

** RE-ISSUED ON 01/07/11 TO SPECIFY FREQUENCY BANDS **

*** see also
SAT-PPL-20100506-00093

S2793 SAT-APL-20101209-00257 IB2010003759
HISPAMAR SATELLITES, S.A.
Amazonas-2

File # SAT-APL-20101209-00257

Call Sign S2793 Grant Date 12/21/10

(or other identifier)

Term Dates

From 12/21/10 To:

Approved by OMB
3060-0678

Date & Time Filed: Dec 9 2010 4:52:35:390PM
File Number: SAT-APL-20101209-00257



Approved: Stephen J. Duall
Stephen J. Duall
Chief, Satellite Policy Branch

FCC APPLICATION FOR SPACE AND EARTH STATION:MOD OR AMD - MAIN FORM FCC Use Only
FCC 312 MAIN FORM FOR OFFICIAL USE ONLY

APPLICANT INFORMATION

Enter a description of this application to identify it on the main menu:
Modification of Pending DTH Petition for Amazonas-2

1-8. Legal Name of Applicant

Name: HISPAMAR SATELLITE S.A. Phone Number: 202-467-6400
DBA Name: Fax Number: 202-296-6892
Street: 1120 19th St., N.W. E-Mail: don@jansky-barrmat.com
City: Washington State: DC
Country: USA Zipcode: 20036 -3614
Attention: Mr Donald M Jansky

Attachment to Grant
IBFS File Nos. SAT-PPL-20100506-00093; SAT-APL-20101209-00257
Call Sign: S2793
December 21, 2010

Pursuant to Sections 303(r), 308, 309, and 310 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 303(r), 308, 309, 310, and Sections 0.261 and 25.137(c) of the Commission's rules, 47 C.F.R. §§ 0.261, 25.137(c), the application (File No. SAT-PPL-20100506-00093, as amended by SAT-APL-20101209-00257) filed by HISPAMAR SATÉLITES, S.A., to modify the conditions placed on the inclusion of the AMAZONAS-2 satellite (S2793) located at the 61° W.L. orbital location, which is licensed by Brazil, on the Federal Communications Commission's Permitted Space Station List ("Permitted List") IS GRANTED. Accordingly, the AMAZONAS-2 satellite is now authorized to provide Direct-to-Home (DTH) service to, from, or within the United States in the 14.0-14.5 GHz (Earth-to-space) and 11.7-12.2 GHz (space-to-Earth) frequency bands. The remaining conditions for inclusion of the AMAZONAS-2 satellite on the Permitted List remain in effect. Accordingly, the AMAZONAS-2 satellite must be operated in accordance with the technical parameters and terms and conditions of the original grant (IBFS File No. SAT-PPL-20090806-00081).¹ This authorization is subject to the following additional condition:

1. The applicant's request for waiver of Section 25.283(c) for the AMAZONAS-2 satellite is granted. Section 25.283(c) requires discharge of all stored energy sources when a space station is retired from service. AMAZONAS-2 is an EADS Astrium E3000 series satellite, which does not completely discharge all stored energy at end of life. At the completion of mission, upon disposal of the spacecraft, the chemical propulsion tanks will be depleted. A helium pressurant tank, however, will retain a total mass of 1.258 kg of helium with a volume of 0.18 cubic liters at end of life. AMAZONAS-2 was launched on October 1, 2009. Compliance with Section 25.283(c) is not achievable except through direct retrieval of the spacecraft. The information submitted is not sufficient to support a finding that the underlying purpose of Section 25.283(c) would be served by sealing the helium tank without completely venting it. However, we grant a partial waiver of the rule because undue hardship would result from requiring modification of the space station at this time. This action is without prejudice to possible future licensing decisions in connection with other spacecraft of the same manufacturing series.

RE-ISSUED ON 01/07/11 TO SPECIFY FREQUENCY BANDS



*with conditions

SAT-PPL-20100506-00093
File # SAT-APL-20101209-00257
Call Sign S2793 Grant Date 12/21/10
(or other identifier) Term Dates
From 12/21/10 To: _____
Approved: _____

Stephen J. Duall
Chief, Satellite Policy Branch

¹ Policy Branch Information, Actions Taken, *Public Notice*, Report Number SAT-00640 (rel. Octo. 16, 2009)

9-16. Name of Contact Representative

| | | | |
|-------------------|-------------------------------------|----------------------|-----------------------|
| Name: | Donald M. Jansky | Phone Number: | 2024676400 |
| Company: | Jansky-Barnat Telecommunications | Fax Number: | 2022966892 |
| Street: | 7703 Arrowood Ct. | E-Mail: | don@jansky-barnat.com |
| City: | Bethesda | State: | MD |
| Country: | USA | Zipcode: | 20817- |
| Attention: | | Relationship: | |

CLASSIFICATION OF FILING

| | |
|--|---|
| <p>17. Choose the button next to the classification that applies to this filing for both questions a. and b. Choose only one for 17a and only one for 17b.</p> <p><input type="radio"/> a1. Earth Station</p> <p><input checked="" type="radio"/> a2. Space Station</p> | <p>(N/A) b1. Application for License of New Station</p> <p>(N/A) b2. Application for Registration of New Domestic Receive-Only Station</p> <p><input checked="" type="radio"/> b3. Amendment to a Pending Application</p> <p><input type="radio"/> b4. Modification of License or Registration</p> <p>b5. Assignment of License or Registration</p> <p>b6. Transfer of Control of License or Registration</p> <p><input type="radio"/> b7. Notification of Minor Modification</p> <p>(N/A) b8. Application for License of New Receive-Only Station Using Non-U.S. Licensed Satellite</p> <p>(N/A) b9. Letter of Intent to Use Non-U.S. Licensed Satellite to Provide Service in the United States</p> <p>(N/A) b10. Other (Please specify)</p> <p>(N/A) b11. Application for Earth Station to Access a Non-U.S. satellite Not Currently Authorized to Provide the Proposed Service in the Proposed Frequencies in the United States</p> <p>(N/A) b12. Application for Database Entry</p> <p><input type="radio"/> b13. Amendment to a Pending Database Entry Application</p> <p><input type="radio"/> b14. Modification of Database Entry</p> |
| <p>17c. Is a fee submitted with this application?</p> <p><input type="radio"/> If Yes, complete and attach FCC Form 159. If No, indicate reason for fee exemption (see 47 C.F.R. Section 1.1114).</p> <p><input type="radio"/> Governmental Entity</p> <p><input type="radio"/> Noncommercial educational licensee</p> <p><input checked="" type="radio"/> Other (please explain): N/A</p> | |
| <p>17d.</p> <p>Fee Classification</p> | |

| | |
|---|---|
| <p>18. If this filing is in reference to an existing station, enter:</p> <p>(a) Call sign of station:</p> | <p>19. If this filing is an amendment to a pending application enter both fields, if this filing is a modification please enter only the file number:</p> <p>(a) Date pending application was filed: 04/27/2010</p> <p>(b) File number: SATPPL2010050600093</p> |
|---|---|

TYPE OF SERVICE

20. NATURE OF SERVICE: This filing is for an authorization to provide or use the following type(s) of service(s): Select all that apply:

- a. Fixed Satellite
- b. Mobile Satellite
- c. Radiodetermination Satellite
- d. Earth Exploration Satellite
- e. Direct to Home Fixed Satellite
- f. Digital Audio Radio Service
- g. Other (please specify)

21. STATUS: Choose the button next to the applicable status. Choose only one.

- Common Carrier Non-Common Carrier

22. If earth station applicant, check all that apply.

- Using U.S. licensed satellites
- Using Non-U.S. licensed satellites

23. If applicant is providing INTERNATIONAL COMMON CARRIER service, see instructions regarding Sec. 214 filings. Choose one. Are these facilities:

- Connected to a Public Switched Network Not connected to a Public Switched Network N/A

24. FREQUENCY BAND(S): Place an 'X' in the box(es) next to all applicable frequency band(s).

- a. C-Band (4/6 GHz) b. Ku-Band (12/14 GHz)
 c. Other (Please specify upper and lower frequencies in MHz.)

Frequency Lower: _____ Frequency Upper: _____ (Please specify additional frequencies in an attachment)

TYPE OF STATION

25. CLASS OF STATION: Choose the button next to the class of station that applies. Choose only one.

- a. Fixed Earth Station
 b. Temporary-Fixed Earth Station
 c. 12/14 GHz VSAT Network
 d. Mobile Earth Station
 e. Geostationary Space Station
 f. Non-Geostationary Space Station
 g. Other (please specify)

26. TYPE OF EARTH STATION FACILITY:

- Transmit/Receive Transmit-Only Receive-Only N/A

"For Space Station applications, select N/A."

PURPOSE OF MODIFICATION

27. The purpose of this proposed modification is to: (Place an 'X' in the box(es) next to all that apply.)

- a --- authorization to add new emission designator and related service
- b --- authorization to change emission designator and related service
- c --- authorization to increase EIRP and EIRP density
- d --- authorization to replace antenna
- e --- authorization to add antenna
- f --- authorization to relocate fixed station
- g --- authorization to change frequency(ies)
- h --- authorization to add frequency
- i --- authorization to add Points of Communication (satellites & countries)
- j --- authorization to change Points of Communication (satellites & countries)
- k --- authorization for facilities for which environmental assessment and radiation hazard reporting is required
- l --- authorization to change orbit location
- m --- authorization to perform fleet management
- n --- authorization to extend milestones
- o --- Other (Please specify)

ENVIRONMENTAL POLICY

28. Would a Commission grant of any proposal in this application or amendment have a significant environmental impact as defined by 47 CFR 1.1307? If YES, submit the statement as required by Sections 1.1308 and 1.1311 of the Commission's rules, 47 C.F.R. 1.1308 and 1.1311, as an exhibit to this application. A Radiation Hazard Study must accompany all applications for new transmitting facilities, major modifications, or major amendments.

Yes No

ALIEN OWNERSHIP Earth station applicants not proposing to provide broadcast, common carrier, aeronautical en route or aeronautical fixed radio station services are not required to respond to Items 30-34.

29. Is the applicant a foreign government or the representative of any foreign government?

Yes No

30. Is the applicant an alien or the representative of an alien?

Yes No N/A

31. Is the applicant a corporation organized under the laws of any foreign government?

Yes No N/A

32. Is the applicant a corporation of which more than one-fifth of the capital stock is owned of record or voted by aliens or their representatives or by a foreign government or representative thereof or by any corporation organized under the laws of a foreign country?

Yes No N/A

| | |
|---|--|
| <p>33. Is the applicant a corporation directly or indirectly controlled by any other corporation of which more than one-fourth of the capital stock is owned of record or voted by aliens, their representatives, or by a foreign government or representative thereof or by any corporation organized under the laws of a foreign country?</p> | <p> <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A </p> |
| <p>34. If any answer to questions 29, 30, 31, 32 and/or 33 is Yes, attach as an exhibit an identification of the aliens or foreign entities, their nationality, their relationship to the applicant, and the percentage of stock they own or vote.</p> | |

BASIC QUALIFICATIONS

| | |
|---|--|
| <p>35. Does the Applicant request any waivers or exemptions from any of the Commission's Rules? If Yes, attach as an exhibit, copies of the requests for waivers or exceptions with supporting documents.</p> | <p> <input type="radio"/> Yes <input checked="" type="radio"/> No </p> |
| <p>36. Has the applicant or any party to this application or amendment had any FCC station authorization or license revoked or had any application for an initial, modification or renewal of FCC station authorization, license, or construction permit denied by the Commission? If Yes, attach as an exhibit, an explanation of circumstances.</p> | <p> <input type="radio"/> Yes <input checked="" type="radio"/> No </p> |

| | |
|---|---|
| <p>37. Has the applicant, or any party to this application or amendment, or any party directly or indirectly controlling the applicant ever been convicted of a felony by any state or federal court? If Yes, attach as an exhibit, an explanation of circumstances.</p> | <p style="text-align: center;"> <input type="radio"/> Yes <input checked="" type="radio"/> No </p> |
| <p>38. Has any court finally adjudged the applicant, or any person directly or indirectly controlling the applicant, guilty of unlawfully monopolizing or attempting unlawfully to monopolize radio communication, directly or indirectly, through control of manufacture or sale of radio apparatus, exclusive traffic arrangement or any other means or unfair methods of competition? If Yes, attach as an exhibit, an explanation of circumstances</p> | <p style="text-align: center;"> <input type="radio"/> Yes <input checked="" type="radio"/> No </p> |
| <p>39. Is the applicant, or any person directly or indirectly controlling the applicant, currently a party in any pending matter referred to in the preceding two items? If yes, attach as an exhibit, an explanation of the circumstances.</p> | <p style="text-align: center;"> <input type="radio"/> Yes <input checked="" type="radio"/> No </p> |
| <p>40. If the applicant is a corporation and is applying for a space station license, attach as an exhibit the names, address, and citizenship of those stockholders owning a record and/or voting 10 percent or more of the Filer's voting stock and the percentages so held. In the case of fiduciary control, indicate the beneficiary(ies) or class of beneficiaries. Also list the names and addresses of the officers and directors of the Filer.</p> | |

| | |
|---|--|
| <p>41. By checking Yes, the undersigned certifies, that neither applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. See 47 CFR 1.2002(b) for the meaning of "party to the application" for these purposes.</p> | <p style="text-align: right;"> <input checked="" type="radio"/> Yes <input type="radio"/> No </p> |
| <p>42a. Does the applicant intend to use a non-U.S. licensed satellite to provide service in the United States? If Yes, answer 42b and attach an exhibit providing the information specified in 47 C.F.R. 25.137, as appropriate. If No, proceed to question 43.</p> | <p style="text-align: right;"> <input checked="" type="radio"/> Yes <input type="radio"/> No </p> |
| <p>42b. What administration has licensed or is in the process of licensing the space station? If no license will be issued, what administration has coordinated or is in the process of coordinating the space station? BRAZIL</p> | |
| <p>43. Description. (Summarize the nature of the application and the services to be provided). (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>This is a modification to a pending DTH Petition of Amazonas-2 to provide additional information on end of life</p> </div> | |

43a. Geographic Service Rule Certification

By selecting A, the undersigned certifies that the applicant is not subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25.

A

By selecting B, the undersigned certifies that the applicant is subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25 and will comply with such requirements.

B

By selecting C, the undersigned certifies that the applicant is subject to the geographic service or geographic coverage requirements specified in 47 C.F.R. Part 25 and will not comply with such requirements because it is not feasible as a technical matter to do so, or that, while technically feasible, such services would require so many compromises in satellite design and operation as to make it economically unreasonable. A narrative description and technical analysis demonstrating this claim are attached.

C

Amazonas-2
Amendment

CERTIFICATION

The Applicant waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and requests an authorization in accordance with this application. The applicant certifies that grant of this application would not cause the applicant to be in violation of the spectrum aggregation limit in 47 CFR Part 20. All statements made in exhibits are a material part hereof and are incorporated herein as if set out in full in this application. The undersigned, individually and for the applicant, hereby certifies that all statements made in this application and in all attached exhibits are true, complete and correct to the best of his or her knowledge and belief, and are made in good faith.

44. Applicant is a (an): (Choose the button next to applicable response.)

- Individual
- Unincorporated Association
- Partnership
- Corporation
- Governmental Entity
- Other (please specify)

45. Name of Person Signing
Vicente Rubio Carreton

46. Title of Person Signing
Director Regulatory Affairs

WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND / OR IMPRISONMENT
(U.S. Code, Title 18, Section 1001), AND/OR REVOCATION OF ANY STATION AUTHORIZATION
(U.S. Code, Title 47, Section 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).

FCC NOTICE REQUIRED BY THE PAPERWORK REDUCTION ACT

The public reporting for this collection of information is estimated to average 2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the required data, and completing and reviewing the collection of information. If you have any comments on this burden estimate, or how we can improve the collection and reduce the burden it causes you, please write to the Federal Communications Commission, AMD-PERM, Paperwork Reduction Project (3060-0678), Washington, DC 20554. We will also accept your comments regarding the Paperwork Reduction Act aspects of this collection via the Internet if you send them to PRA@fcc.gov. PLEASE DO NOT SEND COMPLETED FORMS TO THIS ADDRESS.

Remember -- You are not required to respond to a collection of information sponsored by the Federal government, and the government may not conduct or sponsor this collection, unless it displays a currently valid OMB control number or if we fail to provide you with this notice. This collection has been assigned an OMB control number of 3060-0678.

THE FOREGOING NOTICE IS REQUIRED BY THE PAPERWORK REDUCTION ACT OF 1995, PUBLIC LAW 104-13, OCTOBER 1, 1995, 44 U.S.C. SECTION 3507.

- (14) A description of the design and operational strategies that will be used to mitigate orbital debris including the following information:
- (i) A statement that the space station operator has assessed and limited the amount of debris released in a planned manner during normal operations, and has assessed and limited the probability of the space station becoming a source of debris by collisions with small debris or meteoroids that could cause loss of control and prevent post-mission disposal;
 - (ii) A statement that the space station operator has assessed and limited the probability of accidental explosions during and after completion of mission operations. This statement must include a demonstration that debris generation will not result from the conversion of energy sources on board the spacecraft into energy that fragments the spacecraft. Energy sources include chemical, pressure, and kinetic energy. This demonstration should address whether stored energy will be removed at the spacecraft's end of life, by depleting residual fuel and leaving all fuel line valves open, venting any pressurized system, leaving all batteries in a permanent discharge state, and removing any remaining source of stored energy, or through other equivalent procedures specifically disclosed in the application;
 - (iii) A statement that the space station operator has assessed and limited the probability of the space station becoming a source of debris by collisions with large debris or other operational space stations. Where a space station will be launched into a low-Earth orbit that is identical, or very similar, to an orbit used by other space stations, the statement must include an analysis of the potential risk of collision and a description of what measures the space station operator plans to take to avoid in-orbit collisions. If the space station operator is relying on coordination with another system, the statement must indicate what steps have been taken to contact, and ascertain the likelihood of successful coordination of physical operations with, the other system. The statement must disclose the accuracy--if any--with which orbital parameters of non-geostationary satellite orbit space stations will be maintained, including apogee, perigee, inclination, and the right ascension of the ascending node(s). In the event that a system is not able to maintain orbital tolerances, i.e., it lacks a propulsion system for orbital maintenance, that fact should be included in the debris mitigation disclosure. Such systems must also indicate the anticipated evolution over time of the orbit of the proposed satellite or satellites. Where a space station requests the assignment of a geostationary-Earth orbit location, it must assess whether there are any known satellites located at, or reasonably

expected to be located at, the requested orbital location, or assigned in the vicinity of that location, such that the station keeping volumes of the respective satellites might overlap. If so, the statement must include a statement as to the identities of those parties and the measures that will be taken to prevent collisions;

- (iv) A statement detailing the post-mission disposal plans for the space station at end of life, including the quantity of fuel--if any--that will be reserved for post-mission disposal maneuvers. For geostationary-Earth orbit space stations, the statement must disclose the altitude selected for a post-mission disposal orbit and the calculations that are used in deriving the disposal altitude. The statement must also include a casualty risk assessment if planned post-mission disposal involves atmospheric re-entry of the space station. In general, an assessment should include an estimate as to whether portions of the spacecraft will survive re-entry and reach the surface of the Earth, as well as an estimate of the resulting probability of human casualty.

(14) Orbital Debris Mitigation Plan

HISPAMAR SATELITES S.A. (hereinafter **HISPAMAR SATELITES**) is proactive in ensuring safe operation and disposal of this and all spacecrafts under its control. The four elements of debris mitigation are addressed below:

(i) Spacecraft Hardware Design

The spacecraft is designed such that no debris will be released during normal operations. **HISPAMAR SATELITES** has assessed the probability of collision with meteoroids and other small debris (<1 cm diameter) and has taken the following steps to limit the effects of such collisions: (1) critical spacecraft components are located inside the protective body of the spacecraft and properly shielded; and (2) all spacecraft subsystems have redundant components to ensure no single-point failures. The spacecraft does not use any subsystems for end-of-life disposal that are not used for normal operations.

(ii) Minimizing Accidental Explosions

HISPAMAR SATELITES has assessed the probability of accidental explosions during and after completion of mission operations. The spacecraft is designed in manner to minimize the potential for such explosions. Propellant tanks and thrusters are isolated using redundant valves and electrical power systems are shielded in accordance with standard industry practices. At the completion of the mission, upon disposal of the spacecraft and according to the manufacturer, EADS Astrium, the E3000 design allows removing the chemical stored energy by depleting the chemical propulsion tanks. Albeit the E3000 design does not allow to completely depressurize the pressurant tank, however, the remaining pressure (30 bars) is far below the burst pressure (625 bars); in addition, the pressurant tank is located inside the central cylinder, well protected from external impact. Further, the E3000 design allows removal of the electrical stored energy by discharging the batteries and actuating the batteries bypasses. EADS concludes that with such conditions the FCC concerns and objectives are met.

The mass of any sealed pressurant that will be left in the Amazonas-2 at the end of life and the volume in which that mass is contained will be

| Mass in Pressurant Tank (kg) | Volume (m ³) |
|------------------------------|--------------------------|
| 1.258 | 0.18 |

(iii) Safe Flight Profiles

HISPAMAR SATELITES has assessed and limited the probability of the space station becoming a source of debris as a result of collisions with large debris or other operational space stations.

The proposed orbital location for **AMAZONAS 2** is 61° W.L. same as **AMAZONAS 1**. **AMAZONAS 2** will be maintained on the geostationary orbit within a window of less than 0.1° in North South and East West. It will be co-located with **AMAZONAS 1**, also owned by **HISPAMAR SATELITES**. The co-location strategy will be based on separation in eccentricity and inclination in such a way that when separation in inclination is minimum, eccentricity is maximum and vice versa.

HISPAMAR SATELITES is not aware of any other FCC licensed system, or any other system applied for and under consideration by the FCC, having an overlapping station keeping volume with **AMAZONAS-2**. **HISPAMAR SATELITES** is also not aware of any system with an overlapping station keeping volume with **AMAZONAS-2** that is the subject of an ITU filing and that is either in orbit or progressing towards launch.

(iv) Post Mission Disposal

At the end of the mission, **HISPAMAR SATELITES** will dispose of the spacecraft by moving it to a minimum altitude of 415 kilometers above the geostationary arc. This exceeds the minimum altitude established by the IADC formula.

HISPAMAR SATELITES has reserved 16.5 kilograms of fuel for this purpose. The reserved fuel figure was determined by the spacecraft manufacturer and provided for in the propellant budget. To calculate this figure, the "rocket equation" was used, taking into account the expected mass of the satellite at the end of life and the required delta-velocity to achieve the desired orbit. The fuel gauging uncertainty has been taken into account in these calculations.

In calculating the disposal orbit, **HISPAMAR SATELITES** has used simplifying assumptions as permitted under the Commission's Orbital Debris Report and Order. For reference, the effective area to mass ratio (Cr^*A/M) of the **AMAZONAS-2** spacecraft is 0.0404 m²/kg, resulting in a minimum perigee disposal altitude under the IADC formula of at most 275.4 kilometers above the geostationary arc, which is lower than the 415 kilometers above geostationary disposal altitude specified by **HISPAMAR SATELITES** in this filing.

Accordingly, the **AMAZONAS-2** planned disposal orbit complies with the FCC's rules.