Section 25.137 of the Commission's Rules to add the Satmex 8 at 116.8ºW to the Permitted Space Station List. The Satmex 8 satellite operates in C- and Ku- band frequencies and will replace the Satmex 5 satellite.[1]

The Commission allows non-U.S.-licensed satellites to be included on the Permitted Space Station List upon demonstrating compliance with Sections 25.114 and 25.137 of the Commission's Rules, assuming there are no other public interest concerns. This Petition and its associated attachments, including FCC Form 312, provide the required information for the FCC to determine that the Satmex 8 satellite meets the requirements of Sections 25.114 and 25.137 of the Commission's Rules, and is thus eligible to be on the Permitted Space Station List. [2]

[1] The Satmex 8 satellite is constructed and is scheduled to be launched by International Launch Services during the fourth quarter of 2012. Once the Satmex 8 satellite has been brought into use, the Satmex 5 satellite will be moved to the 114.9ºW orbital location. Satmex will separately file information relating to the relocation of the Satmex 5 satellite with the Commission.

[2] This submission is the refiling of a similar petition filed on July 27, 2012, but dismissed by the Commission. *See* File No. SAT-PPL-20120727-00122 (Call Sign S2871); *Letter from Robert G. Nelson, Chief, Satellite Division, International Bureau, to Carlos M. Nalda, Counsel for Satmex*, DA 12-1356 (August 17, 2012) ("*International Bureau Letter*"). In the context of the prior filing, it appears that a required attachment was not successfully uploaded to the Commission's IBFS web site. This submission includes a regulatory compliance index (Attachment A) to highlight the location of information

I. REQUIREMENT OF SECTION 25.114 AND 25.137 OF THE COMMISSION'S RULES

The Satmex 8 satellite is licensed by Mexico and will be located at the 116.8º W orbital location. As the Commission is aware, the 116.8ºW orbital location is assigned to Mexico in accordance with the Trilateral Agreement for C- and Ku-band frequencies among Canada, Mexico and the United States ("Trilateral Agreement"), and subsequent bilateral agreements between Mexico and Canada. Therefore, the Commission cannot license U.S. satellites in these frequency bands at this orbital location.

Mexico is a member country of the WTO. In addition, Mexico and the United States have reached a bilateral agreement that allows Mexican satellites to offer Direct-to-Home (DTH) service and Direct Broadcast Satellite (DBS) service in the United States, after those satellites have been coordinated with the United States for these services.[3] The Commission has also already authorized the addition of Satmex's Solidaridad 2 satellite at 113° W (subsequently moved to 114.9º W), the Satmex 5 satellite at 116.8º W, and the Satmex 6 satellite at 113º W to the Permitted Space Station List.[4]

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required by the Commission's rules, as well as the Technical Appendix (Attachment B). The *International Bureau Letter* indicated that the petition did not provide antenna gain contours as required by Section 25.114(d)(3) of the Commission's Rules. *Id*. at 2. Satmex notes that this information was provided in the Schedule S that was included with the initial petition, and is again included in the instant submission. To the extent additional clarification may be required, Satmex respectfully requests the opportunity to supplement or amend the petition as appropriate.

[3] *See* Protocol Concerning the Transmission and Reception of Signals from Satellites for the Provision of Direct-to-Home Satellite Television Services in the United States of America and the United Mexican States (November 8, 1996); *see also Televisa Internacional, LLC*, Order and Authorization, 13 FCC Rcd 100074, 10075-76 (para. 5) (Int'l Bur. 1997) ("*Televisa Order*") (discussing DTH Protocol).

[4] *Satélites Mexicanos, S.A. de C.V. Petition for Rulemaking*, Order, DA 00-1793, 15 FCC Rcd 19311 (2000) (adding Solidaridad 2 and Satmex 5 to the Permitted Space Station List at 113˚W and 116.8˚W, respectively); SAT-PPL-20060329-00030 and SAT-AMD-20060724-00080 (2006) (adding Satmex 6 to the Permitted Space Station List at 113º W); SAT-PDR-19991214-00131 and SAT-MOD-20060821-00090 (2006) (modifying orbital location of Solidaridad 2 to 114.9ºW on the Permitted Space Station List).

Satmex is requesting to provide Fixed-Satellite Services ("FSS") covered by the WTO Telecom Agreement and FSS DTH services covered by the US and Mexican Bilateral Agreement. Given Mexico's membership in the WTO and the existing Bilateral Agreement with the United States, Satmex is not required to make the effective competitive opportunities showing pursuant to Section 25.137 of the Commission's Rules.[5] The relevant International Telecommunications Union ("ITU") network for the Satmex 8 satellite has been notified under Article 11 of the ITU Radio Regulations and is recorded in the ITU Master Register.

As stated above, the Satmex 8 satellite is a replacement satellite for the Satmex 5 satellite currently operating at the 116.8ºW orbital location. The Satmex 8 satellite will operate in the same frequency bands as the Satmex 5 satellite, and the service areas of the two satellites include North and South America. Once the Satmex 8 satellite has been brought into use, the Satmex 5 satellite will be moved to the 114.9ºW orbital location. Given that Satmex 8 is a replacement satellite, it is not necessary for Satmex to provide financial information for the Commission to determine that Satmex is financially capable of building, launching and operating its satellite.[6]

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[5] *See* 47 C.F.R. § 25.137(a)(2); *see also Amendment of the Commission's Regulatory Policies to Allow Non-U.S. Licensed satellites Providing Domestic and International Service in the United States*, Report and Order, IB Docket No. 96-111, 12 FCC Rcd 24094, ¶ 39 (1997) ("We adopt our proposal to apply a presumption in favor of entry in considering applications to access non-U.S. satellites licensed by WTO members to provide services covered by the U.S. commitments under the WTO Basic Telecom Agreement."); *Id*., ¶ 64 ("[W]e will not evaluate the effective competitive opportunities in the route market for non-U.S. satellites licensed by a WTO Member providing WTO covered services. Thus, we will not perform an ECO-Sat test on any route, whether a WTO route market or a non-WTO route market.").

[6] *Amendment of the Commission's Regulatory Policies To Allow Non-U.S.-Licensed Space Stations To Provide Domestic and International Satellite Service in the United States*, Report and Order, IB Docket No. 96-111, 12 FCC Rcd 24094, ¶ 191 (1997) ("*DISCO II Order*") (explaining that the presence of in-orbit satellites satisfies concerns about an operator's capabilities of building and operating a satellite).

II. REQUEST FOR WAIVER OF SECTION 25.210(a)(3) OF THE COMMISSION'S RULES

Satmex requests a waiver of Section 25.210(a)(3) of the Commission's Rules, which requires that the C-band payload on the space station providing service to the U.S. be capable of switching polarity upon ground command. The Satmex 8 C-band transmission polarization sense is not switchable from the ground. The Commission has previously waived this rule in several cases for good cause for Satmex and other non-U.S. licensed FSS operators requesting to add space stations to the Permitted Space Station List.

Section 1.3 of the Commission's Rules provides that the Commission may waive any of its rules if the petitioner shows "good cause," for example, circumstances in which waiver would better serve the public interest than would application of the rule.[7] As previously stated, the Satmex 8 satellite will operate at the 116.8ºW Mexican orbital location in accordance with the Trilateral Agreement. Additionally, Satmex has completed coordination with operators of adjacent satellites and will operate in accordance with those agreements, which take into account the fixed polarization of its C-band transmissions. The Commission has granted this same waiver to Satmex and several other non-U.S. satellite operators who have applied to be on the Permitted Space Station List under similar circumstances.[8]

In these Orders, the Commission concluded that waiving Section 25.210(a)(3) will not undercut the policies underlying the Commission's adoption of the rule and the Commission placed appropriate conditions on the waiver.[9] Consistent with relevant precedent, granting this waiver under Section 1.3 of the Commission's Rules is appropriate and would serve the public interest.

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[7] 47 C.F.R. § 1.3; *WAIT Radio v. FCC*, 418 F.2d 1153 (D.C. Cir. 1969); appeal after remand, 459 F.2d 1203 (D.C. Cir. 1972), *cert. denied*, 409 U.S. 1027 (1972); *Northeast Cellular Tel. Co. v. FCC*, 897 F.2d 1164 (D.C. Cir. 1990).

[8] *See Telesat Canada, Petition for Declaratory Ruling*, Order, DA 00-2835**,** 15 FCC Rcd 24828, ¶¶ 16-17 (2000) ("*Telesat Canada Order*"). Satmex also asked for a waiver of Section 25.210(a)(3) for the Satmex 6 satellite, which the Commission granted, with conditions. *See* SAT-PPL-20060329-00030 and SAT-AMD-20060724-00080 (2006).

[9] *Telesat Canada Order*, ¶ 17.

III. ADDING THE SATMEX 8 SATELLITE TO THE PERMITTED SPACE STATION LIST IS IN THE PUBLIC INTEREST

The Commission previously found that adding the Solidaridad 2, Satmex 5 and Satmex 6 satellites to the Permitted Space Station List was in the public interest.[10] For these same reasons the public interest will be served by also adding the replacement Satmex 8 satellite to the Permitted Space Station List. Allowing the Satmex 8 satellite to offer FSS, including DTH, will enhance competition in the United States. Thus, inclusion of Satmex 8 on the Permitted Space Station List is in the public interest.

IV. CONCLUSION

For the reasons stated herein, Satmex respectfully requests that the Commission add the Satmex 8 satellite to the Permitted Space Station List.

[10] *See supra* n.4.

SATMEX 8

ATTACHMENT A

Regulatory Compliance Index

FCC Rule	Application/Exhibit Section and Page No.
25.114(c)(4)(vii)	Attachment A, § 7 (supplemental information to Schedule S)
25.114(c)(8)	Attachment A, Annex 1 (supplemental information to Schedule S)
25.114(c)(9)	Attachment A, § 6 (supplemental information to Schedule S)
25.114(d)(1)	Narrative Statement, § A; Attachment A, § 2
25.114(d)(3)	Attachment A, § 4 (provided in GXT format and embedded in Schedule S)
25.114(d)(4)	Narrative Statement, § A; Attachment A, §§ 2, 5
25.114(d)(5)	Attachment A, Annex 1, § 2.0
25.224(d)(6)	Narrative Statement, § C
25.114(d)(7)	Attachment A, Annex 1
25.114(d)(14)(i-iv)	Attachment A, § 9
25.137(b)	Narrative Statement; Attachment A
25.140(b)(2)	Attachment A, Annex 1, 1.0
25.202(e)	Attachment A, § 7
25,202(f)(1-3)	Attachment A, § 7
25.208	Attachment A, Annex 1, § 2.0
25.210(a)(3)	Narrative Statement, § B (Waiver Requested)
25.283	Attachment A, § 9.4

SATMEX 8

ATTACHMENT B
Technical Information to Supplement Schedule S

1 SCOPE

This Attachment contains additional information required by §25.114(c) and other sections of the FCC §25 rules that cannot be entered into the Schedule S submission.

2 GENERAL DESCRIPTION (§25.114(d)(1))

The SATMEX 8 satellite will operate at the 116.8° W.L. orbital location and is intended as a replacement to the SATMEX 5 satellite that currently operates at 116.8° W.L. The SATMEX 8 is a hybrid satellite which will provide DTH and a range of FSS services to various countries within ITU Region 2 using the conventional C- and Ku-band frequencies. The satellite employs 24 C-band transponders and 40 Ku-band transponders using both linear polarizations thereby providing dual frequency re-use.

The satellite has one C-band beam which provides coverage of most of the Americas and three Ku-band beams: a North American beam, a Hemispheric beam and a South America beam. There is no inter-connectivity between any of the beams. An uplink transmission to any one satellite receive beam results in a downlink transmission in the same satellite transmit beam (e.g., Hemi-to-Hemi, NAFTA-to-NAFTA, etc.).

3 FREQUENCY PLAN

Figures 3-1 and 3-2 show the C-band and Ku-band frequency plans, respectively.

Figure 3-1. C-band frequency plan.

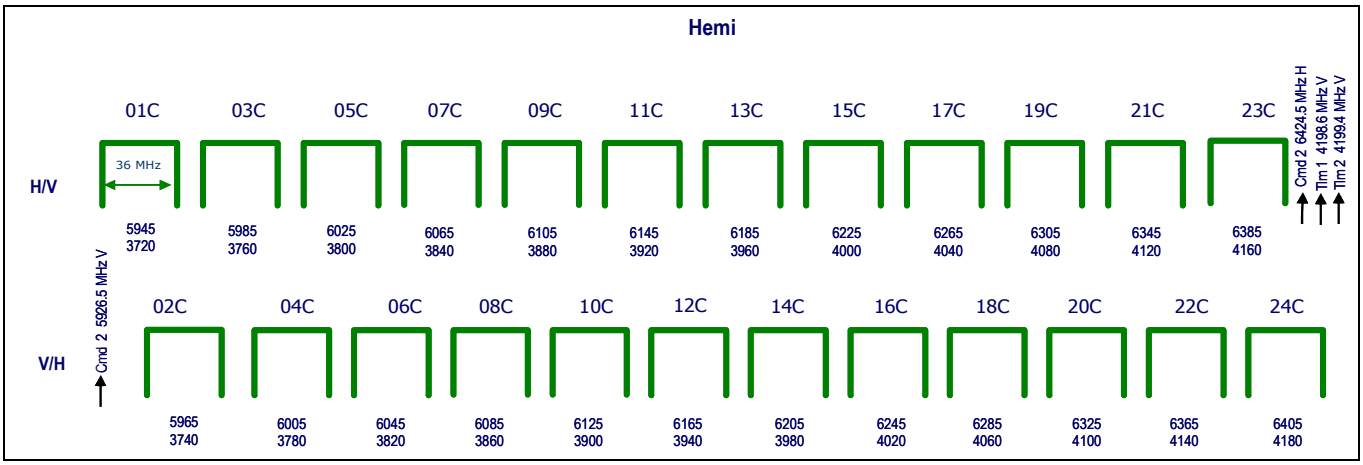
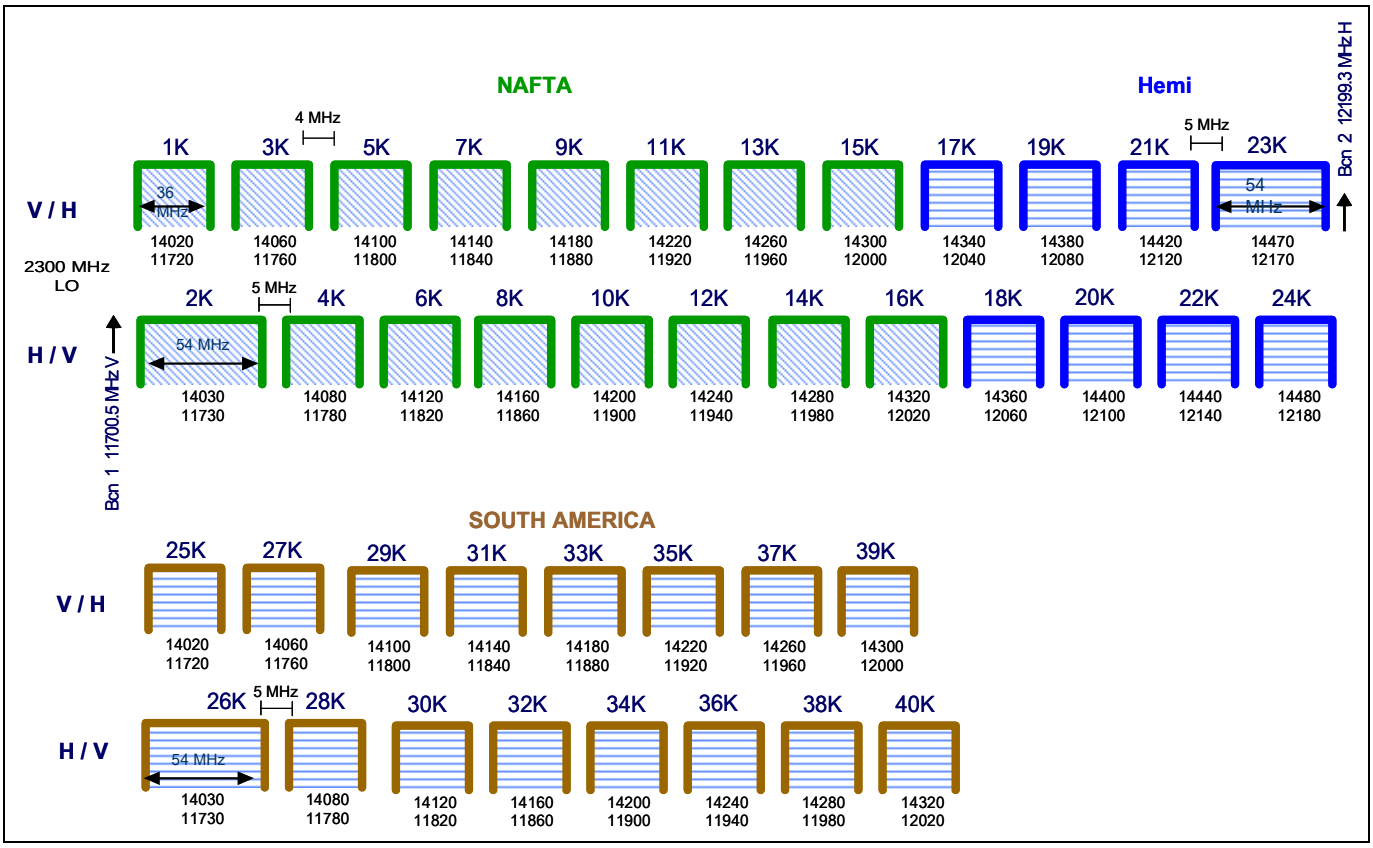


Figure 3-2. Ku-band frequency plan.



Because uplink transmissions to the South America beam downlink in the same beam, Satmex does not seek Commission authorization to use this beam. Accordingly, details of the South America beam have not been included in the associated Schedule S form.

4 PREDICTED SPACE STATION ANTENNA GAIN CONTOURS (§25.114(d)(3))

The SATMEX 8 antenna gain contours for the receive and transmit beams, as required by §25.114(d)(3), are given in GXT format and embedded in the associated Schedule S submission.

5 SERVICES TO BE PROVIDED (§25.114(d)(4))

The SATMEX 8 satellite will provide a variety of digital FSS and DTH services. Representative link budgets, which include details of the transmission characteristics, performance objectives and earth station characteristics, are provided in the associated Schedule S submission.

6 TT&C CHARACTERISTICS (§25.114(c)(4)(i) & §25.114(c)(9))

The SATMEX 8 TT&C sub-system provides for communications during pre-launch, transfer orbit and on-station operations, as well as during spacecraft emergencies. C-band telecommand transmissions are received by the spacecraft through a near omni-directional antenna during both transfer orbit and emergency operations. When on-station, TT&C is conducted via the C-band beam.

TT&C operations will be conducted from Mexican territory. Satmex does not seek Commission authorization for TT&C transmissions. Contact details for the control stations are provided below:

Centro de Control Iztapalapa Av. de las Telecomunicaciones S/N
CONTEL – Edificio SGA-II
Col. Leyes de Reforma
México, DF. CP 09310
Phone: 1 52 (55) 5804 7300

Centro de Control de Hermosillo
Carretera a Bahía Kino Km 5.5
Col. El Llano CP 83210
Hermosillo, Sonora México
Phone: 01 (662) 2600289

7 SATELLITE TRANSPONDER FREQUENCY RESPONSES (§25.114(c)(4)(vii))

The transponder frequency responses specified over the various channel bandwidths are shown in Tables 7-1 through 7-3. In addition, the frequency tolerances of §25.202(e) and the out-of-band emission limits of §25.202(f)(1), (2) and (3) will be met.

Table 7-1. C-Band Transponder Frequency Response

Frequency offset from channel center	Gain relative to channel center frequency (dB)		Comments
	Receive	Transmit	
CF±12 MHz	-0.4	-0.7	In-Band
CF±16 MHz	-0.65	-1.2	
CF±18 MHz	-0.9	-2.4	
CF±22 MHz	-15	-23	Out-of-Band
CF±26 MHz	-30	-50	
CF±30 MHz	-40	-65	
CF±50 MHz	-40	-65	

Table 7-2. 36 MHz Ku-Band Transponder Frequency Response

Frequency offset from channel center	Gain relative to channel center frequency (dB)		Comments
	Receive	Transmit	
CF±12 MHz	-0.45	-0.85	In-Band
CF±16 MHz	-1.0	-1.90	
CF±18 MHz	-2.0	-4.3	
CF±22 MHz	-10	-19.5	Out-of-Band
CF±25 MHz	-25	-42	
CF±58 MHz	-45	-70	
CF±100 MHz	-51	-70	

Table 7-3. 54 MHz Ku-Band Transponder Frequency Response

Frequency offset from channel center	Gain relative to channel center frequency (dB)		Comments
	Receive	Transmit	
CF±12 MHz	-0.45	-0.8	In-Band
CF±25 MHz	-1.2	-2.3	
CF±27 MHz	-2.2	-4.4	
CF±32 MHz	-15	-24	Out-of-Band
CF±35 MHz	-23	-40	
CF±58 MHz	-45	-70	
CF±100 MHz	-50	-70	

8 INTERFERENCE AND PFD ANALYSES (§25.140(b)(2) & (§25.114(c)(8))

The interference and PFD analyses are contained in Annex 1 to this Attachment.

9 ORBITAL DEBRIS MITIGATION PLAN (§ 25.114(d)(5))

9.1 Spacecraft Hardware Design

Satmex can confirm that the satellite will not undergo any planned release of debris during its operation. Furthermore, all separation and deployment mechanisms, and any other potential source of debris will be retained by the spacecraft or launch vehicle.

In conjunction with Space Systems/Loral, Satmex has assessed and limited the probability of the satellite becoming a source of debris by collisions with small debris or meteoroids of less than one centimeter in diameter that could cause loss of control and prevent post-mission disposal. Satmex has taken steps to limit the effects of such collisions through shielding, the placement of components, and the use of redundant systems.

The SATMEX 8 satellite includes separate TT&C and propulsion subsystems that are necessary for end-of-life disposal. The spacecraft TT&C system, vital for orbit raising, is extremely rugged with regard to meteoroids smaller than 1 cm, by virtue of its redundancy, shielding, separation of components and physical characteristics. Omni-directional antennas are mounted on opposite sides of the spacecraft. These antennas, each providing greater than hemispherical coverage patterns, are extremely rugged and capable of providing adequate coverage even if struck, bent or otherwise damaged by a small or medium sized particle. Either one of the two omni-directional antennas, for both command and telemetry, will be sufficient to enable orbit raising. The command receivers and decoders and telemetry encoders and transmitters will be located within a shielded area and will be totally redundant and physically separated. A single rugged thruster and shielded propellant tank provide the energy for orbit-raising. Otherwise, there are no single points of failure in the system.

9.2 Minimizing Accidental Explosions

In conjunction with Space Systems/Loral, Satmex has assessed and limited the probability of accidental explosions during and after completion of mission operations. The satellite manufacturer has taken steps to ensure that debris generation will not result from the conversion of energy sources on board the satellite into energy that fragments the satellite. In particular, the satellite manufacturer advises that burst tests are performed on all pressure vessels during qualification testing to demonstrate a margin of safety against burst. Bipropellant mixing is prevented by the use of valves that prevent backwards flow in propellant lines and pressurization lines. Pyrotechnics are nominally used in the mission only as part of the initial deployment process. After orbit-raising to the disposal orbit, all unfired pyrotechnics will be fired as part of the final satellite decommission. All batteries and fuel tanks are monitored for pressure and temperature. Excessive battery charging or discharging is limited by a monitoring and control system which will automatically limit the possibility of fragmentation. Corrective action, if not automatically undertaken, will be immediately undertaken by the spacecraft operator to avoid destruction and fragmentation. Thruster temperatures, impulse and thrust duration are carefully monitored, and any thruster may be turned off via redundant valves. Consequently, there is no

possibility of explosion during the operating mission. Space Systems/Loral has also conducted a failure mode effects and criticality analysis as part of the design process.

In order to ensure that the spacecraft has no explosive risk after it has been successfully de-orbited, all stored energy onboard the spacecraft will be removed. Upon successful de-orbit of the spacecraft, all propulsion lines and latch valves will be vented and left open. All battery chargers will be turned off and batteries will be left in a permanent discharge state.

9.3 Safe Flight Profiles

In considering current and planned satellites that may have a station-keeping volume that overlaps the SATMEX 8 satellite, Satmex has reviewed the lists of FCC licensed satellite networks, as well as those that are currently under consideration by the FCC. In addition, non-Mexican networks for which a request for coordination has been published by the ITU within ±0.15 degrees of 116.8° W.L. have also been reviewed. Only those networks that either operate, or are planned to operate, and have an overlapping station-keeping volume with the SATMEX 8 satellite, have been taken into account in the analysis.

Based on these reviews, the only satellite operational satellite within ±0.15° of 116.8° W.L. is the SATMEX 5 satellite which is controlled and operated by Satmex. There are no pending applications before the Commission requesting authorization to use an orbital location within ±0.15° of 116.8° W.L., and within this sub-arc, the only ITU network is the LUX-G8-39 network. Satmex can find no evidence that a satellite for this network is being constructed and progressed towards launch.

Based on the preceding, it is concluded that physical coordination of the SATMEX 8 satellite with another party is not required at the present time.

The SATMEX 8 satellite will be temporarily collocated with the SATMEX 5 satellite as traffic is transferred to the SATMEX 8. After traffic transfer is complete, the SATMEX 5 satellite will be

located elsewhere such that there will be no station-keeping volume overlap with the SATMEX 8 satellite. During the period of collocation, Satmex will use the proven inclination-eccentricity technique to ensure adequate separation between the satellites.

9.4 Post Mission Disposal Plan

At the end of the operational life of the SATMEX 8 satellite, Satmex will maneuver the satellite to a disposal orbit with a minimum perigee of 300 km above the normal GSO operational orbit. This proposed disposal orbit altitude is based on the following calculation, as required in §25.283:

Total Solar Pressure Area "A" = 95.3 m^2

"M" = Dry Mass of Satellite = 2317 kg

"C_R" = Solar Pressure Radiation Coefficient = 1.24

Therefore the Minimum Disposal Orbit Perigee Altitude:

= 36,021 km + 1000 x C_R x A/m

= 36,021 km + 1000 x 1.24 x 95.3/2317

= 36,072 km

= 286 km above GSO (35,786 km)

To provide margin, the nominal disposal orbit will be increased to 300 km. This will require 10.8 kg of propellant that will be reserved, taking account of all fuel measurement uncertainties, to perform the final orbit raising maneuvers.

10 ESTIMATED OPERATIONAL LIFETIME AND RELIABILITY

The satellite is designed for a lifetime of 15 years. The probability of the entire satellite successfully operating to that date is estimated at 0.78 based upon a bus reliability of better than 0.88 and a payload reliability better than 0.88. These numbers are based on a detailed reliability analysis performed by the spacecraft manufacturer of all critical components in the satellite bus and payload.

11 ITU FILING

The SATMEX 8 satellite will operate under the SATMEX 8 ITU network (CR/C/1464, MOD-1 and MOD-2). This network has been notified and recorded in the ITU's Master Register.

CERTIFICATION OF PERSON RESPONSIBLE FOR PREPARING ENGINEERING INFORMATION

I hereby certify that I am the technically qualified person responsible for preparation of the engineering information contained in this application, that I am familiar with Part 25 of the Commission's rules, that I have either prepared or reviewed the engineering information submitted in this application and that it is complete and accurate to the best of my knowledge and belief.

/s/

Stephen D. McNeil
Telecomm Strategies Canada, Inc.
Ottawa, Ontario, Canada
(613) 270-1177

ANNEX 1

INTERFERENCE AND PFD ANALYSES

1.0 Interference Analyses (§§ 25.114(d)(7) & 25.140(b)(1-2))

There are no C-/Ku-band operational satellites exactly two degrees away from the 116.8° W.L. orbital location. The two immediately adjacent satellites are the SOLIDARIDAD 2 satellite at 114.9° W.L., operated by Satmex, and the ANIK F3 satellite at 118.7° W.L., operated by Telesat Canada. The ANIK F3 satellite has been placed on the Commission's Permitted Space Station List ("PSSL"). The purpose of this section is to demonstrate compatibility between the operations of the SATMEX 8 and ANIK F3 networks.

Mexico and Canada have a coordination agreement that includes the SATMEX 8 ITU network. Satmex will operate the satellite in a manner so as to not exceed the transmission limits contained in the coordination agreement between Mexico and Canada.

Tables 1 and 3 provide a summary of the C-band and Ku-band transmission parameters, respectively, derived from the SATMEX 8 link budgets that are embedded in the Schedule S form. Tables 2 and 4 provide a summary of the C-band and Ku-band transmission parameters, respectively, of the ANIK F3 as contained in the ANIK F3 PSSL application[1].

Interference from the SATMEX 8 network into the ANIK F3 network was calculated and vice versa. Tables 5 and 6 show the results of the C-band interference calculations, while Tables 7 and 8 show the results of the Ku-band interference calculations. These tables provide the calculated overall C/I margins and are provided in a format similar to that of the output of the Sharp Adjacent Satellite Interference Analysis program. The interference calculations assumed a

[1] *See* SAT-PPL-20060516-00061.

1 dB advantage for topocentric-to-geocentric conversion, all wanted and interfering carriers are co-polarized and all earth station antennas conform to a sidelobe pattern of 29-25 log(θ). The C/I calculations were performed on a per Hz basis.

The overall C/I margins shown in Tables 5 through 8 are all positive, demonstrating the compatibility between the SATMEX 8 and ANIK F3 satellite networks.

Table 1. SATMEX 8 Typical C-band Transmission Parameters

Carrier ID	Emission Designator	Bandwidth (MHz)	Tx E/S Gain (dBi)	Uplink EIRP (dBW)	Downlink EIRP (dBW)	Rx E/S Gain (dBi)	C/I Criterion (dB)
1	48K6G7W	0.0486	47.4	41.9	8.6	43.6	17.9
2	1M34G7W	1.34	47.4	56.3	23.0	43.6	17.9
3	6M33G7W	6.33	47.4	63.0	29.7	43.6	18.0
4	36M0G7W	36	51.3	74.4	39.7	41.9	16.1
5	36M0G7W	36	53.5	74.8	39.7	41.9	17.9

Table 2. ANIK F3 Typical C-band Transmission Parameters

Carrier ID	Emission Designator	Bandwidth (MHz)	Tx E/S Gain (dBi)	Uplink EIRP (dBW)	Downlink EIRP (dBW)	Rx E/S Gain (dBi)	C/I Criterion (dB)
6	24K0G7D	0.024	51.3	39.8	7.2	43.5	17.5
7	26K7G7D	0.026	51.3	42.3	9.7	43.5	20.5
8	80K0G7D	0.080	51.3	46.3	13.7	43.5	19.2
9	106KG7D	0.106	52.4	47.4	14.7	43.5	15.0
10	160KG7D	0.160	47.4	49.1	16.7	43.5	15.0
11	640KG7D	0.640	51.3	55.3	22.7	43.5	15.0
12	4M33G7D	4.330	47.4	60.6	28.2	43.5	18.3
13	6M10G7W	6.100	51.3	63.3	30.7	43.5	18.6
14	8M00G7D	8.000	52.4	63.9	31.2	47.4	18.3
15	30M0G7W	30.000	52.4	71.4	40.2	43.5	22.0
16	33M3G7D	33.300	54.4	71.6	40.2	50.5	22.0

Table 3. SATMEX 8 Typical Ku-band Transmission Parameters

Carrier ID	Emission Designator	Bandwidth (MHz)	Tx E/S Gain (dBi)	Uplink EIRP (dBW)	Downlink EIRP (dBW)	Rx E/S Gain (dBi)	C/I Criterion (dB)
1	48K6G7W	0.0486	49.2	39.1	18.5	45.2	17.9
2	1M34G7W	1.34	43.2	51.4	31.1	47.7	17.9
3	6M33G7W	6.33	49.2	61.0	39.4	47.7	18.0
4	36M0G7W	36	54.7	74.2	49.4	41.6	16.1
5	36M0G7W	36	54.7	74.2	49.4	43.6	17.9
6	48K6G7W	0.0486	49.3	39.2	16.3	47.8	17.9
7	1M34G7W	1.34	43.3	51.6	29.0	51.6	17.9
8	6M33G7W	6.33	49.3	61.1	37.2	47.8	18.0
9	36M0G7W	36	54.8	74.4	47.2	43.7	16.1
10	36M0G7W	36	54.8	74.4	47.2	45.3	17.9

Table 4. ANIK F3 Typical Ku-band Transmission Parameters

Carrier ID	Emission Designator	Bandwidth (MHz)	Tx E/S Gain (dBi)	Uplink EIRP (dBW)	Downlink EIRP (dBW)	Rx E/S Gain (dBi)	C/I Criterion (dB)
11	26K7G7D	0.027	43.2	35.7	16.0	55.1	20.5
12	32K0G7D	0.032	43.2	37.7	18.0	53.2	17.5
13	80K0G7D	0.080	43.2	41.7	22.0	53.2	19.2
14	160KG7D	0.160	43.2	44.7	25.0	53.2	15.0
15	320KG7D	0.320	43.2	47.7	28.0	55.1	15.0
16	640KG7D	0.640	53.0	52.2	28.0	47.7	15.0
17	1M28G7D	1.280	53.0	55.2	31.0	47.7	15.0
18	1M85G7D	1.850	53.0	56.8	32.7	51.5	18.1
19	5M48G7D	5.480	53.0	61.5	37.4	51.5	18.3
20	6M10G7W	6.100	53.0	62.0	40.8	51.5	18.6
21	24M0G7D	24.000	60.7	76.9	50.0	39.2	18.3

Table 5. C-band overall link C/I margins (dB); SATMEX 8 interfering into ANIK F3.

		Interfering Carriers				
	Carrier ID	1	2	3	4	5
Wanted Carriers	6	5.0	5.0	5.0	3.2	3.5
	7	4.1	4.1	4.2	2.4	2.7
	8	4.5	4.5	4.6	2.8	3.1
	9	8.5	8.5	8.6	6.8	7.1
	10	8.7	8.7	8.7	7.0	7.3
	11	8.7	8.7	8.8	7.0	7.3
	12	2.5	2.5	2.6	0.8	1.2
	13	3.3	3.3	3.4	1.6	1.9
	14	5.2	5.2	5.3	4.0	4.6
	15	2.0	2.0	2.1	0.4	0.8
	16	4.6	4.6	4.6	3.9	4.9

Table 6. C-band overall link C/I margins (dB); ANIK F3 interfering into SATMEX 8.

		Interfering Carriers										
	Carrier ID	6	7	8	9	10	11	12	13	14	15	16
Wanted Carriers	1	2.5	0.3	1.2	1.5	0.5	1.2	3.3	3.0	3.8	0.7	1.2
	2	2.5	0.3	1.2	1.5	0.5	1.2	3.3	3.0	3.8	0.7	1.2
	3	2.3	0.1	1.0	1.3	0.3	1.0	3.2	2.8	3.6	0.5	1.0
	4	3.4	1.3	2.1	2.4	1.8	2.2	4.6	4.0	4.7	1.5	2.0
	5	2.6	0.5	1.4	1.7	1.0	1.4	3.9	3.2	3.9	0.7	1.2

Table 7. Overall link C/I margins (dB); SATMEX 8 interfering into ANIK F3.

		Interfering Carriers									
	Carrier ID	1	2	3	4	5	6	7	8	9	10
Wanted Carriers	11	6.1	2.7	5.5	4.9	4.9	6.4	2.8	5.8	5.2	5.2
	12	9.9	6.8	9.4	8.6	8.6	10.4	6.9	9.8	9.1	9.1
	13	8.2	5.2	7.7	6.9	6.9	8.7	5.2	8.1	7.4	7.4
	14	12.4	9.3	11.9	11.1	11.1	12.9	9.4	12.3	11.6	11.6
	15	12.8	9.5	12.2	11.6	11.6	13.1	9.5	12.5	11.9	11.9
	16	8.9	8.5	8.8	6.9	6.9	10.4	9.3	10.3	8.6	8.6
	17	8.8	8.5	8.8	6.9	6.9	10.4	9.3	10.3	8.6	8.6
	18	8.4	6.8	8.1	6.7	6.7	9.5	7.2	9.1	7.9	7.9
	19	8.1	6.6	7.9	6.4	6.4	9.3	7.0	8.9	7.7	7.7
	20	9.3	6.9	8.9	7.8	7.8	10.1	7.1	9.6	8.6	8.6
	21	4.4	5.9	4.6	2.2	2.2	6.5	7.8	6.7	4.4	4.4

Table 8. Overall link C/I margins (dB); ANIK F3 interfering into SATMEX 8.

		Interfering Carriers										
	Carrier ID	11	12	13	14	15	16	17	18	19	20	21
Wanted Carriers	1	2.6	1.4	1.3	1.4	1.4	6.6	6.6	6.5	6.5	4.2	1.2
	2	1.5	0.3	0.3	0.3	0.3	6.3	6.3	6.2	6.3	4.3	1.5
	3	3.8	2.6	2.6	2.6	2.6	8.2	8.3	8.2	8.2	6.1	3.2
	4	4.0	2.8	2.7	2.8	2.8	6.3	6.4	6.3	6.3	3.5	0.3
	5	4.7	3.5	3.5	3.5	3.5	7.3	7.4	7.3	7.3	4.5	1.4
	6	2.8	1.6	1.6	1.6	1.6	6.9	6.9	6.9	6.9	4.6	1.6
	7	2.1	0.9	0.9	0.9	0.9	7.4	7.4	7.3	7.3	5.6	3.0
	8	3.0	1.8	1.8	1.8	1.8	6.8	6.8	6.8	6.8	4.4	1.4
	9	3.9	2.7	2.7	2.7	2.7	6.3	6.3	6.2	6.2	3.4	0.2
	10	4.4	3.2	3.2	3.2	3.2	6.9	7.0	6.9	6.9	4.1	0.9

2.0 C-Band PFD Analyses (§ 25.114(d)(5))

Satmex will operate the SATMEX 8 satellite such that all C-band downlink transmissions will comply with the PFD limits of §25.208(a). The maximum C-band downlink EIRP density that will be transmitted is -32 dBW/Hz. Table 9 shows the maximum PFD levels that will occur at various angles of arrival using a downlink EIRP density of -32 dBW/Hz and demonstrates compliance with §25.208.

Table 9. Maximum C-Band PFD Levels of the SATMEX 8 Satellite.

Angle of Arrival	**Applicable PFD Limit for Angle of Arrival ($dBW/m^2/4$ kHz)**	**Spreading Loss (dBW/m^2)**	**Gain Contour (dB)**	**Worst Case PFD Level at Angle of Arrival ($dBW/m^2/4$ kHz)**	**PFD Margin (dB)**
0°	-152.0	-163.4	-1.8	-161.2	9.2
5°	-152.0	-163.3	-1.8	-161.1	9.1
10°	-149.5	-163.2	-1.8	-160.9	11.4
15°	-147.0	-163.0	-1.8	-160.8	13.8
20°	-144.5	-162.9	-1.7	-160.6	16.1
25°	-142.0	-162.8	-1.7	-160.5	18.5
57° (Peak)	-142.0	-162.3	0.0	-158.3	16.3