

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, D.C. 20554

In the Matter of	)	
	)	
HORIZONS SATELLITE LLC	)	
	)	
Petition for Declaratory Ruling	)	File No.
To Add Horizons I to the	)	
Permitted Space Station List	)	
	)	

**PETITION FOR DECLARATORY RULING**

Horizons Satellite LLC (“Horizons”), a limited liability company organized under Delaware law, hereby files this Petition for Declaratory Ruling. Horizons is a 50/50 joint venture between PanAmSat Corporation (“PanAmSat”) and JSAT International Inc. (“JII”), a subsidiary of JSAT Corporation. Japan, through its Ministry of Public Management, Home Affairs, Posts and Telecommunications (“MPHPT”), has awarded a license to Horizons for the Ku-band<sup>1</sup> payload of Galaxy XIII, which will be known as Horizons I, at 127° W.L.<sup>2</sup> Pursuant to Section 25.137 of the Commission’s rules<sup>3</sup> and the *DISCO II Reconsideration Order*,<sup>4</sup> Horizons respectfully requests that the Commission grant this petition by adding Horizons I to the Permitted Space Station List.

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<sup>1</sup> In this Petition, Ku-band refers to the 14.0-14.5 GHz (uplink) and 11.7-12.2 GHz (downlink) bands.

<sup>2</sup> PanAmSat will be submitting separately a request for an FCC license authorizing it to launch and operate the C-band payload on Galaxy XIII.

<sup>3</sup> 47 C.F.R. § 25.137 (2001).

<sup>4</sup> *In the Matter of 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*, IB Docket No. 96-111, First Order on Reconsideration, 15 FCC Rcd 7207 (1999).

## **I. INTRODUCTION**

In the *DISCO II Reconsideration Order*, the Commission stated that non-U.S. licensed satellites may be included on the Permitted Space Station List upon demonstrating compliance with Sections 25.114 and 25.137 of the Commission's rules,<sup>5</sup> assuming there are no other public interest concerns. This petition, together with the accompanying FCC Form 312 and attachments, demonstrates that Horizons I satisfies the legal, financial and technical requirements of the Commission's rules for inclusion on the Permitted Space Station List. In addition, it is shown herein that adding Horizons I to the Permitted Space Station List would further the public interest.

## **II. HORIZONS I SATISFIES THE COMMISSION'S LEGAL AND TECHNICAL REQUIREMENTS UNDER SECTION 25.114 OF THE FCC'S RULES.**

The accompanying FCC Form 312 demonstrates compliance with the Commission's legal and technical qualifications requirements. In particular as to technical requirements, the response to Question 42 of the form and the "Technical Information" associated with the response to Question 42 demonstrate that Horizons I complies with the relevant technical requirements of Sections 25.114 and 25.140 of the Commission's rules,<sup>6</sup> including two-degree orbital spacing requirements. As also stated in the response to Question 42, moreover, Horizons I has been fully coordinated with all operating U.S.-licensed Ku-band satellites.<sup>7</sup>

## **III. HORIZONS IS FINANCIALLY QUALIFIED TO COMPLETE CONSTRUCTION AND OPERATE HORIZONS I.**

The "Financial Qualifications Information" associated with the response to Question 42 of the accompanying FCC Form 312 demonstrates compliance with the Commission's financial qualifications requirements. Although Horizons will operate

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<sup>5</sup> 47 C.F.R. §§ 25.114 and 25.137.

<sup>6</sup> 47 C.F.R. §§ 25.114 and 25.140.

Horizons I, PanAmSat is the contracting party with the vendors that will construct, launch, and insure Galaxy XIII, and PanAmSat's existing infrastructure will be used to control the satellite. The attached "Financial Qualifications Information" demonstrates that PanAmSat has the financial capability to satisfy its contractual commitments to these vendors,<sup>8</sup> and therefore is financially qualified to construct, launch, and operate Galaxy XIII, including Horizons I.

#### **IV. SECTION 25.137(a) OF THE COMMISSION'S RULES IS SATISFIED.**

Section 25.137 of the Commission's rules implements the policies established in the *DISCO II Order*.<sup>9</sup> Among other things, Section 25.137 requires parties filing a request to add a space station to the Permitted Space Station List to provide information demonstrating that U.S.-licensed satellite systems have effective competitive opportunities to provide analogous services in: (1) the country in which the non-U.S. licensed space station is licensed; and (2) the countries to be linked with the United States via the non-U.S. licensed space station.

Pursuant to Section 25.137(a)(2) and the *DISCO II Order*, however, the Commission presumes that this competitive test is satisfied with respect to space stations licensed by WTO members that will be used to provide services that are covered under the World Trade Organization ("WTO") Basic Telecommunications Agreement ("BTA").<sup>10</sup> This presumption applies to the instant petition, because Japan is a member of the WTO, and because Horizons only seeks inclusion on the Permitted Space Station List for the purpose of providing services covered by the WTO BTA. Horizons is not seeking authority to provide direct-to-home, DARS, or DBS service.

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<sup>7</sup> PanAmSat is investigating whether there are any non-operating U.S.-licensed Ku-band satellites for which coordination is needed, and will supplement this filing once its investigation is complete.

<sup>8</sup> The attachment shows the financial condition of Hughes Electronics Corporation, PanAmSat's parent company.

<sup>9</sup> *In the Matter of 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*, IB Docket No. 96-111, Report and Order, 12 FCC Rcd 24094 (1997) ("*DISCO II Order*").

<sup>10</sup> *DISCO II Order* at 24112.

**V. GRANT OF THIS PETITION WILL SERVE THE PUBLIC INTEREST.**

By granting this Petition, the Commission will increase competition and help make available additional Ku-band capacity capable that can be used to provide a variety of advanced communications services and to furnish redundancy for critical infrastructure communications. These changes will redound to the benefit of U.S. consumers in the form of more options, lower rates and better service. These are the very public interest goals the Commission sought to promote when it established its presumption in favor of entry for WTO satellites. Thus, public interest considerations support a grant of this petition.<sup>11</sup>

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<sup>11</sup> See *DISCO II Order* at 24112-24113.

## CONCLUSION

For the foregoing reasons, the Commission should add the Ku-band payload of Galaxy XIII, to be known as Horizons I, to the Permitted Space Station List.

Respectfully submitted,

HORIZONS SATELLITE LLC

By: \_\_\_\_\_

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February 10, 2003

**FCC 312**  
Main Form

**FEDERAL COMMUNICATIONS COMMISSION**

**APPLICATION FOR SATELLITE SPACE AND EARTH STATION AUTHORIZATIONS**

Approved by OMB  
3060-0678  
Est. Avg. Burden Hours  
Per Response: 11 Hrs.

FCC Use Only

File Number:

Call Sign:

Fee Number:

**APPLICANT INFORMATION**

1. Legal Name of Applicant		2. Voice Telephone Number	
3. Other Name Used for Doing Business (if any)		4. Fax Telephone Number	
5. Mailing Street Address or P.O. Box		6. City	
ATTENTION:		7. State / Country (if not U.S.A.)	8. Zip Code
9. Name of Contact Representative (If other than applicant)		10. Voice Telephone Number	
11. Firm or Company Name		12. Fax Telephone Number	
13. Mailing Street Address or P.O. Box		14. City	
ATTENTION:		15. State / Country (if not U.S.A)	16. Zip Code

**CLASSIFICATION OF FILING**

17. Place an "X" in the box next to the classification that applies to this filing for both questions a. and b. Mark only one box for 17a and only one box for 17b.

<input type="checkbox"/> a1. Earth Station	<input type="checkbox"/> b1. Application for License of New Station	<input type="checkbox"/> b6. Transfer of Control of License or Registration
<input type="checkbox"/> a2. Space Station	<input type="checkbox"/> b2. Application for Registration of New Domestic Receive-Only Station	<input type="checkbox"/> b7. Notification of Minor Modification
	<input type="checkbox"/> b3. Amendment to a Pending Application	<input type="checkbox"/> b8. Application for License of New Receive-Only Station Using Non-U.S. Licensed Satellite
	<input type="checkbox"/> b4. Modification of License or Registration	<input type="checkbox"/> b9. Letter of Intent to Use Non-U.S. Licensed Satellite to Provide Service in the United States
	<input type="checkbox"/> b5. Assignment of License or Registration	<input type="checkbox"/> b10. Other (Please Specify): _____

18. If this filing is in reference to an existing station, enter: Call sign of station:	19. If this filing is an amendment to a pending application enter: (a) Date pending application was filed: _____ (b) File number of pending application: _____
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### TYPE OF SERVICE

20. NATURE OF SERVICE: This filing is for an authorization to provide or use the following type(s) of service(s): Place an "X" in the box(es) next to all that apply.

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

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21. STATUS: Place an "X" in the box next to the applicable status. Mark only one box.

a. Common Carrier      b. Non-Common Carrier

22. If earth station applicant, place an "X" in the box(es) next to all that apply.

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

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

a. Connected to the Public Switched Network      b. Not connected to the Public Switched Network

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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) \_\_\_\_\_

### TYPE OF STATION

25. CLASS OF STATION: Place an "X" in the box next to the class of station that applies. Mark only one box.

a. Fixed Earth Station      b. Temporary-Fixed Earth Station      c. 12/14 GHz VSAT Network      d. Mobile Earth Station      e. Space Station      f. Other (Specify) \_\_\_\_\_  
 If space station applicant, go to Question 27.

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26. TYPE OF EARTH STATION FACILITY Mark only one box.

a. Transmit/Receive      b. Transmit-Only      c. Receive-Only

### PURPOSE OF MODIFICATION OR AMENDMENT

27. The purpose of this proposed modification or amendment 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 assigned frequency(ies)  
 h -- authorization to add Points of Communication (satellites & countries)  
 i -- authorization to change Points of Communication (satellites & countries)  
 j -- authorization for facilities for which environmental assessment and radiation hazard reporting is required  
 k -- 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?  YES      NO

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 as an exhibit for new transmitting facilities, major modifications, or major amendments. Refer to OET Bulletin 65.

### ALIEN OWNERSHIP

29. Is the applicant a foreign government or the representative of any foreign government?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
30. Is the applicant an alien or the representative of an alien?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
31. Is the applicant a corporation organized under the laws of any foreign government?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
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?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
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?	<input type="checkbox"/> YES	<input type="checkbox"/> NO
34. If any answer to questions 29, 30, 31, 32 and/or 33 is Yes, attach as an exhibit, the identification of the aliens or foreign entities, their nationality, their relationship to the applicant, and the percentage of stock they own or vote.		

### BASIC QUALIFICATIONS

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.	<input type="checkbox"/> YES	<input type="checkbox"/> NO
36. Has the applicant or any party to this application 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 the circumstances.	<input type="checkbox"/> YES	<input type="checkbox"/> NO
37. Has the applicant, or any party to this application, 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 the circumstances.	<input type="checkbox"/> YES	<input type="checkbox"/> NO
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 the circumstances.	<input type="checkbox"/> YES	<input type="checkbox"/> NO
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.	<input type="checkbox"/> YES	<input type="checkbox"/> NO
40. If the applicant is a corporation and is applying for a space station license, attach as an exhibit the names, addresses, and citizenship of those stockholders owning of 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.		
41. By checking Yes, the undersigned certifies, that neither the 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.	<input type="checkbox"/> YES	<input type="checkbox"/> NO
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.	<input type="checkbox"/> YES	<input type="checkbox"/> NO
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? _____		





Regarding Cancelled Authorizations:

The applicant, Horizons Satellite LLC ("Horizons"), is a 50/50 joint venture between PanAmSat Corporation ("PanAmSat") and JSAT International Inc. In response to question 36 of FCC Form 312, Horizons never has had an FCC license "revoked." However, on June 26, 2000, the International Bureau "cancelled" two Ka-band satellite authorizations issued to PanAmSat's subsidiary, PanAmSat Licensee Corp. ("PanAmSat LC"), based on its finding that PanAmSat LC had not satisfied applicable construction milestones. See PanAmSat Licensee Corp., File Nos. 198/199-SAT-P/LA-95 *et al.*, Memorandum Opinion and Order (rel. June 26, 2000). In that same order, the Bureau denied related applications to modify the cancelled authorizations. Subsequently, PanAmSat LC filed an appeal with the United States Court of Appeals for the District of Columbia Circuit, which was dismissed in January 2003 at PanAmSat's LC's request. Notwithstanding the fact that the Bureau's action does not seem to be the kind of revocation action contemplated by question 36, Horizons is herein making note of the decision in the interests of absolute candor and out of an abundance of caution.

In any event, the Bureau's action with respect to PanAmSat LC does not reflect on PanAmSat's basic qualifications, which are well-established and a matter of public record.

Question 37:

The applicant, Horizons Satellite LLC ("Horizons"), is a 50/50 joint venture between PanAmSat Corporation ("PanAmSat") and JSAT International Inc. Hughes Electronics Corporation ("HE") indirectly owns over 80% of PanAmSat's issued and outstanding stock. Hughes Aircraft Company ("HAC"), formerly a wholly-owned subsidiary of HE, pled guilty to two felony counts in 1990. The full details of this matter are included in a Form 430 for Hughes Communications Galaxy, Inc., dated August 19, 1991.

On June 15, 1992, HAC was found guilty of one felony count with regard to the testing of microelectronics components. The full details of this matter are included in a Form 430 for Hughes Communications Galaxy, Inc., dated August 12, 1992.

The conduct at issue in these two cases stemmed from the aerospace and defense business of HAC, and has no relevance to the FCC authorizations and applications of PanAmSat or Horizons. HAC (which, in 1996, changed its name to HE Holdings, Inc.) was merged with the Raytheon Company in 1997 and is no longer affiliated with PanAmSat or any party to this application. HE, moreover, had no ownership interest in the PanAmSat system when the conduct occurred at HAC. In addition, conduct in these matters is wholly unrelated to the communications area and does not reflect in any way upon the FCC-related activity of PanAmSat, whose operations were largely independent of HAC during the period when HAC was a subsidiary of HE.

Question 39:

1. Grand Jury Investigation/State Department Review

In 1996, two Hughes employees participated in a committee formed to review the findings of Chinese engineers regarding the failure of a Long March rocket in China. A grand jury investigation of potential export control law violations arising from the actions of the two employees was closed without issuing charges. However, Hughes is subject to the authority of the United States State Department to impose sanctions for non-criminal violations of the Arms Export Control Act. To date, the State Department has not imposed sanctions.

2. Bischoff, et al. v. DIRECTV, et al.

In September 2000, a putative class action was commenced against DIRECTV, Thomson Consumer Electronics, Best Buy Co., Circuit City

Stores and Tandy Corporation. The named plaintiffs purport to represent a class of all consumers who purchased DIRECTV equipment and services any time from March 1996 to September 1, 2000, and allege that defendants have violated federal and California antitrust statutes by entering into agreements to exclude competition and force retailers to boycott competitors' products and services. Motion to compel arbitration with named plaintiffs was granted. The parties subsequently agreed to dismiss class allegations and settle and dismiss the named plaintiffs' claims for a small non-material sum.

3. Kingray, et al. v. NHL, et al.  
Putative class actions against NBA and NHL, its member teams and DIRECTV. Plaintiffs allege that the distribution agreements between the leagues and DIRECTV violate the antitrust laws. DIRECTV's motion to dismiss complaint granted with leave to amend. The second motion to dismiss was granted with prejudice with respect to federal antitrust claims, and without prejudice with respect to state law claims. The parties have settled the cases by the plaintiffs' agreeing not to re-file their state-law claims in the state court and DIRECTV agreeing not to pursue its claim for attorney's fees.
4. Cable Connections, Inc., et al. v. DIRECTV, Inc., et al.  
In May 2001, plaintiffs filed a class action complaint in Oklahoma State Court alleging claims including breach of contract and fiduciary duty, fraud, promissory estoppel, antitrust and unfair competition. The four plaintiffs are independent DIRECTV retailers who claim to be bringing the complaint on behalf of all independent retailers, including former PRIMESTAR and USSB retailers. In August 2001, the case was stayed and the court ordered the individual plaintiffs to pursue their claims in arbitration. After seven months of inactivity, plaintiffs filed a motion for class certification of their claims in arbitration. DIRECTV opposed this late request filed in contravention of the court's stay order, but the court entered an order indicating that it would retain jurisdiction in order to determine whether the prerequisites for class treatment exist. DIRECTV is appealing the order.

The applicant, Horizons Satellite LLC (“Horizons”), is a Delaware limited liability company having two members, PanAmSat Corporation and JSAT International Inc. The address, citizenship, and percentage interest of these two members, and the names and addresses of Horizons’s managing directors and alternate directors, are shown below.

**PanAmSat Corporation**

USA 50%  
20 Westport Road  
Wilton, CT 06897  
USA

**JSAT International Inc.**

USA 50%  
5230 Pacific Concourse Drive  
Los Angeles, CA 90045  
USA

**Names and addresses of Directors and Officers of Horizons Satellite LLC**

Mr. James Cuminale, *Managing Director*  
c/o PanAmSat Corporation  
20 Westport Road  
Wilton, CT 06897  
USA

Mr. Masanori Akiyama, *Managing Director*  
c/o JSAT Corporation  
Pacific Century Place Marunouchi 17F  
1-11-1 Marunouchi, Chiyoda-ku  
Tokyo 100-6218  
Japan

Horizons Satellite LLC  
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Mr. Derek Swanson, *Alternate Director*  
c/o PanAmSat Corporation  
20 Westport Road  
Wilton, CT 06897  
USA

Mr. Keisuke Iwase, *Alternate Director*  
c/o JSAT Corporation  
Pacific Century Place Marunouchi 17F  
1-11-1 Marunouchi, Chiyoda-ku  
Tokyo 100-6218  
Japan

**INFORMATION REQUIRED BY 47 C.F.R. § 25.137**

In this filing, Horizons Satellite LLC (“Horizons”), a Delaware limited liability company that is a joint venture between PanAmSat Corporation (“PanAmSat”) and JSAT International Inc. (“JII”), a subsidiary of JSAT Corporation, seeks a declaratory ruling adding Horizons I, which is the Ku-band payload on the Galaxy XIII space station at 127° W.L., to the Permitted Space Station List. Because this Ku-band payload has been licensed by Japan (with Horizons as the licensee), Horizons is providing below the information required by Section 25.137 of the Commission’s rules concerning non-U.S. licensed space stations.<sup>1</sup> Horizons I has been fully coordinated with all operating U.S.-licensed Ku-band satellites.<sup>2</sup> Horizons is not seeking authority in this filing to communicate with Horizons I for the purpose of providing direct-to-home, DARS, or DBS service.

Section 25.137(a): Competitive analysis.

Not applicable; Japan is a member of the World Trade Organization for services covered under the World Trade Organization Basic Telecommunications Agreement.

Section 25.137(b): Legal, financial, and technical information.

Pursuant to the requirements of Section 25.137(b) of the rules, Horizons below provides legal, financial, and technical information concerning Horizons I. PanAmSat has organized this information in accordance with the pertinent provisions of Section 25.114 and 25.140 of the rules.

Section 25.114(c)(1)-(2): Contact information.

See Form FCC 312, Items 1-16.

Section 25.114(c)(3): Type of authorization requested.

PanAmSat is seeking to have Horizons I added to the Permitted Space Station.

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<sup>1</sup> 47 C.F.R. § 25.137. PanAmSat will be submitting separately a request for an FCC license authorizing it to launch and operate the C-band payload on Galaxy XIII.

<sup>2</sup> PanAmSat is investigating whether there are any non-operating U.S.-licensed Ku-band satellites for which coordination is needed, and will supplement this filing once its investigation is complete.

Section 25.114(c)(4): General description of overall system facilities, operations, and services.

See attached technical information.

Section 25.114(c)(5)-(11): Technical information.

See attached technical information.

Section 25.114(c)(12): Satellite physical characteristics.

See attached technical information.

Section 25.114(c)(13): Financial qualifications.

It will cost approximately \$139,169,000 to construct and launch Galaxy XIII, including the Horizons I payload, and operate it for one year. Although Horizons will operate Horizons I, PanAmSat is the contracting party with the vendors that will construct, launch, and insure Galaxy XIII, and PanAmSat's existing infrastructure will be used to control the satellite. The attached financial information for Hughes Electronics Corporation, which is PanAmSat's parent company, demonstrates that PanAmSat has the financial capability to satisfy its contractual commitments to these vendors, and therefore is financially qualified to construct, launch, and operate Galaxy XIII, including Horizons I.

Section 25.114(c)(14): Non- common carrier status.

Horizons I will be operated on a non-common carrier basis.

Section 25.114(c)(15): Schedule.

Commencement of Construction	Done
Completion of Construction	2Q 2003
Launch	2Q 2003
Commencement of Service	2-3Q 2003

Section 25.114(c)(16): Public interest considerations.

Adding Horizons I to the Permitted Space Station List will serve the public interest by making it possible for earth stations in the United States to access the payload. This payload will add to the supply of available capacity, thereby increasing



competition, and make possible the provision of a variety of advanced communications services to users in the Americas. In addition, by providing an overlay to the terrestrial fiber network, the payload will afford redundancy for critical infrastructure communications.

Section 25.114(c)(17): Information specified in Section 25.140.

See below.

Section 25.114(c)(18)-(21): Service-specific information.

Not applicable.

Section 25.140(b)(1): Information specified in Section 25.114.

See above.

Section 25.140(b)(2): Interference analysis.

See attached technical information.

Section 25.140(b)(3)-(4): Estimated costs and expenses.

See above.

Section 25.140(c)-(d): Financial information.

See attached financial information.

Section 25.137(c): Non-U.S. authority.

Japan has licensed Horizons I.

Section 25.137(d): Compliance with Commission rules.

Horizons I is in compliance with all applicable Commission milestones, reporting requirements, and any other applicable service rules required of non-U.S. licensed satellite systems to operate in the United States.

Horizons Satellite LLC

FCC Form 312  
Exhibit 5

## FINANCIAL QUALIFICATIONS INFORMATION

## HUGHES ELECTRONICS CORPORATION

### INDEPENDENT AUDITORS' REPORT

To the Board of Directors of Hughes Electronics Corporation:

We have audited the accompanying Consolidated Balance Sheets of Hughes Electronics Corporation as of December 31, 2001 and 2000, and the related Consolidated Statements of Operations and Available Separate Consolidated Net Income (Loss), Consolidated Statements of Changes in Stockholder's Equity and Consolidated Statements of Cash Flows for each of the three years in the period ended December 31, 2001. Our audits also included the financial statement schedule listed in Item 14. These financial statements and the financial statement schedule are the responsibility of Hughes Electronics Corporation's management. Our responsibility is to express an opinion on these financial statements and the financial statement schedule based on our audits.

We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, such financial statements present fairly, in all material respects, the financial position of Hughes Electronics Corporation at December 31, 2001 and 2000, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2001 in conformity with accounting principles generally accepted in the United States of America. Also, in our opinion, the financial statement schedule, when considered in relation to the basic consolidated financial statements taken as a whole, presents fairly, in all material respects, the information set forth therein.

/s/ DELOITTE &  
TOUCHE LLP

DELOITTE & TOUCHE LLP

Los Angeles, California  
January 15, 2002  
(March 7, 2002 as to Note 21)

**HUGHES ELECTRONICS CORPORATION**

**ITEM 8. CONSOLIDATED FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA**

**CONSOLIDATED STATEMENTS OF OPERATIONS AND  
AVAILABLE SEPARATE CONSOLIDATED NET INCOME (LOSS)**

	<u>Years Ended December 31,</u>		
	<u>2001</u>	<u>2000</u>	<u>1999</u>
	(Dollars in Millions)		
Revenues			
Direct broadcast, leasing and other services	\$ 7,202.3	\$ 6,262.2	\$ 4,550.8
Product sales	<u>1,059.7</u>	<u>1,025.4</u>	<u>1,009.5</u>
Total Revenues	<u>8,262.0</u>	<u>7,287.6</u>	<u>5,560.3</u>
Operating Costs and Expenses			
Broadcast programming and other costs	3,254.2	2,812.8	2,039.0
Cost of products sold	900.2	815.1	961.6
Selling, general and administrative expenses	3,717.7	3,065.7	2,295.3
Depreciation and amortization	<u>1,147.7</u>	<u>948.1</u>	<u>678.9</u>
Total Operating Costs and Expenses	<u>9,019.8</u>	<u>7,641.7</u>	<u>5,974.8</u>
Operating Loss	(757.8)	(354.1)	(414.5)
Interest income	56.7	49.3	27.0
Interest expense	(195.9)	(218.2)	(122.7)
Other, net	<u>(92.7)</u>	<u>(292.6)</u>	<u>(149.8)</u>
Loss From Continuing Operations Before Income Taxes, Minority Interest and Cumulative Effect of Accounting Change	(989.7)	(815.6)	(660.0)
Income tax benefit	325.6	406.1	236.9
Minority interests in net losses of subsidiaries	<u>49.9</u>	<u>54.1</u>	<u>32.0</u>
Loss from continuing operations before cumulative effect of accounting change	(614.2)	(355.4)	(391.1)
Income from discontinued operations, net of taxes	—	36.1	99.8
Gain on sale of discontinued operations, net of taxes	<u>—</u>	<u>1,132.3</u>	<u>—</u>
Income (Loss) before cumulative effect of accounting change	(614.2)	813.0	(291.3)
Cumulative effect of accounting change, net of taxes	<u>(7.4)</u>	<u>—</u>	<u>—</u>
Net Income (Loss)	(621.6)	813.0	(291.3)
Adjustment to exclude the effect of GM purchase accounting	3.3	16.9	21.0
Earnings (Loss) excluding the effect of GM purchase accounting adjustment	(618.3)	829.9	(270.3)
Preferred stock dividends	<u>(96.4)</u>	<u>(97.0)</u>	<u>(50.9)</u>
Earnings (Loss) Used for Computation of Available Separate Consolidated Net Income (Loss)	<u>\$ (714.7)</u>	<u>\$ 732.9</u>	<u>\$ (321.20)</u>
Available Separate Consolidated Net Income (Loss)			
Average number of shares of General Motors Class H Common Stock outstanding (in millions) (Numerator)	876.3	681.2	374.1
Average Class H dividend base (in millions) (Denominator)	1,300.0	1,297.0	1,255.5
Available Separate Consolidated Net Income (Loss)	<u>\$ (481.8)</u>	<u>\$ 384.9</u>	<u>\$ (95.7)</u>

Reference should be made to the Notes to the Consolidated Financial Statements.

**HUGHES ELECTRONICS CORPORATION**  
**CONSOLIDATED BALANCE SHEETS**

December 31,  
2001                      2000  
(Dollars in Millions)

**ASSETS**

Current Assets		
Cash and cash equivalents	\$ 700.1	\$ 1,508.1
Accounts and notes receivable, net of allowances of \$113.6 and \$88.3	1,090.5	1,253.0
Contracts in process	153.1	186.0
Inventories	360.1	338.0
Deferred income taxes	118.9	89.9
Prepaid expenses and other	<u>918.4</u>	<u>778.7</u>
Total Current Assets	3,341.1	4,153.7
Satellites, net	4,806.6	4,230.0
Property, net	2,197.8	1,707.8
Net Investment in Sales-type Leases	227.0	221.1
Intangible Assets, net	7,156.8	7,151.3
Investments and Other Assets	<u>1,480.8</u>	<u>1,815.4</u>
Total Assets	<u>\$ 19,210.1</u>	<u>\$ 19,279.3</u>

**LIABILITIES AND STOCKHOLDER'S EQUITY**

Current Liabilities		
Accounts payable	\$ 1,227.5	\$ 1,224.2
Deferred revenues	178.5	137.6
Short-term borrowings and current portion of long-term debt	1,658.5	24.6
Accrued liabilities and other	<u>1,342.0</u>	<u>1,304.5</u>
Total Current Liabilities	<u>4,406.5</u>	<u>2,690.9</u>
Long-Term Debt	988.8	1,292.0
Other Liabilities and Deferred Credits	1,465.1	1,647.3
Deferred Income Taxes	746.5	769.3
Commitments and Contingencies		
Minority Interests	531.3	553.7
Stockholder's Equity		
Capital stock and additional paid-in capital	9,561.2	9,973.8
Preferred stock	1,498.4	1,495.7
Retained earnings (deficit)	(86.4)	631.6
Subtotal Stockholder's Equity	10,973.2	12,101.1
Accumulated Other Comprehensive Income (Loss)		
Minimum pension liability adjustment	(17.3)	(16.1)
Accumulated unrealized gains on securities	192.6	257.0
Accumulated foreign currency translation adjustments	<u>(76.6)</u>	<u>(15.9)</u>
Accumulated other comprehensive income	<u>98.7</u>	<u>225.0</u>
Total Stockholder's Equity	<u>11,071.9</u>	<u>12,326.1</u>
Total Liabilities and Stockholder's Equity	<u>\$ 19,210.1</u>	<u>\$ 19,279.3</u>

Reference should be made to the Notes to the Consolidated Financial Statements.

**HUGHES ELECTRONICS CORPORATION**  
**CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDER'S EQUITY**

	Capital Stock and Additional Paid-In Capital	Preferred Stock	Retained Earnings (Deficit)	Accumulated Other Comprehensive Income (Loss)	Total Stockholder's Equity	Comprehensive Income (Loss)
	(Dollars in Millions)					
<b>Balance at December 31, 1998</b>	\$ 8,146.1		\$257.8	\$8.3	\$8,412.2	
Net Loss			(291.3)		(291.3)	\$(291.3)
Preferred stock		\$1,487.5	(2.5)		1,485.0	
Preferred stock dividends			(48.4)		(48.4)	
GM Class H common stock acquired by Hughes and retired by GM	(11.1)				(11.1)	
Stock options exercised	114.4				114.4	
Shares issued in connection with acquisitions	1,506.7				1,506.7	
Tax benefit from exercise of GM Class H common stock options	53.4				53.4	
Minimum pension liability adjustment				(0.5)	(0.5)	(0.5)
Foreign currency translation adjustments				11.0	11.0	11.0
Unrealized gains on securities				449.9	449.9	449.9
Comprehensive income						<u>169.1</u>
<b>Balance at December 31, 1999</b>	9,809.5	1,487.5	(84.4)	468.7	11,681.3	
Net Income			813.0		813.0	\$ 813.0
Preferred stock		8.2	(3.2)		5.0	
Preferred stock dividends			(93.8)		(93.8)	
Stock options exercised	78.4				78.4	
Tax benefit from exercise of GM Class H common stock options	62.3				62.3	
Subsidiary common stock issued in connection with acquisition and other	23.6				23.6	
Minimum pension liability adjustment				(8.8)	(8.8)	(8.8)
Foreign currency translation adjustments				(25.9)	(25.9)	(25.9)
Unrealized loss on securities				(209.0)	(209.0)	(209.0)
Comprehensive income						<u>569.3</u>
<b>Balance at December 31, 2000</b>	9,973.8	1,495.7	631.6	225.0	12,326.1	
Net Loss			(621.6)		(621.6)	\$ (621.6)
Preferred stock		2.7	(2.7)			
Preferred stock dividends			(93.7)		(93.7)	
Stock options exercised	31.5				31.5	
Tax benefit from exercise of GM Class H common stock options	7.1				7.1	
Adjustment related to Raytheon purchase price settlement	(574.2)				(574.2)	
Subsidiary common stock issued in connection with acquisition and other	123.0				123.0	
Minimum pension liability adjustment				(1.2)	(1.2)	(1.2)
Foreign currency translation adjustments				(60.7)	(60.7)	(60.7)
Cumulative effect of accounting change				0.4	0.4	0.4
Unrealized gains (losses) on securities and derivatives:						
Unrealized holding losses				(121.4)	(121.4)	(121.4)
Less: reclassification adjustment for net losses recognized during the period				56.6	56.6	56.6
Comprehensive income						<u>(747.9)</u>
<b>Balance at December 31, 2001</b>	<u>\$ 9,561.2</u>	<u>\$ 1,498.4</u>	<u>\$ (86.4)</u>	<u>\$ 98.7</u>	<u>\$ 11,071.9</u>	

Reference should be made to the Notes to the Consolidated Financial Statements.

# HUGHES ELECTRONICS CORPORATION

## CONSOLIDATED STATEMENTS OF CASH FLOWS

	Years Ended December 31,		
	<u>2001</u>	<u>2000</u>	<u>1999</u>
	(Dollars in Millions)		
<b>Cash Flows from Operating Activities</b>			
Loss from continuing operations before cumulative effect of accounting change	\$ (614.2)	\$ (355.4)	\$ (391.1)
Adjustments to reconcile loss from continuing operations before cumulative effect of accounting change to net cash provided by operating activities			
Depreciation and amortization	1,147.7	948.1	678.9
Equity losses from unconsolidated affiliates	61.3	164.2	189.2
Loss on disposal of assets	15.3	14.6	2.7
Net gain from sale of investments	(130.6)	—	(30.0)
Gross profit on sales-type leases	(32.7)	(136.4)	—
Loss on discontinuation of DIRECTV Japan business and write down of Sky Perfect investment	180.0	128.4	—
Deferred income taxes and other	93.3	377.1	260.3
Loss on discontinuation of wireless product lines	—	—	272.1
Change in other operating assets and liabilities			
Accounts and notes receivable	49.9	(164.4)	35.0
Inventories	(19.8)	(101.9)	(38.7)
Prepaid expenses and other	(23.3)	5.3	(494.0)
Accounts payable	(320.8)	162.0	101.4
Accrued liabilities	(100.7)	(132.1)	59.6
Other	(115.1)	181.2	(265.9)
Net Cash Provided by Operating Activities	<u>190.3</u>	<u>1,090.7</u>	<u>379.5</u>
<b>Cash Flows from Investing Activities</b>			
Investment in companies, net of cash acquired	(287.8)	(181.2)	(2,443.7)
Expenditures for property	(799.4)	(939.0)	(506.4)
Expenditures for satellites	(944.1)	(777.1)	(789.4)
Investment in convertible bonds	—	—	(244.7)
Early buy-out of satellite sale-leasebacks	—	—	(245.4)
Proceeds from sale of investments	204.9	4,040.3	—
Proceeds from insurance claims	132.4	36.2	272.0
Other, net	(47.2)	31.6	15.8
Net Cash Provided by (Used in) Investing Activities	<u>(1,741.2)</u>	<u>2,210.8</u>	<u>(3,941.8)</u>
<b>Cash Flows from Financing Activities</b>			
Net increase (decrease) in notes and loans payable	1,187.4	(496.6)	343.0
Long-term debt borrowings	1,642.6	5,262.2	8,165.6
Repayment of long-term debt	(1,515.2)	(5,591.5)	(7,494.4)
Net proceeds from issuance of preferred stock	—	—	1,485.0
Stock options exercised	21.8	70.1	114.4
Purchase and retirement of GM Class H common stock	—	—	(11.1)
Preferred stock dividends paid to General Motors	(93.7)	(93.8)	(25.0)
Partial payment of Raytheon settlement	(500.0)	—	—
Net Cash Provided by (Used in) Financing Activities	<u>742.9</u>	<u>(849.6)</u>	<u>2,577.5</u>
Net cash provided by (used in) continuing operations	(808.0)	2,451.9	(984.8)
Net cash used in discontinued operations	—	(1,182.0)	(119.0)
Net increase (decrease) in cash and cash equivalents	(808.0)	1,269.9	(1,103.8)
Cash and cash equivalents at beginning of the year	<u>1,508.1</u>	<u>238.2</u>	<u>1,342.0</u>
Cash and cash equivalents at end of the year	<u>\$ 700.1</u>	<u>\$ 1,508.1</u>	<u>\$ 238.2</u>

Reference should be made to the Notes to the Consolidated Financial Statements.

**HUGHES ELECTRONICS CORPORATION**  
**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS**

**Note 1: Basis of Presentation and Description of Business**

Hughes Electronics Corporation (“Hughes Electronics” or “Hughes”) is a wholly-owned subsidiary of General Motors Corporation (“GM”). The GM Class H common stock tracks the financial performance of Hughes.

Hughes is a leading provider of digital entertainment, information and communication services and satellite-based private business networks. Hughes is the world’s leading digital multi-channel entertainment service provider with its programming distribution service known as DIRECTV®, which was introduced in the U.S. in 1994 and was the first high-powered, all digital, direct-to-home television distribution service in North America. DIRECTV began service in Latin America in 1996. DIRECTV Broadband, Inc. (“DIRECTV Broadband”), formerly known as Telocity Delaware, Inc. (“Telocity”), which was acquired by Hughes in April 2001, provides digital subscriber line (“DSL”) services purchased from wholesale providers. Hughes is also the owner and operator of the largest commercial satellite fleet in the world through its approximately 81% owned subsidiary, PanAmSat Corporation (“PanAmSat”). Hughes is also a leading provider of broadband services and products, including satellite wireless communications ground equipment and business communications services. Hughes’ equipment and services are applied in, among other things, data, video and audio transmission, cable and network television distribution, private business networks, digital cellular communications and direct-to-home satellite broadcast distribution of television programming.

Revenues, operating costs and expenses, and other non-operating results for the discontinued operations of the satellite systems manufacturing businesses (“Satellite Businesses”), which were sold to The Boeing Company (“Boeing”) on October 6, 2000, are excluded from Hughes’ results from continuing operations for 2000 and prior years presented herein. Alternatively, the financial results are presented in Hughes’ Consolidated Statements of Operations and Available Separate Consolidated Net Income (Loss) in a single line item entitled “Income from discontinued operations, net of taxes” and the net cash flows are presented in the Consolidated Statements of Cash Flows as “Net cash used in discontinued operations.” See further discussion in Note 17.

The accompanying consolidated financial statements include the applicable portion of intangible assets, including goodwill, and related amortization resulting from purchase accounting adjustments associated with GM’s purchase of Hughes in 1985, with certain amounts allocated to the Satellite Businesses.

*Merger Transaction*

On October 28, 2001, Hughes and GM, together with EchoStar Communications Corporation (“EchoStar”), announced the signing of definitive agreements that provide for the split-off of Hughes (or a company holding all of the capital stock of Hughes) from GM and the combination of the Hughes business with EchoStar by means of a merger (the “Merger”). The surviving entity is sometimes referred to as New EchoStar. The Merger is subject to a number of conditions and no assurances can be given that the transactions will be completed. See further discussion of the Merger in “Management’s Discussion and Analysis of Financial Condition and Results of Operations—Acquisitions, Investments and Divestitures—Merger Transaction.” The financial and other information regarding Hughes contained in this Annual Report do not give any effect to or make any adjustment for the anticipated completion of the Merger.

The split-off of Hughes from GM would occur by means of a distribution to the holders of GM Class H common stock of one share of Class C common stock of a Hughes holding company (that will own all of the stock of Hughes at the time of the split-off) in exchange for each share of GM Class H common stock held immediately prior to the split-off. Immediately following the split-off, the businesses of Hughes and EchoStar would be combined in the Hughes/EchoStar merger to form New EchoStar. Each share of the Hughes holding company Class C common stock would remain outstanding and become a share of Class C common stock of New EchoStar. Holders of Class A and Class B common stock of EchoStar would receive about 1.3699 shares of stock of the merged entity in exchange for each share of EchoStar Class A or Class B common stock held prior to the Hughes/EchoStar merger.

The transactions are structured in a manner that will not result in the recapitalization of GM Class H common stock into GM \$1<sup>2</sup>/<sub>3</sub> par value common stock at a 120% exchange ratio, as currently provided for under certain circumstances in the General Motors Restated Certificate of Incorporation, as amended. The GM \$1<sup>2</sup>/<sub>3</sub> par value common stock would remain outstanding and would be GM’s only class of common stock after the transactions.



## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

As part of the transactions, GM would receive a dividend from Hughes of up to \$4.2 billion in cash, and its approximately 30% retained economic interest in Hughes would be reduced by a commensurate amount. Following these transactions, subject to Internal Revenue Service (“IRS”) approval, and based on a number of assumptions, including the potential issuance or distribution of up to 100 million shares of GM Class H common stock or New EchoStar Class C common stock in exchange for certain debt of GM, GM currently may retain an interest in the merged entity. The \$4.2 billion dividend to GM will be financed by Hughes through new and existing credit facilities or other borrowings.

The transactions are subject to a number of conditions, including approval by a majority of each class of GM stockholders—GM  $\$1^{2/3}$  and GM Class H—voting both separately as distinct classes and also voting together as a single class based on their respective per share voting power. The proposed transactions also are subject to anti-trust clearance and approval by the Federal Communications Commission. In addition, the transactions are contingent upon the receipt of a favorable ruling from the IRS that the separation of Hughes from GM will be tax-free to GM and its stockholders for U.S. federal income tax purposes. The transactions are currently expected to close in the second half of 2002.

GM, Hughes, and EchoStar have agreed that, in the event that the transactions do not occur because certain specified regulatory-related conditions have not been satisfied, EchoStar will be required to pay Hughes a \$600 million termination fee and if the merger agreement is terminated for failure to obtain specified regulatory clearances or financing to complete the merger, purchase Hughes’ interest in PanAmSat for an aggregate purchase price of approximately \$2.7 billion, which is payable, depending on the circumstances, solely in cash or in a combination of cash and either debt or equity securities of EchoStar. The proceeds from the termination fee and the sale of Hughes’ PanAmSat interest would result in the recognition of a gain that would be material to Hughes’ financial position and results of operations. Cash proceeds, net of income taxes, would be retained by Hughes and used to repay certain outstanding borrowings and fund future operating requirements.

#### **Note 2: Summary of Significant Accounting Policies**

##### *Principles of Consolidation*

The accompanying financial statements are presented on a consolidated basis and include the accounts of Hughes and its domestic and foreign subsidiaries that are more than 50% owned or controlled by Hughes after elimination of intercompany accounts and transactions. Hughes allocates losses to minority interests only to the extent of a minority investor’s investment in a subsidiary.

##### *Use of Estimates in the Preparation of the Consolidated Financial Statements*

The preparation of the consolidated financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect amounts reported therein. Due to the inherent uncertainty involved in making estimates, actual results reported in future periods may be based upon amounts which differ from those estimates.

##### *Revenue Recognition*

Revenues are generated from sales of direct-to-home broadcast subscriptions, the sale of DSL services, the sale of transponder capacity and related services through outright sales, sales-type leases and operating lease contracts, and sales of communications equipment and services.

Sales are generally recognized as products are shipped or services are rendered. Direct-To-Home subscription revenues and pay-per-view services are recognized when programming is broadcast to subscribers. Programming payments received from subscribers in advance of the broadcast are recorded as deferred revenues until earned.

Advance payments in the form of cash and equity instruments from programming content providers for carriage of their signal on DIRECTV are deferred and recognized as revenue using the straight-line method over the related contract term. Equity instruments are recorded at fair value based on quoted market prices or appraised values when received.

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

Satellite transponder lease contracts qualifying for capital lease treatment (typically based on the term of the lease) are accounted for as sales-type leases, with revenues recognized equal to the net present value of the future minimum lease payments. Upon entering into a sales-type lease, the cost basis of the transponder is charged to cost of products sold. The portion of each periodic lease payment deemed to be attributable to interest income is recognized in each respective period. Contracts for sales of transponders typically include telemetry, tracking and control ("TT&C") service agreements. Revenues related to TT&C service agreements are recognized as the services are performed.

Transponder and other lease contracts that do not qualify as sales-type leases are accounted for as operating leases. Operating lease revenues are recognized on a straight-line basis over the respective lease term. Differences between operating lease payments received and revenues recognized are deferred and included in accounts and notes receivable or investments and other assets.

A small percentage of revenues are derived from long-term contracts for the sale of large wireless communications systems. Sales under long-term contracts are recognized primarily using the percentage-of-completion (cost-to-cost) method of accounting. Under this method, sales are recorded equivalent to costs incurred plus a portion of the profit expected to be realized, determined based on the ratio of costs incurred to estimated total costs at completion. Profits expected to be realized on long-term contracts are based on estimates of total sales value and costs at completion. These estimates are reviewed and revised periodically throughout the lives of the contracts, and adjustments to profits resulting from such revisions are recorded in the accounting period in which the revisions are made. Estimated losses on contracts are recorded in the period in which they are identified.

Hughes has from time to time entered into agreements for the sale and leaseback of certain of its satellite transponders. However, as a result of early buy-out transactions described in Note 4, no obligations under sale-leaseback agreements remain at December 31, 2001. Prior to the completion of the early buy-out transactions, the leasebacks were classified as operating leases and, therefore, the capitalized cost and associated depreciation related to satellite transponders sold were not included in the accompanying consolidated financial statements. Gains resulting from the sale-leaseback transactions were deferred and amortized over the leaseback period. Leaseback expense was recorded using the straight-line method over the term of the lease, net of amortization of the deferred gains. Differences between operating leaseback payments made and expense recognized were deferred and included in other liabilities and deferred credits.

#### *Subscriber Acquisition Costs*

Subscriber acquisition costs consist of consumer promotional offers, such as the cost of subsidizing the consumers purchase of DIRECTV™ receiving equipment, subsidizing installation and programming, dealer commissions, print and television advertising, and subsidies paid to manufacturers of DIRECTV receiving equipment. The costs associated with advertising are expensed as services are provided. Promotional offers and manufacturer subsidies are expensed as incurred. Generally, dealer commissions are recognized on a straight-line basis over a one-year period. Dealers earn a pro-rata portion of the commission each month during the first year from the date of initial customer activation as long as a customer remains connected to the DIRECTV service. DIRECTV receiving equipment and installation costs are expensed as incurred or, when a contractual commitment exists, deferred and amortized over the related customer contract period, which is generally one-year. Subscriber acquisition costs are included in "Selling, general and administrative expenses" in the statement of operations. The deferred portion of the costs are included in "Prepaid expenses and other" in the balance sheet.

#### *Cash Flows*

Cash equivalents consist of highly liquid investments purchased with original maturities of three months or less.

Net cash from operating activities includes cash payments made for interest of \$268.4 million, \$312.9 million and \$174.6 million in 2001, 2000 and 1999, respectively. Net cash refunds received by Hughes for prior year income taxes amounted to \$310.7 million, \$290.5 million and \$197.2 million in 2001, 2000 and 1999, respectively.

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

#### *Contracts in Process*

Contracts in process are stated at costs incurred plus estimated profit, less amounts billed to customers and advances and progress payments applied. Engineering, tooling, manufacturing, and applicable overhead costs, including administrative, research and development and selling expenses, are charged to costs and expenses when incurred. Amounts billed under retainage provisions of contracts are not significant. Advances offset against contract related receivables amounted to \$37.6 million and \$93.0 million at December 31, 2001 and 2000, respectively.

#### *Inventories*

Inventories are stated at the lower of cost or market principally using the average cost method.

<u>Major Classes of Inventories</u>	<u>2001</u>	<u>2000</u>
	(Dollars in Millions)	
Productive material and supplies.....	\$ 58.3	\$ 89.5
Work in process.....	118.6	128.3
Finished goods.....	183.2	120.2
Total.....	<u>\$ 360.1</u>	<u>\$ 338.0</u>

#### *Property, Satellites and Depreciation*

Property and satellites are carried at cost. Satellite costs include construction costs, launch costs, launch insurance and capitalized interest. Capitalized customer leased set-top box costs include the cost of hardware and installation. Depreciation is computed generally using the straight-line method over the estimated useful lives of the assets. Leasehold improvements are amortized over the lesser of the life of the asset or term of the lease.

#### *Intangible Assets*

Goodwill, which represents the excess of the cost over the net tangible and identifiable intangible assets of acquired businesses, and intangible assets are amortized using the straight-line method over periods not exceeding 40 years. As discussed below, with the adoption of Statement of Financial Accounting Standards ("SFAS") No. 142, Goodwill and Other Intangible Assets, on January 1, 2002, Hughes will cease amortization of goodwill and intangible assets with indefinite lives.

#### *Broadcast Programming Rights*

The cost of television programming broadcast rights are recognized as programming is broadcast. The costs of rights to distribute live sporting events are charged to expense using the straight-line method as the events occur over the course of the season or tournament. These costs are included in "Broadcast programming and other costs" in the statement of operations.

#### *Software Development Costs*

Other assets include certain software development costs capitalized in accordance with SFAS No. 86, Accounting for the Costs of Computer Software to be Sold, Leased, or Otherwise Marketed. Capitalized software development costs at December 31, 2001 and 2000, net of accumulated amortization of \$147.8 million and \$125.2 million, respectively, totaled \$85.1 million and \$74.5 million, respectively. The software is amortized using the greater of the units of revenue method or the straight-line method over its estimated useful life, not in excess of five years. Software program reviews are conducted to ensure that capitalized software development costs are properly treated and costs associated with programs that are not generating revenues are appropriately written-off.

#### *Valuation of Long-Lived Assets*

Hughes evaluates the carrying value of long-lived assets to be held and used, including goodwill and other intangible assets, when events and circumstances warrant such a review. The carrying value of a long-lived asset is considered impaired when the anticipated undiscounted cash flow from such

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

asset is separately identifiable and is less than its carrying value. In that event, a loss is recognized based on the amount by which the carrying value exceeds the fair value of the long-lived asset. Fair value is determined primarily using the anticipated cash flows discounted at a rate commensurate with the risk involved. Losses on long-lived assets to be disposed of are determined in a similar manner, except that fair values are reduced for the cost of disposal.

#### *Foreign Currency*

Some of Hughes' foreign operations have determined the local currency to be their functional currency. Accordingly, these foreign entities translate assets and liabilities from their local currencies to U.S. dollars using year-end exchange rates while income and expense accounts are translated at the average rates in effect during the year. The resulting translation adjustment is recorded as part of accumulated other comprehensive income (loss) ("OCI"), a separate component of stockholder's equity. Hughes also holds foreign currency denominated equity investments for which translation adjustments are also recorded as part of OCI.

Hughes also has foreign operations where the U.S. dollar has been determined as the functional currency. Gains and losses resulting from remeasurement of the foreign currency denominated assets, liabilities and transactions into the U.S. dollar are recognized currently, in the statement of operations.

#### *Financial Instruments and Investments*

Hughes maintains investments in equity securities of unaffiliated companies. Marketable equity securities are considered available-for-sale and carried at current fair value based on quoted market prices with unrealized gains or losses (excluding other-than-temporary losses), net of taxes, reported as part of OCI. Hughes continually reviews its investments to determine whether a decline in fair value below the cost basis is "other-than-temporary." Hughes considers, among other factors; the magnitude and duration of the decline; the financial health of and business outlook of the investee, including industry and sector performance, changes in technology, and operational and financing cash flow factors; and Hughes' intent and ability to hold the investment. If the decline in fair value is judged to be other-than-temporary, the cost basis of the security is written-down to fair value and the amount recognized in the statement of operations as part of "Other, net."

Non-marketable equity securities are carried at cost. Investments in which Hughes owns at least 20% of the voting securities or has significant influence are accounted for under the equity method of accounting. Equity method investments are recorded at cost and adjusted for the appropriate share of the net earnings or losses of the investee. Investee losses are recorded up to the amount of the investment plus advances and loans made to the investee, and financial guarantees made on behalf of the investee. In certain instances, this can result in Hughes recognizing investee earnings or losses in excess of its ownership percentage.

The carrying value of cash and cash equivalents, accounts and notes receivable, investments and other assets, accounts payable, amounts included in accrued liabilities and other meeting the definition of a financial instrument and debt approximated fair value at December 31, 2001 and 2000.

Hughes carries all derivative financial instruments on the balance sheet at fair value based on quoted marked prices. Hughes uses derivative contracts to minimize the financial impact of changes in the fair value of recognized assets, liabilities, and unrecognized firm commitments, or the variability of cash flows associated with forecasted transactions in accordance with internal risk management policies. Changes in fair value of designated, qualified and effective fair value hedges are recognized in earnings as offsets to the changes in fair value of the related hedged items. Changes in fair value of designated, qualified and effective cash flow hedges are deferred and recorded as a component of OCI until the hedged transactions occur and are recognized in earnings. The ineffective portion and changes related to amounts excluded from the effectiveness assessment of a hedging derivative's change in fair value are immediately recognized in the statement of operations in "Other, net." Hughes assesses, both at the inception of the hedge and on an on-going basis, whether the derivatives are highly effective. Hedge accounting is prospectively discontinued when hedge instruments are no longer highly effective.

The net deferred gain from effective cash flow hedges in OCI of \$0.7 million at December 31, 2001 is expected to be recognized in earnings during the next twelve months.

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

#### *Stock Compensation*

Hughes issues GM Class H common stock options to employees with grant prices equal to the fair value of the underlying security at the date of grant. No compensation cost has been recognized for options in accordance with the provisions of Accounting Principles Board (“APB”) Opinion No. 25, Accounting for Stock Issued to Employees. See Note 12 for information regarding the pro forma effect on earnings of recognizing compensation cost based on the estimated fair value of the stock options granted, as required by SFAS No. 123, Accounting for Stock-Based Compensation.

Compensation expense related to stock awards is recognized ratably over the vesting period and, where required, periodically adjusted to reflect changes in the stock price of the underlying security.

#### *Product and Service Related Expenses*

Advertising and research and development costs are expensed as incurred. Advertising expenses were \$126.6 million in 2001, \$108.3 million in 2000 and \$115.8 million in 1999. Expenditures for research and development were \$85.8 million in 2001, \$104.5 million in 2000 and \$98.8 million in 1999.

#### *Market Concentrations and Credit Risk*

Hughes provides services and extends credit to a number of wireless communications equipment customers and to a large number of consumers. Management monitors its exposure to credit losses and maintains allowances for anticipated losses.

#### *Accounting Changes*

Hughes adopted SFAS No. 141, Business Combinations, on July 1, 2001. SFAS No. 141 requires that all business combinations initiated after June 30, 2001 be accounted for under the purchase method and prohibits the amortization of goodwill and intangible assets with indefinite lives acquired thereafter. The adoption of SFAS No. 141 did not have a significant impact on Hughes’ consolidated results of operations or financial position.

Hughes adopted SFAS No. 133, Accounting for Derivative Instruments and Hedging Activities on January 1, 2001. SFAS No. 133 requires Hughes to carry all derivative financial instruments on the balance sheet at fair value. In accordance with the transition provisions of SFAS No. 133, Hughes recorded a one-time after-tax charge of \$7.4 million on January 1, 2001 as a cumulative effect of accounting change in the Consolidated Statements of Operations and Available Separate Consolidated Net Income (Loss) and an after-tax unrealized gain of \$0.4 million in OCI.

In September 1999, the Financial Accounting Standards Board (“FASB”) issued Emerging Issues Task Force Issue 99-10 (“EITF 99-10”), Percentage Used to Determine the Amount of Equity Method Losses. EITF 99-10 addresses the percentage of ownership that should be used to compute equity method losses when the investment has been reduced to zero and the investor holds other securities of the investee. EITF 99-10 requires that equity method losses should not be recognized solely on the percentage of common stock owned; rather, an entity-wide approach should be adopted. Under such an approach, equity method losses must be recognized based on the ownership level that includes other equity securities (e.g., preferred stock) and loans/advances to the investee or based on the change in the investor’s claim on the investee’s book value. Hughes adopted EITF 99-10 during the third quarter of 1999 which resulted in Hughes recording a higher percentage of DIRECTV Japan’s losses subsequent to the effective date of September 23, 1999. The unfavorable impact of adopting EITF 99-10 was \$39.0 million after-tax.

#### *New Accounting Standards*

In August 2001, the FASB issued SFAS No. 144, Accounting for the Impairment or Disposal of Long-Lived Assets. SFAS No. 144 refines existing impairment accounting guidance and extends the use of this accounting to discontinued operations. SFAS No. 144 allows the use of discontinued operations accounting treatment for both reporting segments and distinguishable components thereof. SFAS No. 144 also eliminates the existing exception to consolidation of a subsidiary for which control is likely to be temporary. The adoption of the statement on January 1, 2002 is not expected to have an impact on Hughes’ consolidated results of operations or financial position.

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

In July 2001, the FASB issued SFAS No. 142, Goodwill and Other Intangible Assets. SFAS No. 142 requires that existing and future goodwill and intangible assets with indefinite lives not be amortized, but written down, as needed, based upon an impairment analysis that must occur at least annually. All other intangible assets are amortized over their estimated useful lives. Hughes adopted SFAS No. 142 on January 1, 2002 which will require an assessment of goodwill and intangible assets acquired prior to July 1, 2001. Intangible assets that no longer qualify for separate accounting, if any, will be combined with goodwill. Management is currently assessing the impact of this provision of the standard on Hughes' results of operations and financial position. Management estimates that as a result of the new standard, amortization expense of \$216 million pre-tax (\$195 million after-tax) associated with goodwill and intangible assets with indefinite lives will not be charged to the statement of operations in 2002.

#### *Reclassifications*

Certain prior year amounts have been reclassified to conform to the 2001 presentation.

#### **Note 3: Property and Satellites, Net**

	Estimated Useful Lives (years)	2001	2000
(Dollars in Millions)			
Land and improvements	7–30	\$ 54.4	\$ 45.5
Buildings and leasehold improvements	2–40	290.9	189.1
Machinery and equipment	2–23	1,627.2	1,105.4
Customer leased set-top boxes	4–7	969.5	778.3
Furniture, fixtures and office machines	3–15	128.6	109.7
Construction in progress	—	<u>450.8</u>	<u>386.0</u>
Total		3,521.4	2,614.0
Less accumulated depreciation		<u>1,323.6</u>	<u>906.2</u>
Property, net		<u>\$ 2,197.8</u>	<u>\$ 1,707.8</u>
Satellites	12–16	\$ 6,215.4	\$ 5,263.8
Less accumulated depreciation		<u>1,408.8</u>	<u>1,033.8</u>
Satellites, net		<u>\$ 4,806.6</u>	<u>\$ 4,230.0</u>

Hughes capitalized interest costs of \$76.3 million, \$82.4 million and \$65.1 million during 2001, 2000 and 1999, respectively, as part of the cost of its satellites under construction.

#### **Note 4: Leasing Activities**

Future minimum payments due from customers under sales-type leases and related service agreements, and noncancelable satellite transponder operating leases as of December 31, 2001 are as follows:

	Minimum Lease Payments	Sales-Type Leases Service Agreement Payments	Operating Leases
(Dollars in Millions)			
2002	\$ 47.0	\$ 4.0	\$ 718.2
2003	47.0	4.0	644.3
2004	45.5	3.7	606.8
2005	43.3	3.4	556.1
2006	28.6	1.2	516.0
Thereafter	<u>169.3</u>	<u>5.2</u>	<u>2,398.5</u>
Total	<u>\$ 380.7</u>	<u>\$ 21.5</u>	<u>\$ 5,439.9</u>

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

The components of the net investment in sales-type leases are as follows:

	<u>2001</u>	<u>2000</u>
	(Dollars in Millions)	
Total minimum lease payments	\$ 380.7	\$ 382.6
Less unearned interest income and allowance for doubtful accounts	<u>128.8</u>	<u>136.5</u>
Total net investment in sales-type leases	251.9	246.1
Less current portion	<u>24.9</u>	<u>25.0</u>
Total long-term net investment in sales-type leases	<u>\$ 227.0</u>	<u>\$ 221.1</u>

In 1999, PanAmSat exercised early buy-out options on transponders leased under sale-leaseback agreements for \$245.4 million in cash and \$124.1 million of assumed debt. As a result, all deferred gains on sale-leaseback transactions were eliminated.

#### **Note 5: Intangible Assets**

At December 31, 2001 and 2000, Hughes had \$6,500.3 million and \$6,443.9 million, respectively, of goodwill, net of accumulated amortization. Accumulated amortization for goodwill was \$700.0 million and \$499.5 million at December 31, 2001 and 2000, respectively. Goodwill is amortized over 7 to 40 years. Hughes also had, net of accumulated amortization, \$656.5 million and \$707.4 million of intangible assets at December 31, 2001 and 2000, respectively, which are amortized over 2 to 40 years. Accumulated amortization for intangible assets was \$182.2 million and \$111.3 million at December 31, 2001 and 2000, respectively. Intangible assets consist mainly of Federal Communications Commission licenses, customer lists and dealer networks.

As discussed in Note 2, Hughes will cease amortization of goodwill and intangible assets with indefinite lives with the adoption of SFAS No. 142 on January 1, 2002.

#### **Note 6: Investments**

Investments in marketable equity securities stated at current fair value and classified as available-for-sale totaled \$725.4 million and \$973.9 million at December 31, 2001 and 2000, respectively. Accumulated unrealized pre-tax holding gains recorded as part of OCI were \$323.1 million and \$433.6 million as of December 31, 2001 and 2000, respectively. During 2001, Hughes recognized other-than-temporary declines in certain marketable equity investments, which resulted in a charge of \$226.1 million. Hughes also recognized a gain of \$130.6 million from the sale of certain marketable equity securities during 2001. The net amount of gains and losses realized from the write-down of investments is reflected as a reclassification adjustment in OCI and included in the statement of operations in "Other, net."

Aggregate investments in affiliated companies, including advances and loans, accounted for under the equity method at December 31, 2001 and 2000, amounted to \$54.9 million and \$121.1 million, respectively.

#### **Note 7: Accrued Liabilities and Other**

	<u>2001</u>	<u>2000</u>
	(Dollars in Millions)	
Payroll and other compensation	\$ 216.8	\$ 231.0
Provision for consumer finance and rebate programs	110.6	125.6
Exit costs and other liabilities related to discontinued businesses	386.3	386.5
Programming contract liabilities	106.3	90.7
Other	<u>522.0</u>	<u>470.7</u>
Total	<u>\$ 1,342.0</u>	<u>\$ 1,304.5</u>

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

Included in Other Liabilities and Deferred Credits is a provision for long-term programming contracts with above-market rates, established as part of the United States Satellite Broadcasting Company, Inc. ("USSB") and PRIMESTAR acquisitions discussed in Note 17, which totaled \$430.1 million and \$536.6 million at December 31, 2001 and December 31, 2000, respectively.

During 2001, Hughes announced a nearly 10% reduction of its approximately 7,900 employees, excluding DIRECTV customer service representatives, located in the United States. As a result 750 employees, across all business disciplines, were given notification of termination that resulted in a charge to operations of \$87.5 million. Of that charge, \$80.0 million related to employee severance benefits and \$7.5 million was for other costs primarily related to a remaining lease obligation associated with excess office space and employee equipment. As of December 31, 2001, 668 employees had been terminated with the remaining employees expected to be terminated in the first quarter of 2002. The remaining accrual for employee severance and other costs amounted to \$32.7 million and \$4.7 million, respectively, at December 31, 2001.

#### **Note 8: Short-Term Borrowings and Long-Term Debt**

##### *Short-Term Borrowings and Current Portion of Long-Term Debt*

	Interest Rates at <u>December 31, 2001</u>	<u>2001</u>	<u>2000</u>
		(Dollars in Millions)	
Revolving credit facilities	3.49%	\$ 450.0	
Other short-term borrowings	4.18%– 11.50%	16.4	\$ 3.4
Current portion of long-term debt	2.75%– 7.23%	<u>1,192.1</u>	<u>21.2</u>
Total short-term borrowings and current portion of long-term debt		<u>\$ 1,658.5</u>	<u>\$ 24.6</u>

##### *Long-Term Debt*

	Interest Rates at <u>December 31, 2001</u>	<u>2001</u>	<u>2000</u>
		(Dollars in Millions)	
Notes payable	2.75%– 6.88%	\$ 796.5	\$ 817.7
Credit facilities	2.99%– 3.29%	1,322.6	464.9
Other debt	3.04%–12.37%	<u>61.8</u>	<u>30.6</u>
Total debt		2,180.9	1,313.2
Less current portion		<u>1,192.1</u>	<u>21.2</u>
Total long-term debt		<u>\$ 988.8</u>	<u>\$ 1,292.0</u>

**Notes Payable.** In July 1999, in connection with the early buy-out of a satellite sale-leaseback, PanAmSat assumed \$124.1 million of variable rate notes of which \$46.5 million was outstanding at December 31, 2001. The weighted average interest rate on the notes was 2.75% at December 31, 2001. The notes were repaid in January 2002.

PanAmSat issued five, seven, ten and thirty-year fixed rate notes totaling \$750.0 million in January 1998. The outstanding principal balances and interest rates for these notes as of December 31, 2001 were \$200 million at 6.0%, \$275 million at 6.125%, \$150 million at 6.375% and \$125 million at 6.875%, respectively. Principal on the notes is payable at maturity, while interest is payable semi-annually.

**Credit Facilities.** On January 5, 2001, DIRECTV Latin America, LLC ("DLA") entered into a \$450.0 million revolving credit facility. This facility provides for a commitment through the earlier of July 5, 2002 or the date of receipt of the cash proceeds from the issuance of any debt or equity security of DLA. Borrowings under the credit facility bear interest at a rate based on the London Interbank Offer Rate



## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

("LIBOR") plus an indicated spread. As of December 31, 2001, the facility was fully drawn, with borrowings outstanding under the revolving credit facility bearing a weighted average interest rate of 3.49%.

As of December 31, 2001, Hughes had a \$750.0 million multi-year unsecured revolving credit facility. Borrowings under the facility bear interest based on a spread to the then-prevailing LIBOR. The multi-year credit facility provides for a commitment of \$750.0 million through December 5, 2002. As of December 31, 2001, the facility was fully drawn, with borrowings outstanding under the revolving credit facility bearing a weighted average interest rate of 2.99%.

On October 1, 2001, Hughes entered into a \$2,000 million revolving credit facility with General Motors Acceptance Corporation ("GMAC"). The facility is split into two loan tranches: a \$1,500 million tranche secured by a cash deposit from Hughes of up to \$1,500 million and a \$500 million unsecured tranche. This facility provides for a commitment through September 30, 2002, and is renewable for up to six additional months at Hughes' option. Borrowings under the secured portion of the facility are only available up to the amount of cash collateral provided. Access to the unsecured portion of the facility is conditioned upon GMAC's receipt of the cash deposit. Borrowings under the unsecured portion of the facility bear an interest rate based on GMAC's cost of funds plus 1.75%. As of December 31, 2001, no cash collateral had been provided to GMAC and the facility was unavailable for loans.

At December 31, 2001, PanAmSat maintained a \$500.0 million multi-year unsecured revolving credit facility. The facility provides for a commitment through December 24, 2002. Borrowings under the credit facility bear interest at a rate equal to LIBOR plus a spread based on PanAmSat's credit rating. No amounts were outstanding under the facility at December 31, 2001.

At December 31, 2001, SurFin Ltd. ("SurFin") had unsecured revolving credit facilities of \$400.0 million and \$212.5 million that expire in June 2002 and September 2003, respectively. Borrowings under the credit facilities bear interest at various rates based on LIBOR plus an indicated spread. \$392.0 million was outstanding under the \$400.0 million credit facility at December 31, 2001, with borrowings bearing a weighted average interest rate of 3.18%. \$180.6 million was outstanding under the \$212.5 million credit facility at December 31, 2001. The weighted average interest rate on these borrowings was 3.29% at December 31, 2001.

*Other.* \$78.2 million in other short-term and long-term debt, related primarily to DLA and Hughes Network Systems' ("HNS") international subsidiaries, were outstanding at December 31, 2001, bearing fixed and floating rates of interest of 3.04% to 12.37%. Principal on these borrowings is due in varying amounts through 2007.

The aggregate maturities of long-term debt for the five years subsequent to December 31, 2001 are \$1,192.1 million in 2002, \$385.1 million in 2003, \$9.8 million in 2004, \$283.4 million in 2005, \$2.0 million in 2006 and \$308.5 million in 2007 and thereafter.

See Note 21 for a discussion of financing activities subsequent to December 31, 2001.

#### **Note 9: Income Taxes**

The income tax benefit is based on the reported loss from continuing operations before income taxes, minority interests and cumulative effect of accounting change. Deferred income tax assets and liabilities reflect the impact of temporary differences between the amounts of assets and liabilities recognized for financial reporting purposes and such amounts recognized for tax purposes, as measured by applying currently enacted tax laws.

Hughes and its domestic subsidiaries join with GM in filing a consolidated U.S. federal income tax return. The portion of the consolidated income tax liability or receivable recorded by Hughes is generally equivalent to the amount that would have been recorded on a separate return basis.

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

The income tax benefit consisted of the following:

	<u>2001</u>	<u>2000</u>	<u>1999</u>
	(Dollars in Millions)		
Taxes currently payable (refundable):			
U.S. federal	\$ (422.2)	\$ (757.9)	\$ (406.5)
Foreign	54.8	31.6	30.1
State and local	<u>(54.1)</u>	<u>(52.0)</u>	<u>(24.2)</u>
Total	<u>(421.5)</u>	<u>(778.3)</u>	<u>(400.6)</u>
Deferred tax liabilities (assets):			
U.S. federal	89.9	361.0	185.0
State and local	<u>6.0</u>	<u>11.2</u>	<u>(21.3)</u>
Total	<u>95.9</u>	<u>372.2</u>	<u>163.7</u>
Total income tax benefit	<u>\$ (325.6)</u>	<u>\$ (406.1)</u>	<u>\$ (236.9)</u>

Loss from continuing operations before income taxes, minority interests and cumulative effect of accounting change included the following components:

	<u>2001</u>	<u>2000</u>	<u>1999</u>
	(Dollars in Millions)		
U.S. loss	\$ (914.7)	\$ (752.2)	\$ (519.0)
Foreign loss	<u>(75.0)</u>	<u>(63.4)</u>	<u>(141.0)</u>
Total	<u>\$ (989.7)</u>	<u>\$ (815.6)</u>	<u>\$ (660.0)</u>

The combined income tax benefit was different than the amount computed using the U.S. federal statutory income tax rate for the reasons set forth in the following table:

	<u>2001</u>	<u>2000</u>	<u>1999</u>
	(Dollars in Millions)		
Expected refund at U.S. federal statutory income tax rate	\$ (346.4)	\$ (285.4)	\$ (231.0)
Research and experimentation tax benefits and resolution of tax contingencies	(30.0)	(80.9)	(78.9)
Extraterritorial income exclusion and foreign sales corporation tax benefit	(37.1)	(32.8)	(13.6)
U.S. state and local income taxes	(20.9)	(26.6)	(29.5)
DIRECTV Japan and other equity method investees	12.1	(81.2)	60.3
Tax benefit for investment in Motient	(41.7)	—	—
Minority interests in losses of partnership	33.9	27.8	19.0
Non-deductible goodwill amortization	46.3	40.3	31.0
Foreign taxes, net of credits	56.8	31.6	2.8
Other	<u>1.4</u>	<u>1.1</u>	<u>3.0</u>
Total income tax benefit	<u>\$ (325.6)</u>	<u>\$ (406.1)</u>	<u>\$ (236.9)</u>

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

Temporary differences and carryforwards which gave rise to deferred tax assets and liabilities at December 31 were as follows:

	<u>2001</u>		<u>2000</u>	
	Deferred Tax <u>Assets</u>	Deferred Tax <u>Liabilities</u>	Deferred Tax <u>Assets</u>	Deferred Tax <u>Liabilities</u>
	(Dollars in Millions)			
Accruals and advances	\$ 316.5		\$ 233.3	
Customer deposits, rebates and commissions	172.3	\$ 170.7	137.9	\$ 185.1
State taxes	23.2	—	29.4	—
Gain on PanAmSat merger	—	176.4	—	181.2
Depreciation and amortization	—	1,065.1	—	982.6
Net operating loss and tax credit carryforwards	351.6	—	244.7	—
Programming contract liabilities	227.0	—	251.0	—
Unrealized gains on securities	—	130.5	—	176.6
Other	<u>72.2</u>	<u>135.0</u>	<u>145.7</u>	<u>97.0</u>
Subtotal	1,162.8	1,677.7	1,042.0	1,622.5
Valuation allowance	<u>(112.7)</u>	<u>—</u>	<u>(98.9)</u>	<u>—</u>
Total deferred taxes	<u>\$ 1,050.1</u>	<u>\$ 1,677.7</u>	<u>\$ 943.1</u>	<u>\$ 1,622.5</u>

No income tax provision has been made for the portion of undistributed earnings of foreign subsidiaries deemed permanently reinvested that amounted to approximately \$87.4 million and \$56.8 million at December 31, 2001 and 2000, respectively. Repatriation of all accumulated earnings would have resulted in tax liabilities of \$30.6 million in 2001 and \$19.9 million in 2000.

At December 31, 2001, Hughes has \$88.5 million of deferred tax assets relating to foreign operating loss carryforwards expiring in varying amounts between 2002 and 2006. A valuation allowance was provided for all foreign operating loss carryforwards. At December 31, 2001, Hughes has \$24.2 million of foreign tax credits which will expire in 2005 and \$37.2 million of foreign tax credits which will expire in 2006. A valuation allowance was provided for \$24.2 million of foreign tax credits. At December 31, 2001, Hughes has \$46.4 million of alternative minimum tax credits, which can be carried forward indefinitely. At December 31, 2001, Hughes' subsidiaries have \$155.3 million of deferred tax assets relating to federal net operating loss carryforwards which will expire in varying amounts between 2009 and 2021.

Hughes has an agreement with Raytheon Company ("Raytheon") which governs Hughes' rights and obligations with respect to U.S. federal and state income taxes for all periods prior to the spin-off and merger of Hughes' defense electronics business with Raytheon in 1997. Hughes is responsible for any income taxes pertaining to those periods prior to the merger, including any additional income taxes resulting from U.S. federal and state tax audits, and is entitled to any U.S. federal and state income tax refunds relating to those years.

Hughes also has an agreement with Boeing which governs Hughes' rights and obligations with respect to U.S. federal and state income taxes for all periods prior to the sale of Hughes' Satellite Businesses. Hughes is responsible for any income taxes pertaining to those periods prior to the sale, including any additional income taxes resulting from U.S. federal and state tax audits, and is entitled to any U.S. federal and state income tax refunds relating to those years.

The U.S. federal income tax returns of Hughes have been examined through 1994. All years prior to 1986 are closed. Issues relating to the years 1986 through 1994 are being contested through various stages of administrative appeal. The IRS is currently examining Hughes' U.S. federal tax returns for years 1995 through 1997. Management believes that adequate provision has been made for any adjustment which might be assessed for open years.

Taxes receivable from GM at December 31, 2001 and 2000, respectively, were approximately \$300.0 million and \$175.0 million of which \$180.0 million and \$75.0 million, respectively, are included in "Prepaid expenses and other" in the consolidated balance sheets. Taxes receivable from GM

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

included as part of investments and other assets were \$120.0 million and \$100.0 at December 31, 2001 and 2000, respectively.

#### **Note 10: Retirement Programs and Other Postretirement Benefits**

Substantially all of Hughes' employees participate in Hughes' contributory and non-contributory defined benefit retirement plans. Benefits are based on years of service and compensation earned during a specified period of time before retirement. Additionally, an unfunded, nonqualified pension plan covers certain employees. Hughes also maintains a program for eligible retirees to participate in health care and life insurance benefits generally until they reach age 65. Qualified employees who elected to participate in the Hughes contributory defined benefit pension plans may become eligible for these health care and life insurance benefits if they retire from Hughes between the ages of 55 and 65.

The components of the pension benefit obligation and the other postretirement benefit obligation, as well as the net benefit obligation recognized in the consolidated balance sheets, are shown below:

	<u>Pension Benefits</u>		<u>Other Postretirement Benefits</u>	
	<u>2001</u>	<u>2000</u>	<u>2001</u>	<u>2000</u>
	(Dollars in Millions)			
<b>Change in Benefit Obligation</b>				
Net benefit obligation at beginning of year	\$ 403.5	\$ 317.7	\$ 30.2	\$ 22.8
Service cost	16.0	14.7	0.5	0.6
Interest cost	32.7	30.4	1.9	2.7
Plan participants' contributions	2.1	2.3	—	—
Actuarial (gain) loss	41.7	76.9	(2.3)	8.1
Benefits paid	<u>(40.1)</u>	<u>(38.5)</u>	<u>(2.7)</u>	<u>(4.0)</u>
Net benefit obligation at end of year	<u>455.9</u>	<u>403.5</u>	<u>27.6</u>	<u>30.2</u>
<b>Change in Plan Assets</b>				
Fair value of plan assets at beginning of year	477.5	390.1	—	—
Actual return on plan assets	(29.9)	115.5	—	—
Employer contributions	6.4	8.0	2.7	4.0
Plan participants' contributions	2.1	2.3	—	—
Benefits paid	(40.1)	(38.5)	(2.7)	(4.0)
Transfers	<u>—</u>	<u>0.1</u>	<u>—</u>	<u>—</u>
Fair value of plan assets at end of year	<u>416.0</u>	<u>477.5</u>	<u>—</u>	<u>—</u>
Funded status at end of year	(39.9)	74.0	(27.6)	(30.2)
Unamortized amount resulting from changes in plan provisions	23.2	0.9	—	—
Unamortized net amount resulting from changes in plan experience and actuarial assumptions	<u>25.6</u>	<u>(62.1)</u>	<u>(6.4)</u>	<u>(4.5)</u>
Net amount recognized at end of year	<u>\$ 8.9</u>	<u>\$ 12.8</u>	<u>\$ (34.0)</u>	<u>\$ (34.7)</u>
Amounts recognized in the consolidated balance sheets consist of:				
Prepaid benefit cost	\$ 29.0	\$ 29.4		
Accrued benefit cost	(52.8)	(46.7)	\$ (34.0)	\$ (34.7)
Intangible asset	3.7	3.0	—	—
Deferred tax assets	11.7	11.0	—	—
Accumulated other comprehensive loss	<u>17.3</u>	<u>16.1</u>	<u>—</u>	<u>—</u>
Net amount recognized at end of year	<u>\$ 8.9</u>	<u>\$ 12.8</u>	<u>\$ (34.0)</u>	<u>\$ (34.7)</u>

There were no GM Class H common stock shares included in the pension plan assets at December 31, 2001 and \$0.5 million at December 31, 2000.

HUGHES ELECTRONICS CORPORATION

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

	Pension Benefits		Other Postretirement Benefits	
	2001	2000	2001	2000
	<b>Weighted-average assumptions as of December 31</b>			
Discount rate	7.25%	7.75%	7.00%	7.50%
Expected return on plan assets	9.50%	9.50%	N/A	N/A
Rate of compensation increase	5.00%	5.00%	N/A	N/A

For measurement purposes, an 8.0% annual rate of increase in per capita cost of covered health care benefits was assumed for 2002. The rate was assumed to decrease gradually 0.5% per year to 6.0% in 2006.

	Pension Benefits			Other Postretirement Benefits		
	2001	2000	1999	2001	2000	1999
		(Dollars in Millions)				
<b>Components of net periodic benefit cost</b>						
Benefits earned during the year	\$ 16.0	\$ 14.7	\$ 14.5	\$ 0.5	\$ 0.6	\$ 0.6
Interest accrued on benefits earned in prior years	32.7	30.4	23.9	1.9	2.7	1.5
Expected return on assets	(41.0)	(37.9)	(28.5)	—	—	—
Amortization components						
Amount resulting from changes in plan provisions	2.1	0.1	0.4	—	—	—
Net amount resulting from changes in plan experience and actuarial assumptions	<u>0.4</u>	<u>3.6</u>	<u>4.7</u>	<u>(0.5)</u>	<u>0.8</u>	<u>—</u>
Net periodic benefit cost	<u>\$10.2</u>	<u>\$10.9</u>	<u>\$15.0</u>	<u>\$ 1.9</u>	<u>\$ 4.1</u>	<u>\$ 2.1</u>

The projected benefit obligation and accumulated benefit obligation for the pension plans with accumulated benefit obligations in excess of plan assets were \$62.3 million and \$52.8 million, respectively, as of December 31, 2001 and \$57.2 million and \$46.7 million, respectively, as of December 31, 2000. The pension plans with accumulated benefit obligations in excess of plan assets do not have any underlying assets.

A one-percentage point change in assumed health care cost trend rates would have the following effects:

	1-Percentage Point Increase		1-Percentage Point Decrease	
	(Dollars in Millions)			
	Effect on total of service and interest cost components	\$	0.2	\$
Effect on postretirement benefit obligation		2.1		(1.9)

Hughes maintains 401(k) plans for qualified employees. A portion of employee contributions are matched by Hughes and amounted to \$17.7 million, \$15.1 million and \$12.5 million in 2001, 2000 and 1999, respectively.

Hughes has disclosed certain amounts associated with estimated future postretirement benefits other than pensions and characterized such amounts as "other postretirement benefit obligation." Notwithstanding the recording of such amounts and the use of these terms, Hughes does not admit or otherwise acknowledge that such amounts or existing postretirement benefit plans of Hughes (other than pensions) represent legally enforceable liabilities of Hughes.

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

#### Note 11: Stockholder's Equity

GM holds all of the outstanding common stock of Hughes, which consists of 200 shares of \$0.01 par value common stock.

The following represents changes in the components of OCI, net of taxes, as of December 31:

	2001			2000			1999		
	<u>Pre-tax Amount</u>	<u>Tax (Credit) Expense</u>	<u>Net Amount</u>	<u>Pre-tax Amount</u>	<u>Tax Credit</u>	<u>Net Amount</u>	<u>Pre-tax Amount</u>	<u>Tax (Credit) Expense</u>	<u>Net Amount</u>
	(Dollars in Millions)								
Minimum pension liability adjustments	\$ (2.0)	\$ (0.8)	\$ (1.2)	\$ (14.8)	\$ (6.0)	\$ (8.8)	\$ (0.8)	\$ (0.3)	\$ (0.5)
Foreign currency translation adjustments	\$ (60.7)	—	\$ (60.7)	\$ (25.9)	—	\$ (25.9)	\$ 11.0	—	\$ 11.0
Unrealized gains (losses) on securities	\$ (203.2)	\$ (82.2)	\$ (121.0)	\$ (351.0)	\$ (142.0)	\$ (209.0)	\$ 767.3	\$ 317.4	\$ 449.9
Reclassification adjustment for net losses recognized during the period	\$ 95.2	\$ 38.6	\$ 56.6	—	—	—	—	—	—

#### Note 12: Incentive Plans

Under the Hughes Electronics Corporation Incentive Plan (the "Plan"), as approved by the GM Board of Directors in 1999, shares, rights or options to acquire up to 233 million shares of GM Class H common stock on a cumulative basis were authorized for grant, of which 75 million shares were available at December 31, 2001 subject to GM Executive Compensation Committee approval.

The GM Executive Compensation Committee may grant options and other rights to acquire shares of GM Class H common stock under the provisions of the Plan. The option price is equal to 100% of the fair market value of GM Class H common stock on the date the options are granted. These nonqualified options generally vest over two to five years, vest immediately in the event of certain transactions, expire ten years from date of grant and are subject to earlier termination under certain conditions.

Changes in the status of outstanding options were as follows:

	<u>Shares Under Option</u>	<u>Weighted- Average Exercise Price</u>
<b>GM Class H Common Stock</b>		
Outstanding at December 31, 1998	47,096,160	\$11.77
Granted	15,012,825	16.08
Exercised	(10,308,171)	9.95
Terminated	<u>(4,294,746)</u>	13.49
Outstanding at December 31, 1999	47,506,068	\$13.28
Granted	35,538,026	37.06
Exercised	(5,718,726)	11.88
Terminated	<u>(10,976,113)</u>	31.47
Outstanding at December 31, 2000	66,349,255	\$23.04
Granted	37,971,644	23.34
Exercised	(1,946,460)	11.44
Terminated	<u>(6,565,541)</u>	27.66
Outstanding at December 31, 2001	<u>95,808,898</u>	\$23.08

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

The following table summarizes information about the Plan stock options outstanding at December 31, 2001:

Range of <u>Exercise Prices</u>	<u>Options Outstanding</u>			<u>Options Exercisable</u>	
	<u>Number Outstanding</u>	<u>Weighted- Average Remaining Contractual Life (years)</u>	<u>Weighted- Average Exercise Price</u>	<u>Number Exercisable</u>	<u>Weighted- Average Exercise Price</u>
\$ 3.00 to \$8.99	1,622,843	2.4	\$ 6.95	1,622,843	\$ 6.95
9.00 to 16.99	28,702,229	5.5	12.58	25,049,427	12.22
17.00 to 24.99	23,671,526	8.5	19.60	6,150,151	18.32
25.00 to 32.99	18,055,604	8.9	27.81	266,599	30.23
33.00 to 41.99	<u>23,756,696</u>	7.9	37.12	<u>3,760,531</u>	40.73
	<u>95,808,898</u>	7.4	\$ 23.08	<u>36,849,551</u>	\$ 15.94

On May 5, 1997, PanAmSat adopted a stock option incentive plan with terms similar to the Plan. As of December 31, 2001, PanAmSat had 5,719,494 options outstanding to purchase its common stock with exercise prices ranging from \$21.88 per share to \$63.25 per share. The options vest ratably over three to four years and have a remaining life ranging from six years to ten years. At December 31, 2001, 1,876,162 options were exercisable at a weighted average exercise price ranging from \$29.00 per share to \$63.25. The PanAmSat options have been considered in the following pro forma analysis.

The following table presents pro forma information as if Hughes recorded compensation cost using the fair value of issued options on their grant date, as required by SFAS No. 123, Accounting for Stock Based Compensation:

	<u>2001</u>	<u>2000</u>	<u>1999</u>
	(Dollars in Millions)		
Earnings (loss) used for computation of available separate consolidated net income (loss)			
as reported	\$ (714.7)	\$ 732.9	\$ (321.2)
pro forma	(946.5)	585.3	(384.9)

The pro forma amounts for compensation cost are not indicative of the effects on operating results for future periods.

The following table presents the estimated weighted-average fair value of options granted under the Plan using the Black-Scholes valuation model and the assumptions used in the calculations:

	<u>2001</u>	<u>2000</u>	<u>1999</u>
Estimated fair value per option granted	\$ 13.66	\$ 20.39	\$ 8.01
Average exercise price per option granted	23.34	37.06	16.08
Expected stock volatility	51.3%	42.1%	38.0%
Risk-free interest rate	5.1%	6.5%	5.2%
Expected option life (in years)	7.0	6.9	7.0

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

#### Note 13: Other Income and Expenses

	<u>2001</u>	<u>2000</u>	<u>1999</u>
	(Dollars in Millions)		
Equity losses from unconsolidated affiliates	\$ (61.3)	\$ (164.2)	\$ (189.2)
Net loss on discontinuation of DIRECTV Japan business and write down of Sky Perfect investment	(180.0)	(128.4)	—
Gain on the sale of Thomson investment	108.0	—	—
Net gain from sale of other investments	22.6	—	39.4
Other	18.0	—	—
Total other, net	<u>\$ (92.7)</u>	<u>\$ (292.6)</u>	<u>\$ (149.8)</u>

Equity losses from unconsolidated affiliates in 2001 are primarily comprised of losses at the DLA local operating companies and Hughes Tele.com (India) Limited (“HTIL”), and in addition, in 2000 and 1999, DIRECTV Japan.

#### Note 14: Related-Party Transactions

In the ordinary course of its operations, Hughes provides telecommunications services and sells electronic components to, and purchases sub-components from, related parties.

The following table summarizes significant related-party transactions:

	<u>2001</u>	<u>2000</u>	<u>1999</u>
	(Dollars in Millions)		
Revenues	\$ 24.8	\$ 33.4	\$ 46.5
Costs and expenses	11.2	27.0	35.2

#### Note 15: Available Separate Consolidated Net Income (Loss)

GM Class H common stock is a “tracking stock” of GM designed to provide holders with financial returns based on the financial performance of Hughes. Holders of GM Class H common stock have no direct rights in the equity or assets of Hughes, but rather have rights in the equity and assets of GM (which includes 100% of the stock of Hughes).

Amounts available for the payment of dividends on GM Class H common stock are based on the Available Separate Consolidated Net Income (Loss) (“ASCNI”) of Hughes. The ASCNI of Hughes is determined quarterly and is equal to the net income (loss) of Hughes, excluding the effects of the GM purchase accounting adjustment arising from GM’s acquisition of Hughes and reduced by the effects of preferred stock dividends paid and/or payable to GM (earnings (loss) used for computation of ASCNI), multiplied by a fraction, the numerator of which is equal to the weighted-average number of shares of GM Class H common stock outstanding during the period (876.3 million, 681.2 million and 374.1 million during 2001, 2000 and 1999, respectively) and the denominator of which is a number equal to the weighted-average number of shares of GM Class H common stock which, if issued and outstanding, would represent 100% of the tracking stock interest in the earnings of Hughes (Average Class H dividend base). The Average Class H dividend base was 1,300.0 million during 2001, 1,297.0 million during 2000 and 1,255.5 million during 1999.

In addition, the denominator used in determining the ASCNI of Hughes may be adjusted from time to time as deemed appropriate by the GM Board to reflect subdivisions or combinations of the GM Class H common stock, certain transfers of capital to or from Hughes, the contribution of shares of capital stock of GM to or for the benefit of Hughes employees and the retirement of GM Class H common stock purchased by Hughes. The GM Board’s discretion to make such adjustments is limited by criteria set forth in GM’s Restated Certificate of Incorporation.

During the second quarter of 2000, GM completed an exchange offer in which GM repurchased 86 million shares of GM \$1-<sup>2</sup>/<sub>3</sub> par value common stock and issued 92 million shares (prior to giving effect to the stock split during 2000) of GM Class H common stock. In addition, on June 12, 2000, GM contributed approximately 54 million shares (prior to giving effect to the stock split during 2000) and



## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

approximately 7 million shares (prior to the stock split during 2000) of GM Class H common stock to its U.S. Hourly-Rate Employees Pension Plan and VEBA trust, respectively.

On June 6, 2000, the GM Board declared a three-for-one stock split of the GM Class H common stock. The stock split was in the form of a 200% stock dividend, paid on June 30, 2000 to GM Class H common stockholders of record on June 13, 2000. As a result, the numbers of shares of GM Class H common stock presented for all periods have been adjusted to reflect the stock split, unless otherwise noted.

Shares of Class H common stock delivered by GM in connection with the award of such shares to and the exercise of stock options by employees of Hughes increases the numerator and denominator of the fraction referred to above. From time to time, in anticipation of exercises of stock options, Hughes may purchase Class H common stock on the open market. Upon purchase, these shares are retired and therefore decrease the numerator and denominator of the fraction referred to above.

#### **Note 16: Hughes Series A Preferred Stock**

On June 24, 1999, as part of a strategic alliance with Hughes, America Online, Inc. ("AOL") invested \$1.5 billion in shares of GM Series H preference stock. The GM Series H preference stock will automatically convert on June 24, 2002 into GM Class H common stock based upon a variable conversion factor linked to the GM Class H common stock price at the time of conversion, which would have resulted in the issuance of about 80 million shares if converted at December 31, 2001. The preferred stock accrues quarterly dividends at a rate of 6.25% per year and may be converted earlier in certain limited circumstances. GM immediately invested the \$1.5 billion received from AOL in shares of Hughes Series A Preferred Stock designed to correspond to the financial terms of the GM Series H preference stock. Dividends on the Hughes Series A Preferred Stock are payable to GM quarterly at an annual rate of 6.25%. The underwriting discount on the Hughes Series A Preferred Stock is amortized over three years. Upon conversion of the GM Series H preference stock into GM Class H common stock, Hughes will redeem the Hughes Series A Preferred Stock through a cash payment to GM equal to the fair market value of the GM Class H common stock issuable upon the conversion. Simultaneous with GM's receipt of the cash redemption proceeds, GM will make a capital contribution to Hughes of the same amount.

#### **Note 17: Acquisitions, Investments and Divestitures**

##### *Acquisitions and Investments*

On November 19, 2001, Hughes repaid \$74.9 million of debt pursuant to the terms of a debt guarantee provided by Hughes for the benefit of Motient Corporation ("Motient"). In connection with the payment, Hughes received from Motient 7.1 million common shares of XM Satellite Radio Holdings Inc. stock, with a market value as of November 2001 of \$67.9 million and \$3.6 million in cash. The repayment of Motient's debt released Hughes of any further obligations related to Motient's indebtedness and therefore Hughes reversed a related reserve of \$39.5 million. The net effect of these actions resulted in a credit of \$36.1 million to "Other, net" in the statement of operations.

On May 1, 2001, DLA, which operates the Latin America DIRECTV business, acquired from Grupo Clarín S.A. ("Clarín") a 51% ownership interest in Galaxy Entertainment Argentina S.A. ("GEA"), a local operating company located in Argentina that provides direct-to-home broadcast services, and other assets, consisting primarily of programming and advertising rights. The purchase price, valued at \$169 million, consisted of a 3.98% ownership interest in DLA and a put option that under certain circumstances will allow Clarín to sell in November 2003 its 3.98% interest back to DLA for \$195 million in cash. As a result of the transaction, Hughes' interest in DLA decreased from 77.8% to 74.7% and Hughes' ownership in GEA increased from 20% to 58.1%. Hughes' portion of the purchase price, which amounted to about \$130 million, was recorded as an increase to additional paid-in capital with the offset allocated to the net assets acquired, including goodwill.

On April 3, 2001, Hughes acquired Telocity, a company that provides land-based DSL services, through the completion of a tender offer and merger. Telocity is now operating as DIRECTV Broadband, Inc., and is included as part of the Direct-To-Home Broadcast segment. The purchase price was \$197.8 million and was paid in cash.

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

The following selected unaudited pro forma information is being provided to present a summary of the combined results of Hughes and Telocity for 2001 and 2000 as if the acquisition had occurred as of the beginning of the respective periods, giving effect to purchase accounting adjustments. The pro forma data is presented for informational purposes only and may not necessarily reflect the results of operations of Hughes had Telocity operated as part of Hughes for each of the periods presented, nor are they necessarily indicative of the results of future operations. The pro forma information excludes the effect of non-recurring charges.

	<u>2001</u>	<u>2000</u>
	(Dollars in Millions)	
Total revenues	\$ 8,270.1	\$ 7,297.0
Income (loss) before cumulative effect of accounting change	(657.8)	670.0
Net income (loss)	(665.2)	670.0
Pro forma income (loss) used for computation of available separate consolidated net income (loss)	(758.3)	589.9

On July 28, 1999, DLA, acquired Galaxy Brasil, Ltda. (“GLB”), the exclusive distributor of DIRECTV services in Brazil, from Tevecap S.A. for approximately \$114.0 million plus the assumption of debt. In connection with the transaction, Tevecap also sold its 10% equity interest in DLA to Hughes and Darlene Investments, LLC, which increased Hughes’ ownership interest in DLA to 77.8%. As part of the transaction, Hughes also increased its ownership interest in SurFin, a company providing financing of subscriber receiver equipment for certain local operating companies located in Latin America, from 59.1% to 75%. The total consideration paid in the transactions amounted to approximately \$101.1 million.

On May 20, 1999, Hughes acquired by merger all of the outstanding capital stock of USSB, a provider of premium subscription television programming via the digital broadcasting system that it shared with DIRECTV. The total consideration of approximately \$1.6 billion paid in July 1999, consisted of approximately \$0.4 billion in cash and 22.6 million shares of GM Class H common stock (prior to giving effect to the stock split during 2000).

On April 28, 1999, Hughes completed the acquisition of PRIMESTAR’s 2.3 million subscriber medium-power direct-to-home satellite business. The purchase price consisted of \$1.1 billion in cash and 4.9 million shares of GM Class H common stock (prior to giving effect to the stock split during 2000), for a total purchase price of \$1.3 billion. As part of the acquisition of PRIMESTAR, Hughes also purchased the high-power satellite assets, which consisted of an in-orbit satellite and a satellite that had not yet been launched, and related orbital frequencies of Tempo Satellite Inc., a wholly owned subsidiary of TCI Satellite Entertainment Inc, for \$500 million in cash.

As part of the PRIMESTAR acquisition, Hughes formulated a detailed exit plan during the second quarter of 1999 and immediately began to migrate the medium-power customers to DIRECTV’s high-power platform. Accordingly, Hughes accrued exit costs of \$150 million in determining the purchase price allocated to the net assets acquired. The principal components of such exit costs include penalties to terminate assumed contracts and costs to remove medium-power equipment from customer premises. Since DIRECTV’s acquisition of PRIMESTAR, DIRECTV converted a total of approximately 1.5 million customers to its high power service. The *PRIMESTAR By DIRECTV* service ceased operations, as planned, on September 30, 2000. The amount of accrued exit costs remaining at December 31, 2001 and 2000 was \$4.0 million and \$25.9 million, respectively, which primarily represents the remaining obligations on certain contracts.

In February 1999, Hughes acquired an additional ownership interest in Grupo Galaxy Mexicana, S.R.L. de C.V. (“GGM”), a Latin America local operating company which is the exclusive distributor of DIRECTV in Mexico, from Grupo MVS, S.R.L. de C.V. (“Grupo MVS”). As a result, Hughes’ equity ownership represents 49% of the voting equity and all of the non-voting equity of GGM. In October 1998, Hughes acquired from Grupo MVS an additional 10% interest in DLA, increasing Hughes’ ownership interest to 70%. Hughes also acquired an additional 19.8% interest in SurFin, increasing Hughes’ ownership percentage from 39.3% to 59.1%. The aggregate purchase price for these transactions was \$197.0 million in cash.

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

The financial information included herein reflect acquisitions discussed above from their respective dates of acquisition. The acquisitions were accounted for by the purchase method of accounting and, accordingly, the purchase price has been allocated to the assets acquired and the liabilities assumed based on their estimated fair values at the date of acquisition. The excess of the purchase price over the estimated fair values of the net assets acquired has been recorded as goodwill, resulting in a goodwill addition of \$278.2 million for the year ended December 31, 2001, none in 2000 and \$3,612.4 million for the year ended December 31, 1999.

#### *Divestitures*

On July 31, 2001, Hughes sold a 1.6% interest in Thomson Multimedia S. A. for approximately \$132.0 million in cash, resulting in a pre-tax gain of approximately \$108.0 million.

On October 6, 2000, Hughes completed the sale of its Satellite Businesses for \$3.75 billion in cash. The transaction resulted in the recognition of a pre-tax gain of \$2,036.0 million, or \$1,132.3 million after-tax. Included in this gain is a net after-tax curtailment loss of \$42.0 million related to pension and other postretirement benefit plan assets and liabilities associated with the Satellite Businesses. The purchase price is subject to adjustment based upon the value of the final closing net assets as discussed in Note 20.

Summarized financial information for the discontinued operations follows:

	<u>2000</u>	<u>1999</u>
	(Dollars in Millions)	
Revenues (excluding intercompany transactions)	\$ 1,260.1	\$ 1,780.4
Income tax provision	23.2	42.9
Net income	36.1	99.8

In a separate, but related transaction, Hughes also sold to Boeing its 50% interest in HRL Laboratories LLC (“HRL”) for \$38.5 million, which represented the net book value of Hughes’ interest in HRL at October 6, 2000.

During September 2000, HTIL sold new common shares in a public offering in India. As a result of this transaction, Hughes’ equity interest was reduced from 44.7% to 29.1%. Due to the nature of the transaction, Hughes recorded a \$23.3 million increase to “Capital stock and additional paid-in capital.”

On March 1, 2000, Hughes announced that the operations of DIRECTV Japan would be discontinued. Pursuant to an agreement with Japan Digital Broadcasting Services Inc. (now named Sky Perfect Communications, Inc. or “Sky Perfect”), qualified subscribers to the DIRECTV Japan service were offered the opportunity to migrate to the Sky Perfect service. DIRECTV Japan was paid a commission for each subscriber who actually migrated. Hughes also acquired a 6.6% interest in Sky Perfect. As a result, Hughes wrote-off its net investment in DIRECTV Japan of \$164.6 million and accrued exit costs of \$403.7 million and involuntary termination benefits of \$14.5 million. Accrued exit costs consist of claims arising out of contracts with dealers, manufacturers, programmers and others, satellite transponder and facility and equipment leases, subscriber migration and termination costs, and professional service fees and other. The write-off and accrual were partially offset by the difference between the cost of the Sky Perfect shares acquired and the estimated fair value of the shares (\$428.8 million), as determined by an independent appraisal, and by \$40.2 million for anticipated contributions from other DIRECTV Japan shareholders. The net effect of the transaction was a charge to “Other, net” in the statement of operations of \$170.6 million at March 31, 2000.

In the third quarter of 2001, \$32.0 million of accrued exit costs were reversed as a credit adjustment to “Other, net.” In the fourth quarter of 2000, \$106.6 million of accrued exit costs were reversed and \$0.6 million of involuntary termination benefits were added, resulting in a net credit adjustment to “Other, net” of \$106.0 million. The adjustments made to the exit cost accrual were primarily attributable to earlier than anticipated cessation of the DIRECTV Japan broadcasting service, greater than anticipated commission payments for subscriber migration and favorable settlements of various contracts and claims. About \$29.7 million was paid for accrued exit costs and \$6.8 million was paid for involuntary termination benefits during 2001. The amount remaining for accrued exit costs was

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

\$47.6 million at December 31, 2001. No amounts were remaining for involuntary termination benefits at December 31, 2001.

DIRECTV Japan employed approximately 290 personnel as of March 31, 2000, of which 244 were terminated during 2000. All remaining personnel were terminated in the first quarter of 2001.

In the fourth quarter of 2000, Sky Perfect completed an initial public offering, at which date the fair value of Hughes' interest (diluted by the public offering to approximately 5.3%) in Sky Perfect was approximately \$343 million. In the third quarter of 2001 and fourth quarter of 2000, a portion of the decline in the value of the Sky Perfect investment was determined to be "other-than-temporary," resulting in a write-down of the carrying value of the investment by \$212 million and \$86 million, respectively. At December 31, 2001, the investment's market value approximated its carrying value.

On January 13, 2000, Hughes announced the discontinuation of its mobile cellular and narrowband local loop product lines at HNS. As a result of this decision, Hughes recorded a fourth quarter 1999 pre-tax charge to continuing operations of \$272.1 million. The charge represents the write-off of receivables and inventories, licenses, software and equipment with no alternative use.

#### **Note 18: Derivative Financial Instruments and Risk Management**

Hughes' cash flows and earnings are subject to fluctuations resulting from changes in foreign currency exchange rates, interest rates and changes in the market value of its equity investments. Hughes manages its exposure to these market risks through internally established policies and procedures and, when deemed appropriate, through the use of derivative financial instruments. Hughes enters into derivative instruments only to the extent considered necessary to meet its risk management objectives, and does not enter into derivative contracts for speculative purposes.

Hughes generally conducts its business in U.S. dollars with some business conducted in a variety of foreign currencies and therefore is exposed to fluctuations in foreign currency exchange rates. Hughes' objective in managing its exposure to foreign currency changes is to reduce earnings and cash flow volatility associated with foreign exchange rate fluctuations. Accordingly, Hughes enters into foreign exchange contracts to mitigate risks associated with foreign currency denominated assets, liabilities, commitments and anticipated foreign currency transactions. By policy, Hughes maintains coverage between minimum and maximum percentages of its anticipated foreign exchange exposures. The gains and losses on derivative foreign exchange contracts offset changes in value of the related exposures.

Hughes is exposed to credit risk in the event of non-performance by the counterparties to its foreign exchange contracts. While Hughes believes this risk is remote, credit risk is managed through the periodic monitoring and approval of financially sound counterparties.

#### **Note 19: Segment Reporting**

Hughes' segments, which are differentiated by their products and services, include Direct-To-Home Broadcast, Satellite Services, and Network Systems. Direct-To-Home Broadcast is engaged in acquiring, promoting, selling and/or distributing digital entertainment programming via satellite to residential and commercial customers and providing land-based DSL services. Satellite Services is engaged in the selling, leasing and operating of satellite transponders and providing services for cable television systems, news companies, Internet service providers and private business networks. The Network Systems segment is a provider of satellite-based private business networks and broadband Internet access, and a supplier of DIRECTV receiving equipment (set-top boxes and dishes). Other includes the corporate office and other entities.

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

Selected information for Hughes' operating segments are reported as follows:

	Direct-To- Home Broadcast	Satellite Services	Network Systems	Other	Eliminations	Total
	(Dollars in Millions)					
<b>2001</b>						
External Revenues	\$6,283.4	\$ 709.0	\$1,229.6	\$ 40.0	—	\$8,262.0
Intersegment Revenues	<u>21.0</u>	<u>161.1</u>	<u>96.2</u>	<u>0.3</u>	\$ (278.6)	<u>—</u>
Total Revenues	<u>\$6,304.4</u>	<u>\$ 870.1</u>	<u>\$1,325.8</u>	<u>\$ 40.3</u>	<u>\$ (278.6)</u>	<u>\$8,262.0</u>
Operating Profit (Loss)	\$ (749.9)	\$ 165.3	\$ (171.8)	\$ (34.5)	\$ 33.1	\$ (757.8)
Depreciation and Amortization	675.1	414.7	60.0	23.0	(25.1)	1,147.7
Intangibles, net	4,249.8	2,238.7	18.9	649.4	—	7,156.8
Segment Assets	9,484.1	6,296.8	2,339.1	1,199.0	(108.9)	19,210.1
Capital Expenditures	<u>734.3</u>	<u>338.2</u>	<u>664.6</u>	<u>0.4</u>	<u>6.0</u>	<u>1,743.5</u>
<b>2000</b>						
External Revenues	\$5,208.6	\$ 880.2	\$1,176.7	\$ 22.1	—	\$7,287.6
Intersegment Revenues	<u>29.4</u>	<u>143.4</u>	<u>233.1</u>	<u>5.2</u>	\$ (411.1)	<u>—</u>
Total Revenues	<u>\$5,238.0</u>	<u>\$1,023.6</u>	<u>\$1,409.8</u>	<u>\$ 27.3</u>	<u>\$ (411.1)</u>	<u>\$7,287.6</u>
Operating Profit (Loss)	\$ (557.9)	\$ 356.6	\$ (63.5)	\$ (67.9)	\$ (21.4)	\$ (354.1)
Depreciation and Amortization	533.4	337.4	63.6	21.2	(7.5)	948.1
Intangibles, net	4,139.9	2,303.6	41.6	666.2	—	7,151.3
Segment Assets	9,278.3	6,178.4	1,789.9	2,154.0	(121.3)	19,279.3
Capital Expenditures	<u>913.5</u>	<u>449.5</u>	<u>369.5</u>	<u>0.6</u>	<u>(17.0)</u>	<u>1,716.1</u>
<b>1999</b>						
External Revenues	\$3,781.7	\$ 673.6	\$1,091.7	\$ 13.3	—	\$5,560.3
Intersegment Revenues	<u>3.3</u>	<u>137.0</u>	<u>293.0</u>	<u>2.5</u>	\$ (435.8)	<u>—</u>
Total Revenues	<u>\$3,785.0</u>	<u>\$ 810.6</u>	<u>\$1,384.7</u>	<u>\$ 15.8</u>	<u>\$ (435.8)</u>	<u>\$5,560.3</u>
Operating Profit (Loss)	\$ (289.6)	\$ 338.3	\$ (234.1)	\$ (126.0)	\$ (103.1)	\$ (414.5)
Depreciation and Amortization	312.0	280.5	77.4	20.8	(11.8)	678.9
Intangibles, net	4,308.5	2,368.6	46.9	682.0	—	7,406.0
Segment Assets	8,452.2	5,984.7	1,167.3	3,370.3	(377.5)	18,597.0
Capital Expenditures	<u>516.9</u>	<u>956.4</u>	<u>175.0</u>	<u>30.0</u>	<u>(13.0)</u>	<u>1,665.3</u>

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

The following table presents revenues earned from customers located in different geographic areas. Property is grouped by its physical location. All satellites are reported as United States assets.

	<u>2001</u>		<u>2000</u>		<u>1999</u>	
	<u>Total Revenues</u>	<u>Net Property &amp; Satellites</u>	<u>Total Revenues</u>	<u>Net Property &amp; Satellites</u>	<u>Total Revenues</u>	<u>Net Property &amp; Satellites</u>
	(Dollars in Millions)					
North America						
United States	\$6,686.7	\$6,331.2	\$6,008.2	\$5,577.3	\$4,407.9	\$4,891.8
Canada and Mexico	<u>206.8</u>	<u>207.4</u>	<u>198.8</u>	<u>89.3</u>	<u>114.6</u>	<u>51.8</u>
Total North America	<u>6,893.5</u>	<u>6,538.6</u>	<u>6,207.0</u>	<u>5,666.6</u>	<u>4,522.5</u>	<u>4,943.6</u>
Europe						
United Kingdom	143.2	8.3	114.7	5.6	175.2	10.5
Other	<u>64.3</u>	<u>0.4</u>	<u>19.7</u>	<u>0.4</u>	<u>47.6</u>	<u>0.2</u>
Total Europe	<u>207.5</u>	<u>8.7</u>	<u>134.4</u>	<u>6.0</u>	<u>222.8</u>	<u>10.7</u>
South America and the Caribbean						
Brazil	247.0	220.0	285.4	234.3	157.7	151.1
Argentina	156.2	171.2	97.6	3.8	58.9	1.8
Other	<u>321.3</u>	<u>34.2</u>	<u>184.7</u>	<u>8.3</u>	<u>186.4</u>	<u>8.0</u>
Total South America and the Caribbean	<u>724.5</u>	<u>425.4</u>	<u>567.7</u>	<u>246.4</u>	<u>403.0</u>	<u>160.9</u>
Asia						
Japan	21.1	0.5	34.5	0.6	103.6	0.7
India	93.5	29.3	81.1	16.4	85.1	12.4
China	32.7	0.5	35.1	0.7	27.7	1.2
Other	<u>141.4</u>	<u>0.9</u>	<u>139.4</u>	<u>0.9</u>	<u>108.5</u>	<u>0.5</u>
Total Asia	<u>288.7</u>	<u>31.2</u>	<u>290.1</u>	<u>18.6</u>	<u>324.9</u>	<u>14.8</u>
Total Middle East	24.0	0.1	14.0	—	11.9	—
Total Africa	<u>123.8</u>	<u>0.4</u>	<u>74.4</u>	<u>0.2</u>	<u>75.2</u>	<u>0.3</u>
Total	<u>\$8,262.0</u>	<u>\$7,004.4</u>	<u>\$7,287.6</u>	<u>\$ 5,937.8</u>	<u>\$5,560.3</u>	<u>\$5,130.3</u>

#### **Note 20: Commitments and Contingencies**

##### *Litigation*

In connection with the 2000 sale by Hughes of its satellite systems manufacturing businesses to Boeing, the stock purchase agreement provides for potential adjustment to the purchase price based upon the final closing date financial statements of the satellite systems manufacturing businesses. The stock purchase agreement also provides for an arbitration process to resolve any disputes that arise in determining the purchase price adjustment. Based upon the final closing date financial statements of the satellite systems manufacturing businesses that were prepared by Hughes, Boeing is owed a purchase price adjustment of \$164 million plus interest from the date of sale, the total amount of which has been provided for in Hughes' financial statements. However, Boeing has submitted additional proposed adjustments, of which about \$750 million remain unresolved. Hughes believes that these additional proposed adjustments are without merit and intends to vigorously contest the matter in the arbitration process which will result in a binding decision unless the matter is otherwise settled. Although Hughes believes it has adequately provided for the disposition of this matter, the impact of its disposition cannot be determined at this time. It is possible that the final resolution of this matter could

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

result in Hughes making a cash payment to Boeing that would be material to Hughes' consolidated financial statements.

Additionally, as part of the sale of the satellite systems manufacturing businesses, Hughes retained liability for certain possible fines and penalties and certain financial consequences of debarment associated with potential violations of U.S. Export control laws related to the business now owned by Boeing should the State Department impose such sanctions against the satellite systems manufacturing businesses. Hughes does not expect sanctions imposed by the State Department, if any, to have a material adverse effect on its consolidated financial statements.

General Electric Capital Corporation ("GECC") and DIRECTV entered into a contract on July 31, 1995, in which GECC agreed to establish and manage a private label consumer credit program for consumer purchases of hardware and related DIRECTV® programming. Under the contract, GECC also agreed to provide certain related services to DIRECTV, including credit risk scoring, billing and collections services. DIRECTV agreed to act as a surety for loans complying with the terms of the contract. Hughes guaranteed DIRECTV's performance under the contract. A complaint and counterclaim were filed by the parties in the U.S. District Court for the District of Connecticut concerning GECC's performance and DIRECTV's obligation to act as a surety. A trial commenced on June 12, 2000 with GECC presenting evidence to the jury for damages of \$157 million. DIRECTV sought damages from GECC of \$45 million. On July 21, 2000, the jury returned a verdict in favor of GECC and awarded contract damages in the amount of \$133.0 million. The trial judge issued an order granting GECC \$48.5 million in interest under Connecticut's offer-of-judgment statute. With this order, the total judgment entered in GECC's favor was \$181.5 million. Hughes and DIRECTV filed a notice of appeal on December 29, 2000. Oral argument on the appeal was heard on October 15, 2001 by the Second Circuit Court of Appeals. While the appeal is pending, post-judgment interest on the total judgment is accruing at a rate of 6.241% per year, compounded annually, from the date judgment was entered in October 2000. Hughes and DIRECTV believe that it is reasonably possible that the jury verdict will be overturned and a new trial granted.

DIRECTV filed suit in California State Court, Los Angeles County, on June 22, 2001 against Pegasus Satellite Television Inc. and Golden Sky Systems, Inc. (referred to together as "Defendants") to recover monies (currently approximately \$60 million) that Defendants owe DIRECTV under the parties' Seamless Marketing Agreement, which provides for reimbursement to DIRECTV of certain subscriber acquisition costs incurred by DIRECTV on account of new subscriber activations in Defendants' territory. Defendants had ceased making payments altogether, and indicated that it did not intend to make any further payments due under the Agreement. On July 13, 2001, Defendants sent notice of termination of the Agreement and on July 16, 2001, Defendants answered DIRECTV's complaint and filed a cross complaint alleging counts of fraud in the inducement, breach of contract, breach of the covenant of good faith and fair dealing, intentional interference with contractual relations, intentional interference with prospective economic advantage and violation of California Bus. and Prof. Code 17200. The latter three counts duplicate claims already asserted by Defendants in the above-referenced federal court litigation. Defendants seek an unstated amount of damages and punitive damages. DIRECTV denies any liability to Defendants, and intends to vigorously pursue its damages claim against Defendants and defend against Defendants' cross claims. Defendants removed the action to federal district court, Central District of Los Angeles, where it has been transferred to the judge hearing the other, above-referenced litigation, and consolidated therewith for purposes of discovery.

Hughes Communications Galaxy, Inc. ("HCGI") filed a lawsuit on March 22, 1991 against the U.S. Government based upon the National Aeronautics and Space Administration's breach of contract to launch ten satellites on the Space Shuttle. The U.S. Court of Federal Claims granted HCGI's motion for summary judgment on the issue of liability on November 30, 1995. A trial was held on May 1, 1998 on the issue of damages. On June 30, 2000, a final judgment was entered in favor of HCGI in the amount of \$103 million. On November 13, 2001, the U.S. Court of Appeals for the Federal Circuit affirmed the lower court decision. On December 26, 2001, Hughes filed a Combined Petition for Panel Rehearing and Rehearing en Banc, seeking to increase the award, which was denied in January 2002. Both parties have until April 25, 2002 to seek Supreme Court review. As a result of the uncertainty regarding the outcome of this matter, no amount has been recorded in the consolidated financial statements to reflect the award.

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

On October 12, 2001, Hughes reached a settlement with Raytheon on a purchase price adjustment related to the 1997 spin-off of Hughes' defense electronics business and the subsequent merger of that business with Raytheon. Under the terms of the settlement, Hughes agreed to reimburse Raytheon \$635.5 million of the original \$9.5 billion purchase price. Hughes paid \$500 million of the settlement amount in October 2001 and the remainder was paid subsequent to December 31, 2001. In the third quarter of 2001, Hughes recorded a decrease to "Capital stock and additional paid-in capital" of \$574.2 million because of the settlement.

Litigation is subject to uncertainties and the outcome of individual litigated matters is not predictable with assurance. In addition to the above items, various legal actions, claims, and proceedings are pending against Hughes and other items arising in the ordinary course of business. Hughes has established reserves for matters in which losses are probable and can be reasonably estimated. Some of the matters may involve compensatory, punitive, or other treble damage claims, or sanctions, that if granted, could require Hughes to pay damages or make other expenditures in amounts that could not be estimated at December 31, 2001. After discussion with counsel, it is the opinion of management that such liability is not expected to have a material adverse effect on Hughes' consolidated financial statements.

#### *Other*

Hughes uses in-orbit and launch insurance to mitigate the potential financial impact of satellite fleet in-orbit and launch failures unless the premium costs are considered uneconomic relative to the risk of satellite failure. The insurance generally covers the unamortized book value of covered satellites. The insurance generally does not compensate for business interruption or loss of future revenues or customers, however Hughes relies on in-orbit spare satellites and excess transponder capacity at key orbital slots to mitigate the impact of satellite failure on Hughes' ability to provide service. Where insurance costs related to known satellite anomalies are prohibitive, Hughes' insurance policies contain coverage exclusions and Hughes is self-insured for certain other satellites. The book value of satellites that were insured with coverage exclusions amounted to \$699.3 million and the book value of the satellites that were self-insured was \$668.5 million at December 31, 2001.

Hughes is contingently liable under standby letters of credit and bonds in the amount of \$51.3 million at December 31, 2001 and has guaranteed up to \$74.3 million of bank debt. Hughes has guaranteed a \$55.4 million debt obligation of an investor in HTIL that matures in 2007. Hughes' performance obligation related to this guarantee can be triggered by a default by the investor beginning in 2002 and thereafter. The remaining obligation is related to DLA and SurFin guarantees of non-consolidated local operating company debt and is due in variable amounts over the next five years. Additionally, in the event that certain transactions do not occur, DLA may be required to repurchase an interest in DLA at the option of a minority partner for \$195 million in cash in 2003.

The Hughes Board of Directors has approved several benefit plans, triggered by a change-in-control, designed to provide benefits for the retention of about 240 key employees and also provide benefits in the event of employee lay-offs. Generally, these benefits are only available if a qualified change-in-control of Hughes occurs. Upon a change-in-control, the retention benefits will be accrued and expensed when earned and the severance benefits will be accrued and expensed if an employee is identified for termination. A total of up to about \$110 million for retention benefits will be paid, with approximately 50% paid at the time of a change-in-control and 50% paid up to 12 months following the date of a change-in-control. The amount of severance benefits to be paid will be based upon the decision to layoff employees, if any, following the date of a change-in-control. In addition, approximately 33.5 million employee stock options will vest upon a qualifying change-in-control and up to an additional 8.5 million employee stock options could vest if employees are laid off within one year of a change-in-control. For purposes of the above benefits and stock options, a successful completion of the Merger would qualify as a change-in-control.

At December 31, 2001, minimum future commitments under noncancelable operating leases having lease terms in excess of one year were primarily for real property and aggregated \$375.0 million, payable as follows: \$92.8 million in 2002, \$76.0 million in 2003, \$49.3 million in 2004, \$38.1 million in 2005, \$32.8 million in 2006 and \$86.0 million thereafter. Certain of these leases contain escalation clauses and renewal or purchase options. Rental expenses under operating leases, net of sublease rental income, were \$59.7 million in 2001, \$55.9 million in 2000 and \$58.5 million in 1999.



## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(continued)

At December 31, 2001, the minimum commitments under noncancelable satellite construction and launch contracts totaled \$1,061.5 million.

In connection with the direct-to-home broadcast businesses, Hughes has commitments related to certain programming agreements which are variable based upon the number of underlying subscribers and market penetration rates. Minimum payments over the terms of applicable contracts are anticipated to be approximately \$1.5 billion, payable as follows: \$460.8 million in 2002, \$258.2 million in 2003, \$148.1 million in 2004, \$149.3 million in 2005, \$154.0 million in 2006 and \$287.0 million thereafter.

As part of a series of agreements entered into with AOL on June 21, 1999, Hughes committed to spend up to approximately \$1.5 billion in sales, marketing, development and promotion efforts in support of DirecPC®/AOL-Plus, DIRECTV®, DIRECTV™/AOL TV and DirecDuo™ products and services. At December 31, 2001, Hughes had spent approximately \$500 million in support of these efforts. Consistent with the requirements of the agreements with AOL, additional funds will continue to be spent until the contractual spending limits have been satisfied or until applicable timeframes expire, which in some cases can be for periods of ten years or more.

#### **Note 21: Subsequent Events**

In February 2002, Hughes completed a series of financing activities. PanAmSat borrowed \$1,800 million, of which a portion was used to repay \$1,725 million owed to Hughes; Hughes deposited \$1,500 million of the proceeds received from PanAmSat with GMAC as collateral, with Hughes then borrowing \$1,875 million under the GMAC revolving credit facility. Hughes used \$1,682.5 million of the proceeds to repay all amounts outstanding under Hughes' \$750 million unsecured revolving credit facility, DLA's \$450 million revolving credit facility, and SurFin's \$400 million and \$212.5 million revolving credit facilities. The DLA and SurFin facilities were retired, while the Hughes facility was amended and expanded, as explained below. As a result of these transactions, Hughes expects to have about \$2,300 million of available borrowing capacity under those facilities.

Also in February 2002, Hughes amended and increased its existing \$750.0 million multi-year revolving credit facility (the "New Credit Agreement"). The New Credit Agreement provides availability of \$1,235.25 million. Borrowings under the facility bear interest at LIBOR plus 3%. The New Credit Agreement commitment terminates upon the earlier of December 5, 2002 or the effective date of the EchoStar merger. The facility is secured by substantially all of Hughes' assets other than the assets of DIRECTV Latin America and PanAmSat. In March 2002, Hughes was in the process of adding a term loan to the New Credit Agreement that would increase the total funding available to at least \$1,800 million. The term loan is expected to close in March 2002.

PanAmSat's borrowings consist of a private placement debt offering pursuant to Rule 144A of the Securities Act of 1933, as amended, in the amount of \$800 million and \$1.0 billion borrowed under a new \$1,250 million bank facility, which replaced PanAmSat's \$500 million multi-year revolving credit facility. The notes issued in the private placement bear interest at an annual rate of 8.5%, payable semi-annually, mature in 2012 and are unsecured. The bank facility is comprised of a \$250 million revolving credit facility, a \$300 million Tranche A Term Loan and a \$700 million Tranche B Term Loan. The revolving credit facility and the Tranche A Term Loan bear interest at LIBOR plus a 3.00% spread. The Tranche B Term Loan bears interest at LIBOR plus a 3.5% spread. The interest rate spreads on the revolving credit facility and Tranche A Term Loan may be increased or decreased based upon changes in PanAmSat's total leverage ratio, as defined by the credit agreement. The revolving credit facility will terminate in 2007, the Tranche A Term Loan matures in 2007, and the Tranche B Term Loan matures in 2008. Principal payments under the Tranche A Term Loan are due in varying amounts from 2004 to 2007. Principal payments under the Tranche B Term Loan are due primarily at maturity. The facilities are secured ratably by substantially all of PanAmSat's operating assets, including its satellites. Of the total \$1,800 million borrowed, PanAmSat used \$1,725.0 million to repay an intercompany loan from Hughes. In connection with the \$1,250 million bank facility, the PanAmSat \$750 million fixed rate notes were ratably secured by certain of PanAmSat's operating assets.

Concurrent with the transactions described above, the \$2,000 million GMAC revolving credit facility was amended. The amended facility provides for a commitment through December 5, 2002, and may be extended to March 31, 2003 at Hughes' option. The facility is split into two loan tranches: a \$1,500 million tranche secured by a \$1,500 million Hughes cash deposit and a \$500 million tranche

## HUGHES ELECTRONICS CORPORATION

### NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS—(concluded)

that shares security with the Hughes \$1,235.25 million multi-year secured revolving credit facility described above. Borrowings under the \$1,500 million tranche bear interest at GMAC's cost of funds plus 0.125%. The \$1,500 million cash deposit earns interest at a rate equivalent to GMAC's cost of funds. Borrowings under the \$500 million tranche bear interest at GMAC's cost of funds plus 1.75%. In February 2002, Hughes deposited \$1,500 million with GMAC and immediately borrowed \$1,875.0 million. Hughes plans to offset the \$1,500 million GMAC cash deposit against amounts borrowed from GMAC for balance sheet purposes regardless of whether the merger with EchoStar is completed. The facility must be repaid upon the effective date of the merger with EchoStar.

Hughes' and PanAmSat's ability to borrow under the credit facilities is contingent upon meeting financial and other covenants. The agreements also include certain operational restrictions. The covenants limit Hughes' and PanAmSat's ability to, among other things: incur or guarantee additional indebtedness; make restricted payments, including dividends; create or permit to exist certain liens; enter into business combinations and asset sale transactions; make investments; enter into transactions with affiliates; and enter into new businesses.

In March 2002, PanAmSat reached an agreement with an insurance carrier to settle a claim related to circuit failures suffered on the PAS-7 satellite in October 2001. PanAmSat anticipates receiving approximately \$215.0 million in cash by the end of the second quarter of 2002 as a result of this settlement.

\* \* \*

## HUGHES ELECTRONICS CORPORATION

### SUPPLEMENTAL INFORMATION

#### Selected Quarterly Data (Unaudited)

1st                      2nd                      3rd                      4th  
(Dollars in Millions Except Per Share Amounts)

#### 2001 Quarters

Revenues	\$ <u>1,893.0</u>	\$ <u>1,985.1</u>	\$ <u>2,103.3</u>	\$ <u>2,280.6</u>
Loss from continuing operations before income taxes, minority interests and cumulative effect of accounting change	\$ (172.1)	\$ (257.7)	\$ (321.2)	\$ (238.7)
Income tax benefit	49.9	74.8	93.1	107.8
Minority interests in net losses of subsidiaries	24.3	26.4	0.9	(1.7)
Cumulative effect of accounting change, net of taxes	<u>(7.4)</u>	<u>—</u>	<u>—</u>	<u>—</u>
Net loss	(105.3)	(156.5)	(227.2)	(132.6)
Loss used for computation of available separate consolidated net income (loss)	<u>\$ (128.6)</u>	<u>\$ (179.8)</u>	<u>\$ (250.4)</u>	<u>\$ (155.9)</u>
Average number of shares of General Motors Class H common stock outstanding (in millions) (Numerator)	875.4	875.9	876.8	877.3
Average Class H dividend base (in millions) (Denominator)	1,299.1	1,299.6	1,300.5	1,300.9
Available separate consolidated net income (loss)	\$ (86.7)	\$ (121.2)	\$ (168.8)	\$ (105.1)
Stock price range of General Motors Class H common stock				
High	\$ 28.00	\$ 25.09	\$ 21.65	\$ 15.80
Low	\$ 17.90	\$ 17.50	\$ 11.50	\$ 12.12

#### 2000 Quarters

Revenues	\$ <u>1,703.1</u>	\$ <u>1,837.0</u>	\$ <u>1,688.5</u>	\$ <u>2,059.0</u>
Loss from continuing operations before income taxes and minority interests	\$ (337.7)	\$ (141.8)	\$ (201.7)	\$ (134.4)
Income tax benefit	221.8	54.8	77.8	51.7
Minority interests in net losses of subsidiaries	7.6	4.5	19.6	22.4
Income (loss) from discontinued operations	26.4	13.4	10.5	(14.2)
Gain on sale of discontinued operations, net of taxes	<u>—</u>	<u>—</u>	<u>—</u>	<u>1,132.3</u>
Net income (loss)	(81.9)	(69.1)	(93.8)	1,057.8
Earnings (loss) used for computation of available separate consolidated net income (loss)	<u>\$ (101.3)</u>	<u>\$ (87.9)</u>	<u>\$ (112.6)</u>	<u>\$ 1,034.7</u>
Average number of shares of General Motors Class H common stock outstanding (in millions) (Numerator)	413.4	562.7	873.9	874.9
Average Class H dividend base (in millions) (Denominator)	1,294.5	1,297.0	1,297.8	1,298.7
Available separate consolidated net income (loss)	\$ (32.4)	\$ (38.1)	\$ (75.8)	\$ 697.1
Stock price range of General Motors Class H common stock				
High	\$ 47.00	\$ 41.58	\$ 37.61	\$ 38.00
Low	\$ 30.50	\$ 27.33	\$ 24.63	\$21.33

Horizons Satellite LLC

FCC Form 312  
Exhibit 6

## TECHNICAL INFORMATION

## General Technical Information

### Introduction

The Galaxy 13 spacecraft, which is to operate from the 127° W.L. orbital location, has both C-band and Ku-band capability. This submission will be for the Ku-band portion only, which will be called Horizons I. There are certain parts of this submission where it will be difficult to separate the information about the Ku-band portion and the C-band portion of the spacecraft, such as the weight, fuel, antenna configuration, etc. These parts will be highlighted in the appropriate sections.

### Satellite Operational Characteristics

#### a. Frequency Plan

The GALAXY 13 satellite will be constructed to operate on C-band and Ku-band frequencies. The radio frequency and polarization plans for the Horizons I payload are described in Exhibits 1a and 1b. The Horizons I payload consists of twenty four active transponders each having a bandwidth of 36 MHz. Horizons I will employ full frequency reuse through dual linear polarizations as specified in Section 25.210 of the FCC Rules. Further, Horizons I is designed so that the polarization sense of uplink transmissions is opposite to that of downlink transmissions on the same transponder and is capable of

switching polarization sense upon ground command. The frequency plan, Exhibits 1a and 1b, show this switching of polarization.

The satellite communication subsystem will include appropriate filtering at the inputs and outputs of the satellite to minimize internal interchannel interference, noise effects outside the satellite frequency band, and out-of-band spurious transmissions.

In addition to the communication channel frequencies, there are two Ku-band ULPC frequencies. These frequencies are shown in Exhibits 1a and 1b.

b. Emission Designators

Emission designators for the communications carriers are shown in Exhibit 2. RF link budgets for certain illustrative communication carrier link budgets can be found in Appendix A.

c. Communications Coverage

The Horizons I receive/transmit patterns are depicted in Exhibits 3a through 3d. The beams are produced by a Gregorian reflector located on the West side of the spacecraft. (The East Gregorian reflector is dedicated to C-band and the dual-gridded surface (DGS) antennas are dedicated to the secondary mission.)

The uplink and downlink Ku-band coverages of the 48 contiguous states, southern Canada, Mexico, Alaska, Hawaii, and the Caribbean Islands are provided via the West reflector.

d. Power Flux Density Level

The power flux density limits for space stations are specified in Section 25.208 of the FCC Rules. According to this section of the Rules, there are no power flux density limits for the frequency range 11700 - 12200 MHz for geostationary satellites such as Horizons I.

2. Satellite characteristics

The major technical / operating characteristics of the spacecraft are listed in Exhibit 4. The estimated weight and power budgets, provided in Exhibits 5 and 6, are based on a mission life of 15 years and assume sufficient redundancy to allow for random failures. (These budgets are for the entire spacecraft which includes both the C-band and Ku band portions.)

3. Satellite Description

a. General

The in-orbit satellite configuration is shown in Exhibit 7. The spacecraft bus is based upon the Boeing HS-601HP body-stabilized bus. The satellite design is compatible with launch by one of the currently available commercial launch vehicles. Final injection into geosynchronous orbit is accomplished by an on-board liquid propulsion system.

Deployment of antennas and solar wings takes place in several separate operations. The bicone antenna and the forward and aft pipe antennas, used for telemetry, command and ranging, are placed in the transfer orbit configuration. After the spacecraft has been injected into synchronous orbit, the solar wings are extended and the communication antennas are deployed.

#### b. Structural Design

The spacecraft takes advantage of a modular design for ease of manufacturing and integration. The payload module consists of a subnadir shelf, two auxiliary panels, two vertical shear panels, and north and south radiator panels. The subnadir shelf divides the module into forward and aft sections. The payload module supports the antennas, communications repeaters, sensors, solar arrays, solar wing drives and TC&R electronics.

The bus module consists of the structural assemblies for the propulsion module and the bus equipment modules. The propulsion module consists of the thrust cylinder and a cruciform assembly



providing a structural framework for integration of the propulsion subsystem.

The bus shelf provides a modular platform for electronic units and wire harness. This panel is oriented horizontally and mounts to the aft side of the spacecraft. The bus panel supports various bus units as well as the battery packs and thermal hardware.

c. Thermal Control

Thermal control is accomplished with heaters, heat pipes, and heat rejection surfaces located on the north and south facing radiators using quartz mirrors. Battery temperatures are maintained within limits by using direct radiating surfaces plus heaters.

d. Power

Satellite power will be provided by a solar array of fused silica-covered dual-junction gallium arsenide solar cells that convert solar energy to the required electrical power. The solar wings are deployed after the satellite attains synchronous orbit. A Nickel-Hydrogen battery provides sufficient electrical power during eclipse to operate the full communications and housekeeping loads. The electrical power subsystem has been designed so that no single failure in the subsystem will cause a

spacecraft failure. Sufficient power will be available at the end of the satellite's life to support all 24 active transponder channels (plus the C band transponders) and the housekeeping loads.

e. Attitude Control

The Attitude Control Subsystem (ACS) maintains the spacecraft attitude during the transfer orbit, initial acquisition period, and geostationary operations. The ACS employs sun and earth sensors to perform all attitude determination functions. Control of attitude and spacecraft orbit is accomplished by using momentum wheels and by pulsed or continuous firing of selected thrusters by the ACS during ground controlled maneuvers.

f. Propulsion

The spacecraft will use both a liquid bipropellant system and a Xenon Ion Propulsion (XIP) system. The liquid bipropellant system is based on proven technology from earlier programs.

g. Communication Payload

(i) Antenna Subsystem

The GALAXY 13 satellite antenna subsystem contains two Gregorian reflectors located on the east and west sides of the spacecraft and North and South reflectors mounted on the nadir section of the spacecraft. (The East side Gregorian reflector and the North and South reflectors are not associated with the Ku-band payload.) The West reflector is fed by two feed horns which are frequency diplexed to allow each horn to be used for transmit and receive functions. Relative to the desired polarization, the cross-polarization component of the receive and transmit antenna is designed to provide a cross-polarization isolation such that the ratio of the on axis co-polar gain to the cross-polar gain of the antenna in the assigned frequency band would be at least 30 dB within its primary coverage area as specified in Section 25.210(i) of the FCC Rules.

(ii) Communications Subsystem

The communication subsystem consists of Ku-band repeaters employing 108 Watt traveling wave tube amplifiers ("TWTA"). Subsystem components are selected to optimize performance in conjunction with ground terminals on customer premises.

A block diagram of the communication subsystem is provided in Exhibit 8a.

The wide-band receive section consists of a low noise amplifier ("LNA") followed by a downconverter that will translate the input frequencies to the satellite transmit frequencies without frequency inversion. Variations in net translation frequency over one day will not exceed a total of twenty parts in  $10^6$ , including eclipse effects as required by Section 25.202(e) of the FCC Rules.

The primary and redundant wide-band LNA / downconverters, are connected to the receive antennas through a switch matrix. The receive section has been designed to have high sensitivity (good noise performance) and low crosstalk coefficients (good linearity characteristics). The high sensitivity is required for detection and amplification of extremely low-level signals received by the satellite from the earth station transmitters. The low crosstalk coefficients are necessary since many separate signals pass through these wide-band components prior to channelization by the narrow bandpass filters. A highly linear receive section is necessary in order to minimize coupling of interference among these signals.

The output of the downconverters is fed to a bank of power splitters. The output of the splitters is in turn routed to a bank of input (multiplexer) filters.

Following the input filters is a bank of redundancy switches and combining hardware which form the channel amplifier redundancy combining network. Next, the Channel Control Linearizer Unit (CCLU) provides ground commandable attenuation of up to 30.0 dB in 1 dB increments. The CCLU also includes a limiter and linearizer to limit the Traveling Wave Tube Amplifier (TWTA) overdrive and compensate for the TWTA gain compression at higher drive levels. The CCLU precedes the high power amplifier which outputs the signal to a redundancy combining network followed by the output multiplexer filters.

Spurious emissions that are beyond the usable bandwidth of each transponder and within the Ku-band transmission frequencies are attenuated by a combination of input and output multiplexer filters. Out-of-band emissions beyond the Ku transmission bands, including harmonics, are attenuated by a combination of the input and output multiplexer filters and band pass filters.

The primary operating parameters of the communications subsystem are listed in Exhibit 4. A summary of the uplink and downlink beam parameters is provided in Exhibit 9.

#### h. Satellite Useful Lifetime

The design lifetime of the satellite in orbit (other than with respect to stationkeeping) is 15 years. This has been

determined by a conservative evaluation of the effect of the synchronous orbit environment on the solar array, the effect of the charge-discharge cycling on the life of the battery, and the wearout of the amplifiers. The mass allocation of propellant for spacecraft stationkeeping is 15 years. To enhance the probability of survival, spacecraft equipment will be redundant wherever possible. Materials and processes will be selected so that aging or wearing effects will not adversely affect spacecraft performance over the estimated life. The following paragraphs discuss dominant lifetime factors.

(i) Fuel

A conservative mission analysis indicates a 15 year lifetime. The mission has not yet been optimized since the exact sequence of maneuvers will be determined after the actual selection of the launch vehicle. Any remaining spacecraft weight margin can be converted to fuel life.

(ii) Battery

Life testing to date indicates that a longevity of 15 years can be achieved. In order to ensure this longevity, the spacecraft design incorporates the following required provisions: C/20 charge rate at end of life, thermal control during all phases, and proper selection of cell components.

(iii) Solar Array

The predicted power generation capability of the satellite's solar array at both beginning and end of life are given in Exhibit 6. Predictions concerning the useful life of the solar array are backed by years of experience in predicting and measuring in-orbit solar panel performance. These predictions are based on conservative assumptions concerning the radiation environment.

(iv) Electronics

All critical electronics units and components are redundant. There is a 32 for 24 redundancy ring for the Ku-band 108 Watt power amplifier chain. For the LNAs and down converters, a 4 for 2 redundancy ring is employed. For other electronic units, where possible, a minimum of two-for-one redundancy is employed. The electrical design follows well-established criteria regarding parts selection, testing and design, among others.

(v) Non-Electronic

Full redundancy has been employed for non-electronic components wherever possible.

i. Satellite Stationkeeping

Inclination of the satellite orbit will be maintained to +/- 0.05 degrees or less, and the satellite will be maintained to within +/-0.05 degrees of the nominal longitude position as specified in Section 25.210 (j)(1) of the FCC Rules. Attitude of the satellite will be maintained to an accuracy consistent with the achievement of the specified communications performance, after taking into account all error sources (e.g., attitude perturbations, thermal distortions, misalignments, orbital tolerances, and thruster perturbations).

In addition to the propellant required for operational attitude and orbital control, extra propellant will be incorporated to provide correction of the initial orbit, initial attitude acquisition, and one orbital repositioning maneuver at a drift rate of approximately 1 degree per day. Sufficient propellant will be included in the satellite to permit a 15-year operational life.

#### j. Up Link Power Control

The ULPC beacon allows a ground station to adjust its uplink power based on the atmospheric attenuation of the beacon. Galaxy 13 utilizes two ULPC frequencies: 11700.5 MHz and 12199.0 MHz. As shown in Exhibit 8a, the output of the ULPC transmitter passes through a low pass filter and is routed to the appropriate ULPC



horn via a waveguide switch. The coverage diagrams for the ULPC are shown in Exhibits 3I and 3J.

k. System Reliability

(1) Satellite

The satellite will be designed for an operational and mission life of 15 years. Mission lifetime is determined primarily by the amount of stationkeeping propellant that can be loaded into the tanks within the allowable launch weight and by the wearout of the TWTAs. To ensure a highly reliable performance, a TWTAs redundancy ring of 32 for 24 (108 Watt TWTAs) is provided.

Life and reliability will be maximized by using proven reliability concepts in equipment design. All subsystems and units have a minimum design life of 15 years. Standby redundancy is used in the attitude control subsystem and in the communications receivers, and active redundancy is used in the power subsystem. All avoidable single-point failure modes will be eliminated. All components and subsystems will be flight-qualified, and all components will be derated in accordance with design guidelines.

(2) Eclipse Conditions

Eclipse conditions occur when a satellite passes through the earth's shadow. Satellite outages during eclipse conditions are avoided by providing each satellite with sufficient on-board battery capacity to power all required spacecraft and communications payload functions. The battery capacity will be more than adequate to power all amplifiers during eclipses throughout the mission life.

### (3) Sun Outages

During predictable twice-yearly periods of approximately eight days, the sun briefly transits the field of view of an earth station pointing at a geostationary satellite. The rise in thermal noise in the earth station receivers caused by the sun's radiation disrupts satellite reception (i.e., causes sun outage). Such disruption of satellite reception is predictable and is well understood by satellite users.

### Item E. Performance Requirements and Operational Characteristics

Horizons I is to be a general purpose communications satellite and has been designed to support various services. Depending upon the needs of the users, the transponders on Horizons I can accommodate television, radio, voice, or data communications. Typical types of communications services to be offered include:

1. Frequency modulated television (FM-TV).
2. High speed digital data.
3. Digital single channel per carrier (SCPC) data channels carrying wide-Band T1 data.
4. Digital SCPC with data channels carrying 64 Kbps data.
5. Frequency Modulated Audio SCPC (FM Audio SCPC).
6. Compressed Digital Video

The characteristics and associated link analyses for representative Ku-Band services are presented in Appendix A. The link budgets demonstrate that Horizons I will allow all potential services to meet their respective performance objectives while maintaining sufficient link margin.

Item F. Adjacent Satellite Interference Analysis

The interference levels generated between Horizons I and other adjacent domestic satellite systems have been examined using computer programs which have been used in many previous coordinations. Although the operation of the proposed satellite would increase the level of interference to other adjacent satellite operators, this increase is no more than that of other satellites previously approved by the Commission. Moreover, it is believed that any potential interference problems can be resolved through normal frequency coordination with the affected operator(s).

The sensitivity of Horizons I to adjacent satellite interference is substantially equivalent to that of previously approved satellite systems. Any incompatibilities between Horizons I and other adjacent satellites would not be due to the Horizons I design, but rather are a fundamental characteristic of the orbital spacing environment. Such interference situations will be avoided or minimized through normal coordination arrangements.

In summary, the preliminary interference examination has established that the design of Horizons I is in compliance with the requirements of the Commission for 2-degree spacing.

Item G. Orbital Location

1. Location

Horizons I has been licensed by Japan to operate at 127 W.L.

2. Orbital Arc Limitations

Horizons I is intended to provide video, audio, and data services to satellite users in the 48 contiguous states, southern Canada, Mexico, Alaska, Hawaii, and the Caribbean. The 127° W.L. position affords reasonable earth station elevation angles to this region.

### 3. Service Capabilities

All Horizons I transponders will be capable of providing commercial-grade service to the targeted service areas. The description of transponders, antenna beams, and other technical parameters are set forth in other portions of this Application.

CERTIFICATION STATEMENT

I hereby certify that I am a technically qualified person and am familiar with Part 25 of the Commission's Rules and Regulations. The contents of this engineering statements were prepared by me or under my direct supervision and to the best of my knowledge are complete and accurate.

/s/ Abdolmajid Khalilzadeh

Abdolmajid Khalilzadeh  
PanAmSat  
Manager, Asset Engineering

2/7/2003

Date

## **Appendix A. Technical Characteristics And Link Analyses**

This section presents the technical characteristics and associated link analyses for a representative sampling of services which Horizons I may be used to support. The link analyses, attached as Exhibit A-1, demonstrate that Horizons I allows all of the potential services to achieve their respective performance objectives while maintaining sufficient link margin.

The following assumptions and models were used in the link analyses:

### 1. Earth Station and Satellite Locations

In the sample link budgets, earth stations (uplink and downlink) are assumed to be located within the edge of coverage, and the satellite is at an assumed position of 127° W.L.

### 2. Rain Effects

For the Ku-band services, performance for clear weather, uplink rain and downlink rain conditions were calculated. Rain attenuation predictions were derived using the ITU-R Recommendation 618 rain model. The predicted rain attenuation levels are dependent on many factors including signal frequency, earth station location and required link availability. In conditions of downlink rain, the link is degraded by both link

attenuation as well as by an increase in the noise temperature of the receiving earth station. Both of these factors are included in the analysis.

### 3. Cross-Polarization Interference

The satellite antenna cross-polarization isolation is designed to be 30 dB or greater for both transmit and receive signals over the coverage regions. The earth station cross-polarization isolation values are assumed to be at least 30 dB for transmit and receive antennas.

The link cross-polarization isolation value for channels of opposite polarization is calculated by power summing the earth station and satellite antenna polarization isolation.

### 4. Intermodulation Interference

The values used for C/IM have been derived from a combination of laboratory measurements and computer simulations for those traffic modes in which several carriers are transmitted through a transponder.

### 5. Adjacent Satellite Interference



The model used for calculation of potential interference into Horizons I assumes the existing operational satellite Telstar 7 at 129° W.L. and a generic satellite located at 125°W.L. The adjacent satellites are assumed to be co-polarized and co-coverage with Horizons I. Telstar 7 is assumed to be operating with a peak downlink EIRP of 49.5 dBW and the generic satellite is assumed to be operating with a peak EIRP of 51.8 dBW. Both are assumed to utilize 36 MHz wide transponders operating at saturation. All earth station antennas are assumed to comply with the current FCC sidelobe envelope requirement of  $[29 - 25 \log \phi]$  for off-axis performance. The above assumptions, when compounded, result in a conservative estimate of adjacent satellite interference.

## EXHIBIT 1A: Ku BAND FREQUENCY ASSIGNMENTS

### PRIMARY

UPLINK TRANSPONDER	BEAM	UPLINK POLARIZATION	UPLINK FREQUENCY (MHz)	DOWNLINK TRANSPONDER	BEAM	DOWNLINK POLARIZATION	DOWNLINK FREQUENCY (MHz)	CHANNEL BANDWIDTH (MHz)
1K	NORTH AMERICA	HORIZONTAL	14020.00	1K	NORTH AMERICA	VERTICAL	11720.00	36
3K	NORTH AMERICA	HORIZONTAL	14060.00	3K	NORTH AMERICA	VERTICAL	11760.00	36
5K	NORTH AMERICA	HORIZONTAL	14100.00	5K	NORTH AMERICA	VERTICAL	11800.00	36
7K	NORTH AMERICA	HORIZONTAL	14140.00	7K	NORTH AMERICA	VERTICAL	11840.00	36
9K	NORTH AMERICA	HORIZONTAL	14180.00	9K	NORTH AMERICA	VERTICAL	11880.00	36
11K	NORTH AMERICA	HORIZONTAL	14220.00	11K	NORTH AMERICA	VERTICAL	11920.00	36
13K	NORTH AMERICA	HORIZONTAL	14260.00	13K	NORTH AMERICA	VERTICAL	11960.00	36
15K	NORTH AMERICA	HORIZONTAL	14300.00	15K	NORTH AMERICA	VERTICAL	12000.00	36
17K	NORTH AMERICA	HORIZONTAL	14340.00	17K	NORTH AMERICA	VERTICAL	12040.00	36
19K	NORTH AMERICA	HORIZONTAL	14380.00	19K	NORTH AMERICA	VERTICAL	12080.00	36
21K	NORTH AMERICA	HORIZONTAL	14420.00	21K	NORTH AMERICA	VERTICAL	12120.00	36
23K	NORTH AMERICA	HORIZONTAL	14460.00	23K	NORTH AMERICA	VERTICAL	12160.00	36
2K	NORTH AMERICA	VERTICAL	14040.00	2K	NORTH AMERICA	HORIZONTAL	11740.00	36
4K	NORTH AMERICA	VERTICAL	14080.00	4K	NORTH AMERICA	HORIZONTAL	11780.00	36
6K	NORTH AMERICA	VERTICAL	14120.00	6K	NORTH AMERICA	HORIZONTAL	11820.00	36
8K	NORTH AMERICA	VERTICAL	14160.00	8K	NORTH AMERICA	HORIZONTAL	11860.00	36
10K	NORTH AMERICA	VERTICAL	14200.00	10K	NORTH AMERICA	HORIZONTAL	11900.00	36
12K	NORTH AMERICA	VERTICAL	14240.00	12K	NORTH AMERICA	HORIZONTAL	11940.00	36
14K	NORTH AMERICA	VERTICAL	14280.00	14K	NORTH AMERICA	HORIZONTAL	11980.00	36
16K	NORTH AMERICA	VERTICAL	14320.00	16K	NORTH AMERICA	HORIZONTAL	4020.00	36
18K	NORTH AMERICA	VERTICAL	14360.00	18K	NORTH AMERICA	HORIZONTAL	12020.00	36
20K	NORTH AMERICA	VERTICAL	14400.00	20K	NORTH AMERICA	HORIZONTAL	12060.00	36
22K	NORTH AMERICA	VERTICAL	14440.00	22K	NORTH AMERICA	HORIZONTAL	12100.00	36
24K	NORTH AMERICA	VERTICAL	14480.00	24K	NORTH AMERICA	HORIZONTAL	12140.00	36
				ULPC	ULPC	HORIZONTAL	11700.50	0.025
				ULPC	ULPC	VERTICAL	12199.00	0.025

### ALTERNATE

UPLINK TRANSPONDER	BEAM	UPLINK POLARIZATION	UPLINK FREQUENCY (MHz)	DOWNLINK TRANSPONDER	BEAM	DOWNLINK POLARIZATION	DOWNLINK FREQUENCY (MHz)	CHANNEL BANDWIDTH (MHz)
1K	NORTH AMERICA	VERTICAL	14020.00	1K	NORTH AMERICA	HORIZONTAL	11720.00	36
3K	NORTH AMERICA	VERTICAL	14060.00	3K	NORTH AMERICA	HORIZONTAL	11760.00	36
5K	NORTH AMERICA	VERTICAL	14100.00	5K	NORTH AMERICA	HORIZONTAL	11800.00	36
7K	NORTH AMERICA	VERTICAL	14140.00	7K	NORTH AMERICA	HORIZONTAL	11840.00	36
9K	NORTH AMERICA	VERTICAL	14180.00	9K	NORTH AMERICA	HORIZONTAL	11880.00	36
11K	NORTH AMERICA	VERTICAL	14220.00	11K	NORTH AMERICA	HORIZONTAL	11920.00	36
13K	NORTH AMERICA	VERTICAL	14260.00	13K	NORTH AMERICA	HORIZONTAL	11960.00	36

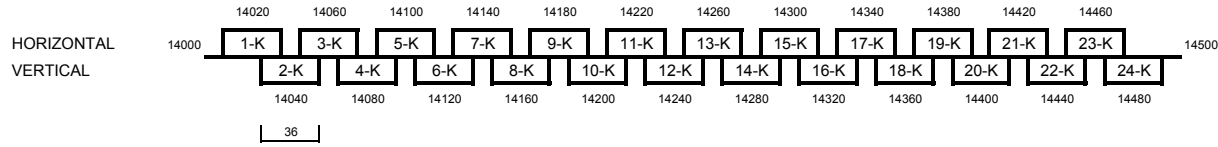
## EXHIBIT 1A: Ku BAND FREQUENCY ASSIGNMENTS

15K	NORTH AMERICA	VERTICAL	14300.00	15K	NORTH AMERICA	HORIZONTAL	12000.00	36
17K	NORTH AMERICA	VERTICAL	14340.00	17K	NORTH AMERICA	HORIZONTAL	12040.00	36
19K	NORTH AMERICA	VERTICAL	14380.00	19K	NORTH AMERICA	HORIZONTAL	12080.00	36
21K	NORTH AMERICA	VERTICAL	14420.00	21K	NORTH AMERICA	HORIZONTAL	12120.00	36
23K	NORTH AMERICA	VERTICAL	14460.00	23K	NORTH AMERICA	HORIZONTAL	12160.00	36
2K	NORTH AMERICA	HORIZONTAL	14040.00	2K	NORTH AMERICA	VERTICAL	11740.00	36
4K	NORTH AMERICA	HORIZONTAL	14080.00	4K	NORTH AMERICA	VERTICAL	11780.00	36
6K	NORTH AMERICA	HORIZONTAL	14120.00	6K	NORTH AMERICA	VERTICAL	11820.00	36
8K	NORTH AMERICA	HORIZONTAL	14160.00	8K	NORTH AMERICA	VERTICAL	11860.00	36
10K	NORTH AMERICA	HORIZONTAL	14200.00	10K	NORTH AMERICA	VERTICAL	11900.00	36
12K	NORTH AMERICA	HORIZONTAL	14240.00	12K	NORTH AMERICA	VERTICAL	11940.00	36
14K	NORTH AMERICA	HORIZONTAL	14280.00	14K	NORTH AMERICA	VERTICAL	11980.00	36
16K	NORTH AMERICA	HORIZONTAL	14320.00	16K	NORTH AMERICA	VERTICAL	4020.00	36
18K	NORTH AMERICA	HORIZONTAL	14360.00	18K	NORTH AMERICA	VERTICAL	12020.00	36
20K	NORTH AMERICA	HORIZONTAL	14400.00	20K	NORTH AMERICA	VERTICAL	12060.00	36
22K	NORTH AMERICA	HORIZONTAL	14440.00	22K	NORTH AMERICA	VERTICAL	12100.00	36
24K	NORTH AMERICA	HORIZONTAL	14480.00	24K	NORTH AMERICA	VERTICAL	12140.00	36
				ULPC	ULPC	VERTICAL	11700.50	0.025
				ULPC	ULPC	HORIZONTAL	12199.00	0.025

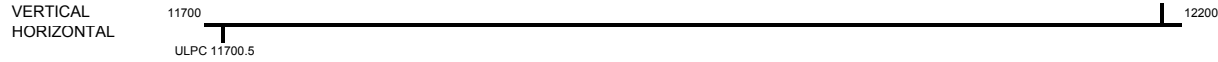
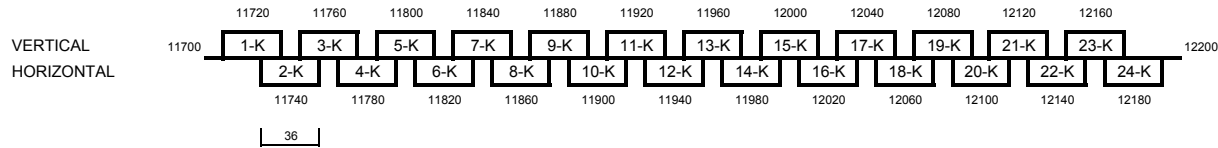
# EXHIBIT 1B: Ku BAND FREQUENCY ASSIGNMENTS

## NORTH AMERICA/MEXICO/CARIBBEAN (Primary)

### UPLINK RECEIVE

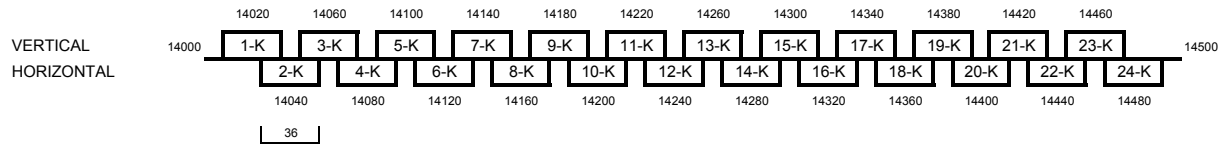


### DOWNLINK TRANSMIT

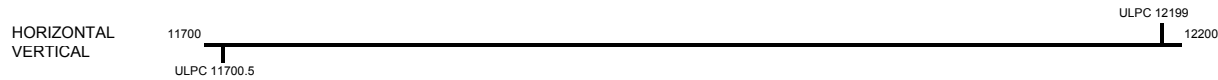
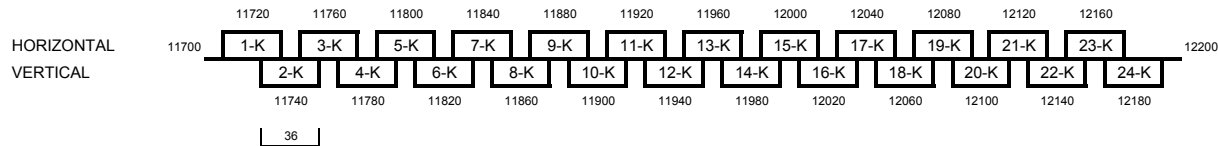


## NORTH AMERICA/MEXICO/CARIBBEAN (Alternate)

### UPLINK RECEIVE



### DOWNLINK TRANSMIT



## EXHIBIT 2 : EMISSION DESIGNATORS

<u>Signal</u>	<u>Emission Designator</u>	<u>Allocated Bandwidth (kHz)</u>
Single TV Carrier	36M0F3F	36000.0
Digital MCPC (QPSK, R3/4)	36M0G7W	36000.0
Digital MCPC (8PSK, R2/3)	36M0G7W	36000.0
9 MHz SCPC (QPSK, R3/4)	6M62G7W	9000.0
6 MHz SCPC (QPSK, R3/4)	5M57G7W	6000.0
3 MHz SCPC (QPSK, R3/4)	2M78G7W	3050.0
Digital Voice	24K3G1W	50.0
Digital (outroute) data	1M23G1W	1450.0
Digital (inroute) data	307KG7W	400.0
Digital T1 (QPSK, R1/2)	2M02G7W	2350.0
Digital T1 (QPSK, R3/4)	1M24G7W	1463.0
64 kbps Carrier (QPSK, R1/2)	77K0G7W	100.0
64 kpbs Carrier (QPSK, R3/4)	51K0G1W	67.5
64 kpbs Carrier (BPSK, R1/2)	154KG7W	200.0
FM Audio (Narrow-band)	50K0F3E	67.0
FM Audio (Wide-band)	150KF3E	200.0

EXHIBIT 3A  
Galaxy 13 127W  
Ku Band Receive Beam  
Horizontal Polarization  
Peak Gain = 34.2 dBi

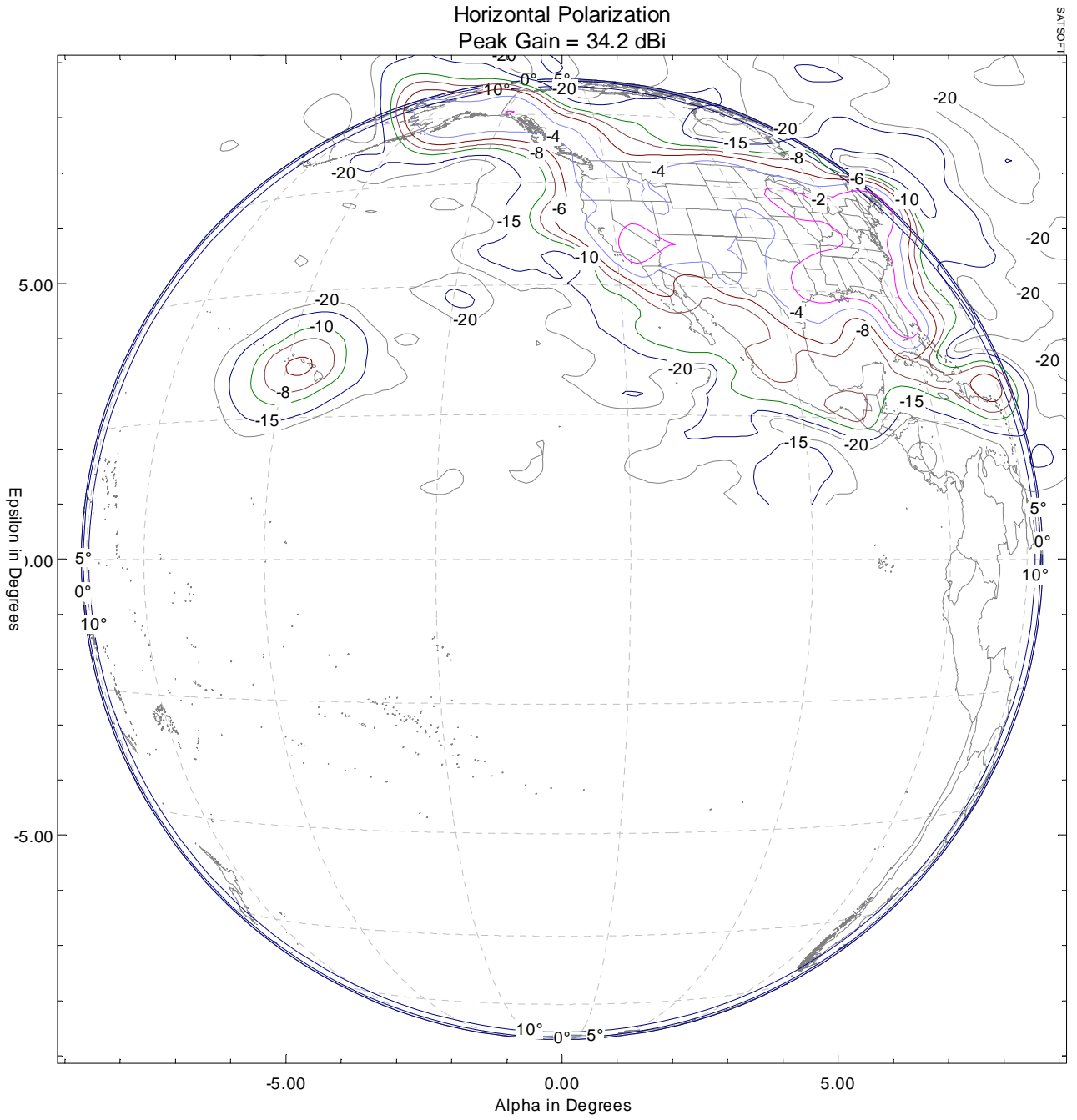




EXHIBIT 3C  
Galaxy 13 127W  
Ku Band Transmit Beam  
Horizontal Polarization  
Peak Gain = 33.8 dBi

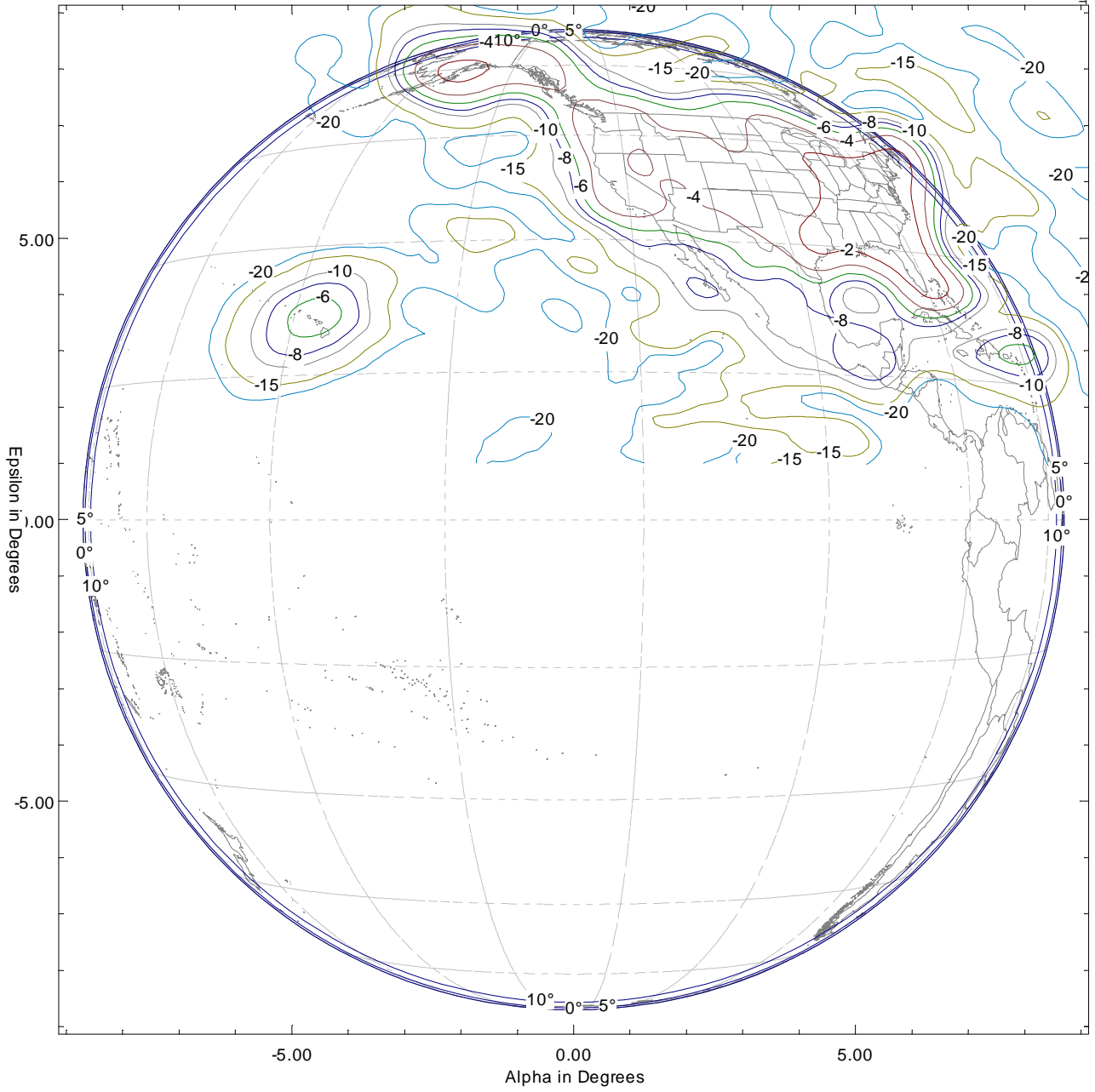




EXHIBIT 3D  
Galaxy 13 127W  
Ku Band Transmit Beam  
Vertical Polarization  
Peak Gain = 33.8 dBi

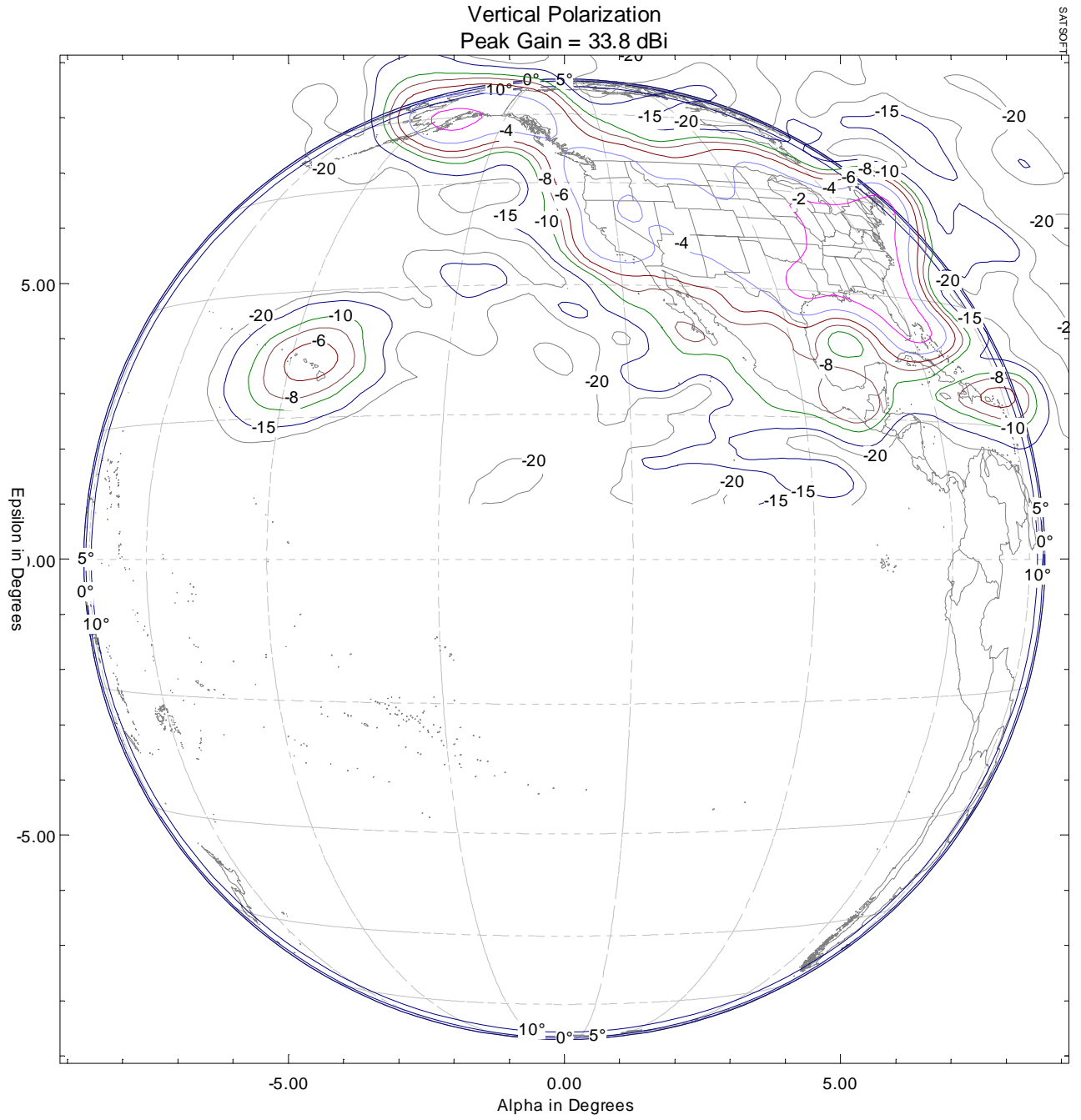


EXHIBIT 3I  
Galaxy 13 127W  
ULPC Beam  
Horizontal Polarization  
Peak Gain = 21.9 dBi

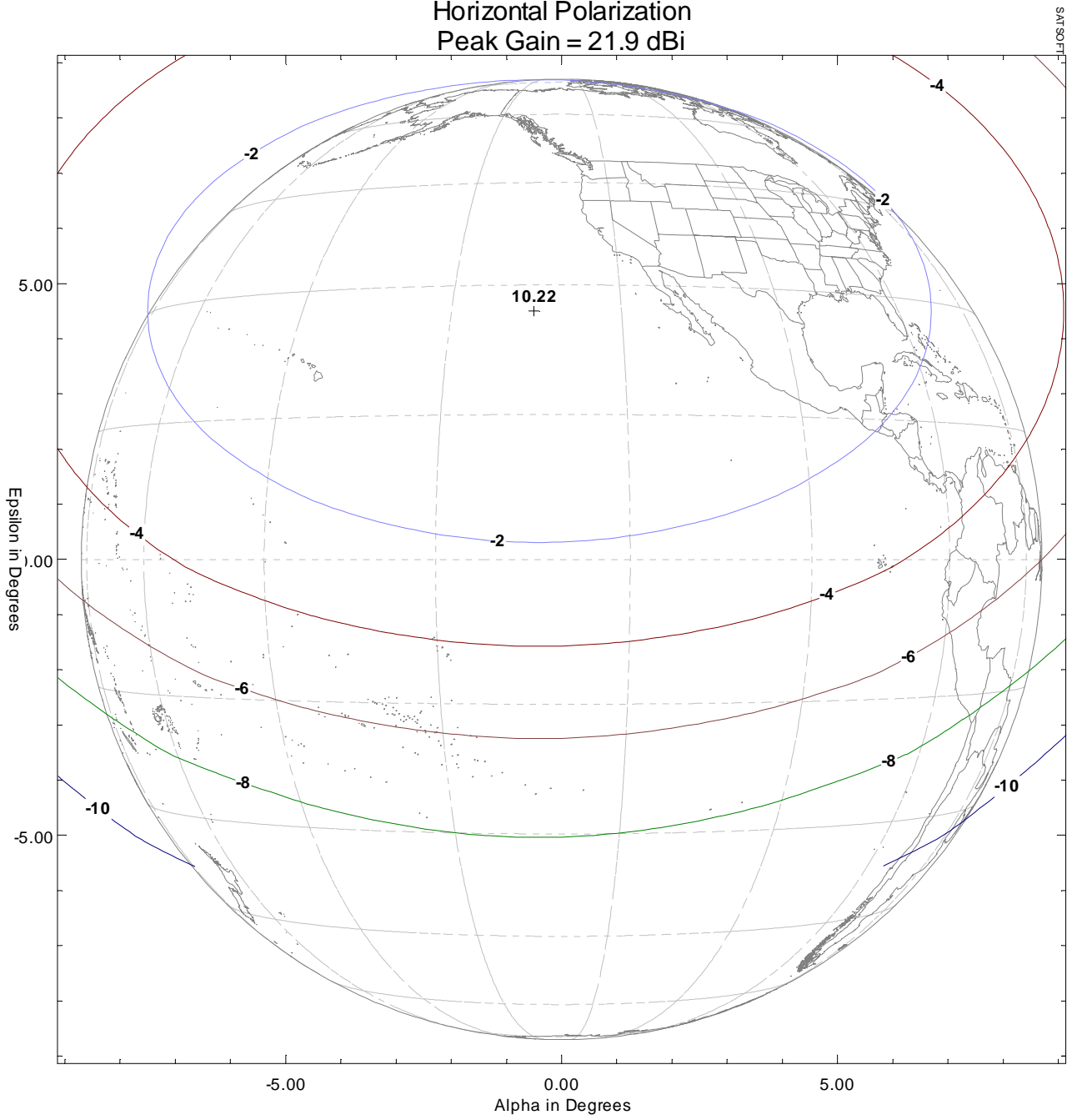
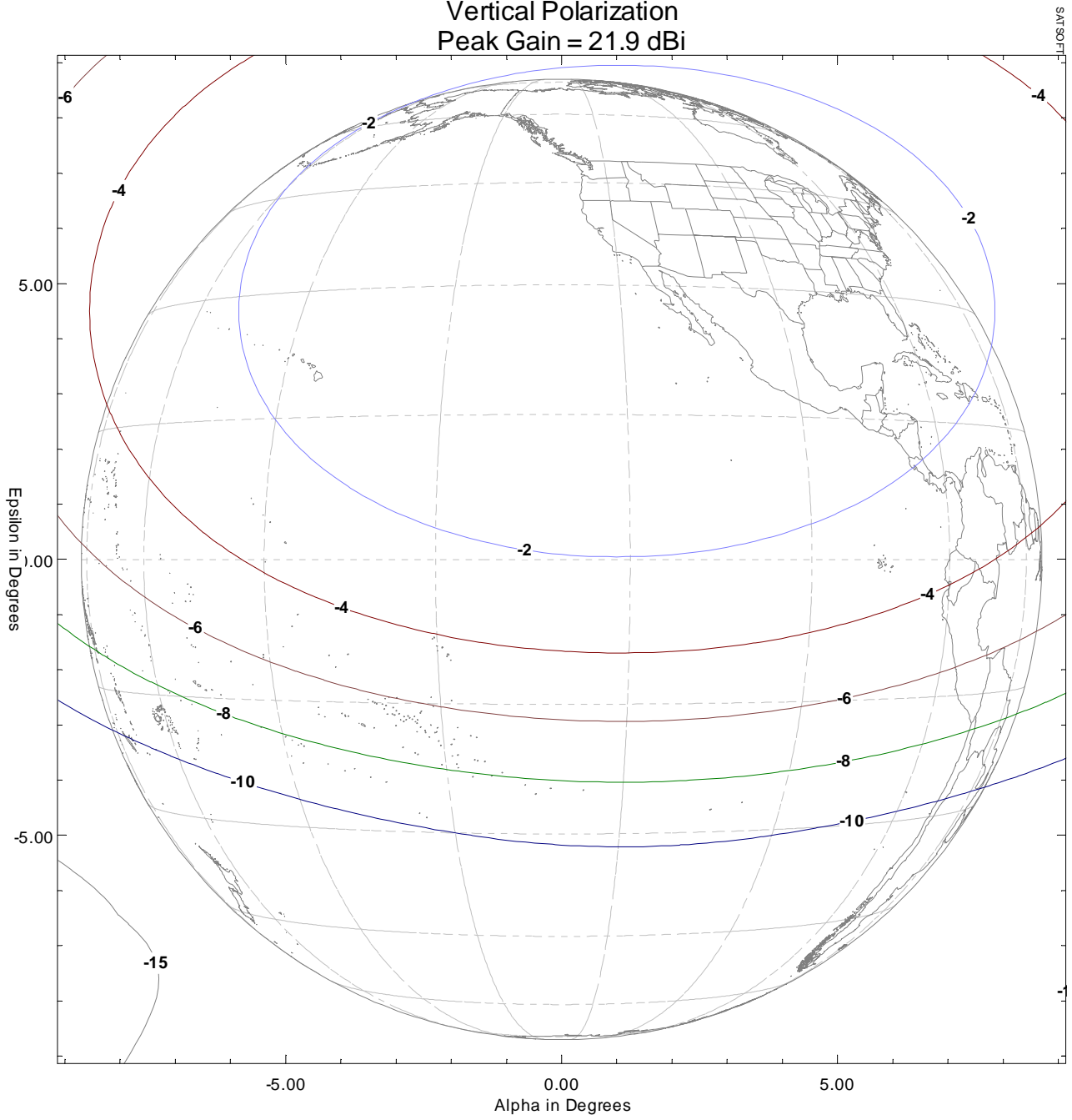


EXHIBIT 3J  
Galaxy 13 127W  
ULPC Beam  
Vertical Polarization  
Peak Gain = 21.9 dBi



## EXHIBIT 4 : SATELLITE CHARACTERISTICS

GENERAL		
1)	Orbital Location	127 WL
2)	Spacecraft Bus	Boeing 601 HP
3)	Stabilization	
3a)	Transfer Orbit	Spin
3b)	On Station	3 Axis with momentum bias
4)	Mission Life	15 years (estimated)
5)	Eclipse Capability	100%
6)	Stationkeeping	
6a)	North-South	+/- 0.05°
6b)	East-West	+/- 0.05°
7)	Antenna Pointing (Earth Sensor)	
7a)	North-South	0.127°
7b)	East-West	0.106°
COMMUNICATION		
1)	Frequency	
1a)	Receive	14000 - 14500 MHz
1b)	Transmit	11700 - 12200 MHz
2)	Polarization	
2a)	Ku-Band Uplink	Linear Horizontal / Linear Vertical
2b)	Ku-Band Downlink	Linear Horizontal / Linear Vertical
2c)	ULPC	Linear Horizontal / Linear Vertical
3)	Number of Transponders	
3a)	Ku-Band	24
4)	Transponder Bandwidth	
4a)	Ku-Band	36 MHz
5)	Transponder Gain Attenuator Range	
5a)	Ku-Band	0 to 30 dB in 1 dB steps
6)	Saturated Transponder Gain	
6a)	North America Uplink (H) / North America Downlink (V) Ku-Band	103.6 to 133.6 dB
6b)	North America Uplink (V) / North America Downlink (H) Ku-Band	103.6 to 133.6 dB
7)	Noise Temperature of Receive Section (at interface to Receive Antenna)	
7a)	North America Ku-Band Horizontal	484.5°K
7b)	North America Ku-Band Vertical	484.5°K
8)	System Noise Temperature (Receiver and Antenna)	
8a)	North America Ku-Band Horizontal	774.5°K
8b)	North America Ku-Band Vertical	774.5°K
9)	Peak G/T	
9a)	North America Ku-Band Horizontal	5.3 dB/K
9b)	North America Ku-Band Vertical	5.3 dB/K

## EXHIBIT 4 : SATELLITE CHARACTERISTICS

10)	Saturated Flux Density ( @ G/T = 0 dB/K)	
10a)	North America Ku-Band Horizontal	-71 to -101 dBW/m <sup>2</sup>
10b)	North America Ku-Band Vertical	-71 to -101 dBW/m <sup>2</sup>
11)	Output Power of Final (transmit) Amplifier	
11a)	Ku-Band	108 W
12)	Maximum Downlink EIRP	
12a)	North America Ku-Band Horizontal	51.8 dBW
12b)	North America Ku-Band Vertical	51.8 dBW
12c)	ULPC	10.2 dBW
13)	Input Multiplexer Filter Response (As percentage of authorized bandwidth)	
13a)	Between 50% and 100%	>40 dB
13b)	Between 100% and 250%	>40 dB
13c)	Greater than 250%	>40 dB
14)	Output Multiplexer Filter Response (As percentage of authorized bandwidth)	
14a)	Between 50% and 100%	>20 dB
14b)	Between 100% and 250%	>20 dB
14c)	Greater than 250%	>20 dB
15)	Total Transponder Filter Response (As percentage of authorized bandwidth)	
15a)	Between 50% and 100%	>63 dB
15b)	Between 100% and 250%	>63 dB
15c)	Greater than 250%	>63 dB
16)	Transmitter / Amplifier Redundancy	
16a)	Ku-Band	32 for 24
17)	Cross Polarization Isolation Within Main Beam	>= 30dB
17a)	Ku-Band Receive Beam	
17b)	Ku-Band Transmit Beam	

## **EXHIBIT 5 : SPACECRAFT WEIGHT BUDGET**

<b>Category</b>	<b>Mass (kg)</b>
Communications Subsystem	501.4
Bus Subsystem	1452.8
Estimated Spacecraft Dry Weight	1954.2
Fuel, expendables	2098
Total Launch Mass	4052.2

## EXHIBIT 6 : SPACECRAFT POWER BUDGET

<b>Category</b>	<b>Power (Watts)</b>
Communications Subsystem Power	6627
Bus Power	278
Miscellaneous	1124
Total Power Requirement	8029
Beginning of Life Array Capability	9600
Beginning of Life Margin	1571
End of Life Array Capability	8765
End of Life Margin	736

# EXHIBIT 7: IN-ORBIT SATELLITE CONFIGURATION

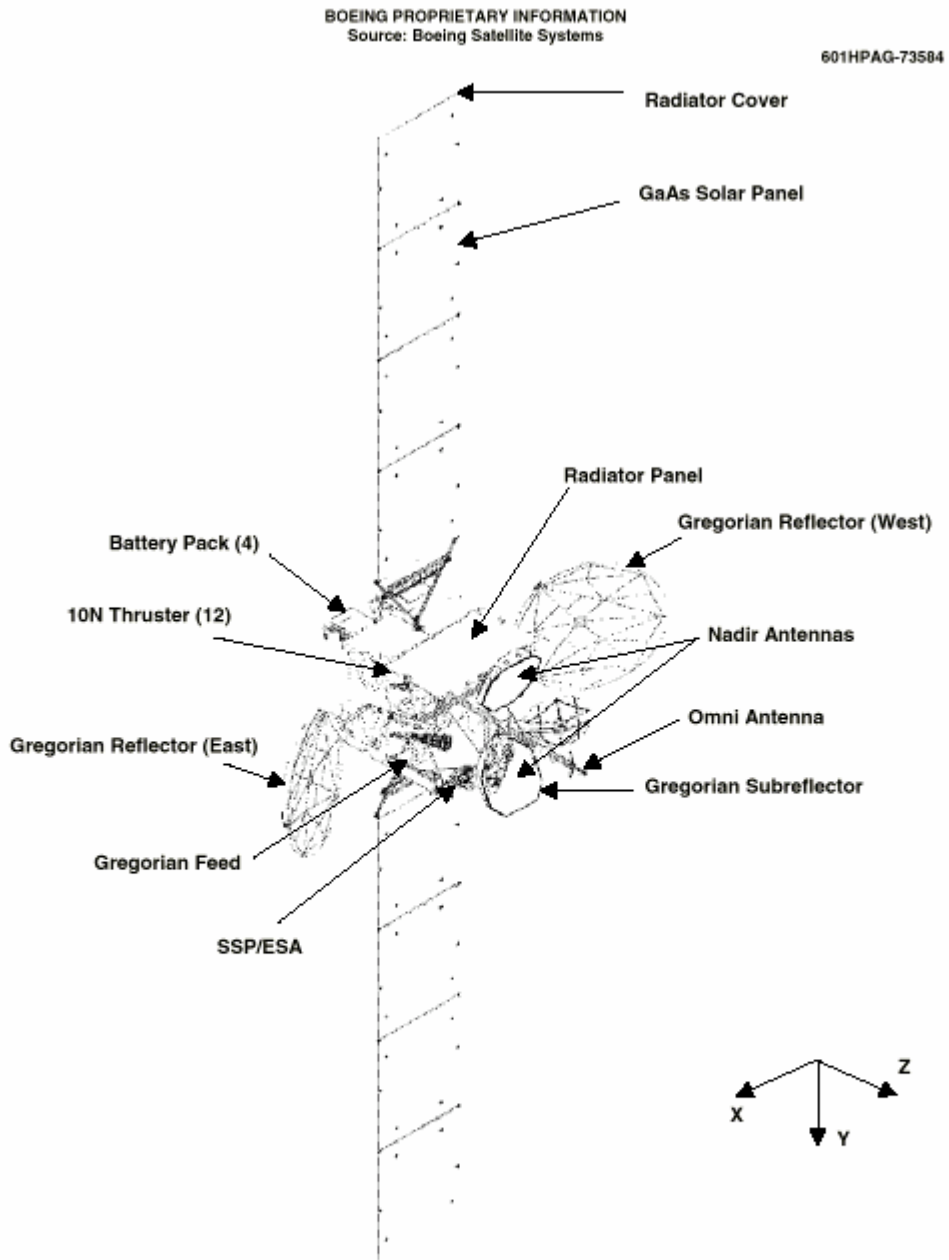


FIGURE 1-1 ON-STATION CONFIGURATION





**EXHIBIT 9 : COMMUNICATION SUBSYSTEM CHARACTERISTICS**

<b>DOWNLINK</b>				
<b>Beam Name</b>	North America	North America	ULPC	ULPC
<b>Frequency Band (MHz)</b>	11700 - 12200	11700 - 12200	11700.5 and 12199	11700.5 and 12199
<b>Polarization</b>	Linear Horizontal	Linear Vertical	Horizontal and Vertical	Vertical and Horizontal
<b>Maximum Power At The Output of Last Stage Amplifier (dBW)</b>	20.3	20.3	-10.7	-10.7
<b>Loss From Last Stage Amplifier To Transmit Antenna Interface (dB)</b>	2.3	2.3	1.0	1.0
<b>Peak Gain of Satellite Transmit Antenna (dBW)</b>	33.8	33.8	21.9	21.9
<b>Maximum Downlink EIRP (dBW)</b>	51.8	51.8	10.2	10.2
<b>UPLINK</b>				
<b>Beam Name</b>	North America	North America		
<b>Frequency Band</b>	14000 - 14500	14000 - 14500		
<b>Polarization</b>	Linear Horizontal	Linear Vertical		
<b>Receiver Noise Temperature (°Kelvin)</b>	484.5	484.5		
<b>Antenna Noise Temperature (°Kelvin)</b>	290	290		
<b>Total System Noise Temperature (°Kelvin)</b>	774.5	774.5		
<b>Total System Noise Temperature (dBK)</b>	28.9	28.9		
<b>Peak Gain of Satellite Receive Antenna (dBi)</b>	34.2	34.2		
<b>Peak G/T (dB/K)</b>	5.3	5.3		
<b>SFD [G/T : 0, Attn : 0 dB] [See Notes 1,2,3] -- (dBW/m<sup>2</sup>)</b>	-101.0	-101.0		
<b>Notes:</b>				
1) SFD : Saturated Flux Density				
2) Specified SFD value corresponds to the condition that the G/T is 0 dB/K and the transponder gain is at maximum.				
3) SFD @ any G/T contour (dBW/m <sup>2</sup> ) = [-101] - [G/T contour value (dB/K)] + [transponder gain attenuation (dB)]				

**APPENDIX A EXHIBIT A-1  
LINK BUDGETS**

<b>SITUATION</b>	1											
<b>UPLINK BEAM INFORMATION</b>												
Uplink Beam Name	North America											
Uplink Frequency (MHz)	14250.00											
Uplink Beam Polarization	Horizontal											
Uplink Relative Contour Level (dB)	-4.0											
Uplink Contour G/T (dB/K)	1.3											
<b>DOWNLINK BEAM INFORMATION</b>												
Downlink Beam Name	North America											
Downlink Frequency (MHz)	11750.00											
Downlink Beam Polarization	Vertical											
Downlink Relative Contour Level (dB)	-5.0											
Downlink Contour EIRP (dBW)	46.8											
<b>ADJACENT SATELLITE 1</b>												
Satellite 1 Orbital Location	125W											
Uplink Power Density (dBW/Hz)	-46.0											
Uplink Polarization Advantage (dB)	0.0											
Downlink EIRP Density (dBW/Hz)	-23.8											
Downlink Polarization Advantage (dB)	0.0											
<b>ADJACENT SATELLITE 2</b>												
Satellite 2 Orbital Location	129W											
Uplink Power Density (dBW/Hz)	-46.0											
Uplink Polarization Advantage (dB)	0.0											
Downlink EIRP Density (dBW/Hz)	-26.1											
Downlink Polarization Advantage (dB)	0.0											
<b>CARRIER INFORMATION</b>												
Carrier ID	36M0F9W	36M0G7W			6M00G7W			1M45G7W				
Carrier Modulation	TV/FM	Digital			Digital			Digital				
Code Rate	n/a	R3/4			R3/4			R1/2				
Occupied Bandwidth (kHz)	36000.0	36000			5565			1229				
Allocated Bandwidth (kHz)	36000.0	36000			6000			1450				
Required C/N, Clear Sky (dB)	10.0	6.8			6.8			3.4				
Minimum C/N, Rain (dB)	10.0	6.8			6.8			2.7				
<b>UPLINK EARTH STATION</b>												
Earth Station Diameter (meters)	6.1	6.1			6.1			6.1				
Earth Station Gain (dBi)	56.9	56.9			56.9			56.9				
Earth Station Elevation Angle	20.0	20.0			20.0			20.0				
Rain Rate 0.01 (mm/hr)	42.0	42.0			42.0			42.0				
<b>DOWNLINK EARTH STATION</b>												
Earth Station Diameter (meters)	2.4	1.8			3.7			1.8				
Earth Station Gain (dBi)	47.5	44.8			51.1			44.8				
Earth Station G/T, Clear Sky (dB/K)	24.8	22.1			28.4			22.1				
Earth Station Elevation Angle	20.0	20.0			20.0			20.0				
Rain Rate 0.01 (mm/hr)	42.0	42.0			42.0			42.0				
Uplink Contour SFD (dBW/m <sup>2</sup> )	-87.0			-89			-82			-82		
Link Fade	Clr Sky	Up Fade	Dn Fade	Clr Sky	Up Fade	Dn Fade	Clr Sky	Up Fade	Dn Fade	Clr Sky	Up Fade	Dn Fade
<b>UPLINK PERFORMANCE</b>												
Uplink Earth Station EIRP (dBW)	75.9	75.9	75.9	73.9	73.9	73.9	66.7	66.7	66.7	60.4	60.4	60.4
Uplink Path Loss, Clear Sky (dB)	-207.3	-207.3	-207.3	-207.3	-207.3	-207.3	-207.3	-207.3	-207.3	-207.3	-207.3	-207.3
Rain Attenuation (dB)	0.0	-3.7	0.0	0.0	-5.1	0.0	0.0	-3.9	0.0	0.0	-4.3	0.0
Satellite G/T (dB/K)	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Boltzman Constant (dBW/K-Hz)	228.6	228.6	228.6	228.6	228.6	228.6	228.6	228.6	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-75.6	-75.6	-75.6	-75.6	-75.6	-75.6	-67.5	-67.5	-67.5	-60.9	-60.9	-60.9
Uplink C/N (dB)	22.9	19.2	22.9	20.9	15.8	20.9	21.8	17.9	21.8	22.1	17.8	22.1
<b>DOWNLINK PERFORMANCE</b>												
Downlink EIRP per Carrier (dBW)	46.8	45.8	46.8	46.8	45.0	46.8	35.1	31.4	35.1	28.8	24.5	28.8
Downlink Path Loss, Clear Sky (dB)	-205.8	-205.8	-205.8	-205.8	-205.8	-205.8	-205.8	-205.8	-205.8	-205.8	-205.8	-205.8
Rain Attenuation (dB)	0.0	0.0	-2.6	0.0	0.0	-3.5	0.0	0.0	-5.5	0.0	0.0	-4.5
Antenna Pointing Error (dB)	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Earth Station G/T, Clear Sky (dB/K)	24.8	24.8	22.5	22.1	22.1	19.4	28.4	28.4	25.2	22.1	22.1	19.1
Boltzman Constant (dBW/K-Hz)	228.6	228.6	228.6	228.6	228.6	228.6	228.6	228.6	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-75.6	-75.6	-75.6	-75.6	-75.6	-75.6	-67.5	-67.5	-67.5	-60.9	-60.9	-60.9
Downlink C/N (dB)	18.4	17.4	13.5	15.7	13.8	9.5	18.4	14.7	9.6	12.3	8.1	4.8
<b>COMPOSITE LINK PERFORMANCE</b>												
C/N Uplink (dB)	22.9	19.2	22.9	20.9	15.8	20.9	21.8	17.9	21.8	22.1	17.8	22.1
C/N Downlink (dB)	18.4	17.4	13.5	15.7	13.8	9.5	18.4	14.7	9.6	12.3	8.1	4.8
C/I Intermodulation (dB)	n/a	n/a	n/a	n/a	n/a	n/a	16.7	14.0	16.7	17.0	12.9	17.0
C/I Uplink Co-Channel (dB)*	24.0	20.3	24.0	24.0	18.9	24.0	23.6	19.7	23.6	23.4	19.1	23.4
C/I Downlink Co-Channel (dB)*	24.0	23.0	24.0	24.0	22.2	24.0	23.6	19.9	23.6	23.4	19.2	23.4
C/I Uplink Adjacent Satellite 1 (dB)	24.3	20.6	24.3	22.3	17.2	22.3	23.3	19.4	23.3	23.5	19.2	23.5
C/I Downlink Adjacent Satellite 1 (dB)	20.1	19.1	20.1	17.1	15.2	17.1	20.4	16.6	20.4	13.7	9.5	13.7
C/I Uplink Adjacent Satellite 2 (dB)	24.3	20.6	24.3	22.3	17.2	22.3	23.3	19.4	23.3	23.5	19.2	23.5
C/I Downlink Adjacent Satellite 2 (dB)	23.9	23.0	23.9	21.5	19.6	21.5	23.7	20.0	23.7	18.1	13.9	18.1
C/(N+) Composite (dB)	13.1	11.0	11.0	10.9	7.8	7.8	11.3	7.8	7.8	8.0	3.7	3.7
Required System Margin (dB)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Net C/(N+) Composite (dB)	12.1	10.0	10.0	9.9	6.8	6.8	10.3	6.8	6.8	7.0	2.7	2.7
Minimum Required C/N (dB)	-10.0	-10.0	-10.0	-6.8	-6.8	-6.8	-6.8	-6.8	-6.8	-3.4	-2.7	-2.7
Excess Link Margin (dB)	2.1	0.0	0.0	3.1	0.0	0.0	3.5	0.0	0.0	3.6	0.0	0.0

Note:

The C/I level is adjusted depending on the signal level and transponder mode of operation.

**APPENDIX A EXHIBIT A-1  
LINK BUDGETS**

<b>SITUATION</b>	2								
<b>UPLINK BEAM INFORMATION</b>									
Uplink Beam Name	North America								
Uplink Frequency (MHz)	14250.00								
Uplink Beam Polarization	Horizontal								
Uplink Relative Contour Level (dB)	-4.0								
Uplink Contour G/T (dB/K)	1.3								
<b>DOWNLINK BEAM INFORMATION</b>									
Downlink Beam Name	North America								
Downlink Frequency (MHz)	11750.00								
Downlink Beam Polarization	Vertical								
Downlink Relative Contour Level (dB)	-5.0								
Downlink Contour EIRP (dBW)	46.8								
<b>ADJACENT SATELLITE 1</b>									
Satellite 1 Orbital Location	125W								
Uplink Power Density (dBW/Hz)	-46.0								
Uplink Polarization Advantage (dB)	0.0								
Downlink EIRP Density (dBW/Hz)	-23.8								
Downlink Polarization Advantage (dB)	0.0								
<b>ADJACENT SATELLITE 2</b>									
Satellite 2 Orbital Location	129W								
Uplink Power Density (dBW/Hz)	-46.0								
Uplink Polarization Advantage (dB)	0.0								
Downlink EIRP Density (dBW/Hz)	-26.1								
Downlink Polarization Advantage (dB)	0.0								
<b>CARRIER INFORMATION</b>									
Carrier ID	200KG7W			100KG7W			400KG7W		
Carrier Modulation	Digital			Digital			Digital		
Code Rate	R1/2			R1/2			R1/2		
Occupied Bandwidth (kHz)	153.6			77.0			307		
Allocated Bandwidth (kHz)	200.0			100.0			400		
Required C/N, Clear Sky (dB)	3.4			6.8			3.4		
Minimum C/N, Rain (dB)	2.7			5.7			2.7		
<b>UPLINK EARTH STATION</b>									
Earth Station Diameter (meters)	6.1			6.1			3.0		
Earth Station Gain (dBi)	56.9			56.9			49.7		
Earth Station Elevation Angle	20.0			20.0			20.0		
Rain Rate 0.01 (mm/hr)	42.0			42.0			42.0		
<b>DOWNLINK EARTH STATION</b>									
Earth Station Diameter (meters)	2.4			2.4			6.1		
Earth Station Gain (dBi)	47.5			47.5			55.5		
Earth Station G/T, Clear Sky (dB/K)	24.8			24.8			32.9		
Earth Station Elevation Angle	20.0			20.0			20.0		
Rain Rate 0.01 (mm/hr)	42.0			42.0			42.0		
Uplink Contour SFD (dBW/m <sup>2</sup> )	-82.0			-82.0			-82		
Link Fade	Clr Sky	Up Fade	Dn Fade	Clr Sky	Up Fade	Dn Fade	Clr Sky	Up Fade	Dn Fade
<b>UPLINK PERFORMANCE</b>									
Uplink Earth Station EIRP (dBW)	49.5	49.5	49.5	49.5	49.5	49.5	49.0	49.0	49.0
Uplink Path Loss, Clear Sky (dB)	-207.3	-207.3	-207.3	-207.3	-207.3	-207.3	-207.3	-207.3	-207.3
Rain Attenuation (dB)	0.0	-4.2	0.0	0.0	-4.2	0.0	0.0	-3.6	0.0
Satellite G/T (dB/K)	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Boltzman Constant (dBW/K-Hz)	228.6	228.6	228.6	228.6	228.6	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-51.9	-51.9	-51.9	-48.9	-48.9	-48.9	-54.9	-54.9	-54.9
Uplink C/N (dB)	20.2	16.0	20.2	23.2	19.0	23.2	16.7	13.1	16.7
<b>DOWNLINK PERFORMANCE</b>									
Downlink EIRP per Carrier (dBW)	17.9	13.7	17.9	17.9	13.7	17.9	17.4	13.8	17.4
Downlink Path Loss, Clear Sky (dB)	-205.8	-205.8	-205.8	-205.8	-205.8	-205.8	-205.8	-205.8	-205.8
Rain Attenuation (dB)	0.0	0.0	-5.0	0.0	0.0	-5.0	0.0	0.0	-8.2
Antenna Pointing Error (dB)	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Earth Station G/T, Clear Sky (dB/K)	24.8	24.8	21.7	24.8	24.8	21.7	32.9	32.9	29.2
Boltzman Constant (dBW/K-Hz)	228.6	228.6	228.6	228.6	228.6	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-51.9	-51.9	-51.9	-48.9	-48.9	-48.9	-54.9	-54.9	-54.9
Downlink C/N (dB)	13.2	9.0	5.0	16.2	12.0	8.0	17.8	14.2	5.9
<b>COMPOSITE LINK PERFORMANCE</b>									
C/N Uplink (dB)	20.2	16.0	20.2	23.2	19.0	23.2	16.7	13.1	16.7
C/N Downlink (dB)	13.2	9.0	5.0	16.2	12.0	8.0	17.8	14.2	5.9
C/I Intermodulation (dB)	15.1	11.0	15.1	18.1	14.0	18.1	11.6	8.0	11.6
C/I Uplink Co-Channel (dB)*	21.1	17.0	21.1	24.2	20.0	24.2	17.6	14.1	17.6
C/I Downlink Co-Channel (dB)*	21.1	17.0	21.1	24.2	20.0	24.2	17.6	14.1	17.6
C/I Uplink Adjacent Satellite 1 (dB)	21.6	17.5	21.6	24.6	20.5	24.6	18.1	14.6	18.1
C/I Downlink Adjacent Satellite 1 (dB)	14.9	10.7	14.9	17.9	13.7	17.9	19.8	16.3	19.8
C/I Uplink Adjacent Satellite 2 (dB)	21.6	17.5	21.6	24.6	20.5	24.6	18.1	14.6	18.1
C/I Downlink Adjacent Satellite 2 (dB)	18.7	14.6	18.7	21.7	17.6	21.7	22.8	19.2	22.8
C/(N+) Composite (dB)	7.9	3.7	3.7	10.9	6.7	6.7	7.3	3.7	3.7
Required System Margin (dB)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Net C/(N+) Composite (dB)	6.9	2.7	2.7	9.9	5.7	5.7	6.3	2.7	2.7
Minimum Required C/N (dB)	-3.4	-2.7	-2.7	-6.8	-5.7	-5.7	-3.4	-2.7	-2.7
Excess Link Margin (dB)	3.5	0.0	0.0	3.1	0.0	0.0	2.9	0.0	0.0

Note:

The C/I level is adjusted depending on the signal level and transponder mode of operation.