

j. Satellite Stationkeeping

Inclination of the satellite orbit will be maintained to  $\pm 0.05$  degrees or less, and the satellite will be maintained to within  $\pm 0.05$  degrees of the nominal longitude position. 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 one degree per day. Sufficient propellant will be included in the satellite to permit a 12-year operational life.

k. Telemetry, Tracking and Command ("TT&C")

The telemetry, tracking and command ("TT&C") subsystem will perform the monitoring and command functions necessary for spacecraft control.

(i) Telemetry

The telemetry system will have two identical links consisting of two encoders that modulate either of two transmitters via a cross-strap switch. Data pertaining to unit status, spacecraft attitude, and spacecraft performance will be transmitted continuously for spacecraft management and control. The telemetry transmitter will also serve as the downlink transmitter for ranging tones and command verification. The primary telemetry data mode will be PCM. For normal on-station operation, the telemetry transmitters will be connected via a filter to the transmit feeds of the communications antenna.

In transfer orbit, each telemetry transmitter will drive the bicone antenna to provide adequate telemetry coverage. Selection of this high-level mode, which may also be used for emergency backup on-station, will be by ground command.

(ii) Command

The command system will control spacecraft operation through all phases of the mission by receiving and decoding commands to the spacecraft. Additionally, it will serve as the uplink receiver for ranging signals and a ground beacon used for spacecraft pointing. It will perform the latter function without interfering with the command function. The command signals will be fed through a filter diplexer into a redundant pair of tracking/ command receivers. The composite signal of the receivers' total output will drive a pair of redundant decoders. The decoders will provide command

outputs for all satellite functions. The command bicone antenna will be used in transfer orbit for command and ranging, while the reflector antenna will be used on-station for ground RF beacon tracking, command and ranging.

(iii) TT&C Performance Characteristics

A telemetry and command summary is given in Table D-8. The satellite system requires a command receiver input power of about -135 dBW for command execution. With a nominal ground station EIRP of 83.5 dBW, the command threshold requirements are met through the bicone and reflector antennas, respectively. See Table D-9 for the command link budget for transfer orbit and on-station operations. The telemetry link budget for on-station operation is given in Table D-10.

1. System Reliability

The satellite will be designed for an operational and mission life of 12 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 mechanism of the TWTAs. To ensure highly reliable performance, two 10 for 8 redundancy rings of TWTA pairs are 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 receiver, 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.

ITEM E. Performance Requirements and Operational Characteristics

1. Introduction

Each planned satellite will be capable of transmitting two types of wideband digital signals as follows:

“Type I” is the QPSK signal with concatenated convolutional and RS coding currently used by the DSS® architecture in DIRECTV’s ongoing business. It provides two information rates, 23.6 and 30.3 Mbps, by varying the convolutional code rate.

“Type II” is an advanced modulation and coding format with a higher power spectral density and a higher spectral efficiency (bits per hertz). The specifics of this format are very similar to “Type I” and do not affect satellite design and other system studies.

Table E-1 provides a detailed link budget for the Type I modulation. The performance of Type II modulation will meet or exceed the performance of Type I.

TABLE D-8

TT&C SYSTEM PARAMETERS

Parameter	Spacecraft Antenna		
	Bicone	Reflector	Pipe
Command frequency	14497 - 14500 MHz	14497 - 14500 MHz	14000 - 14003 MHz
Earth Station Command EIRP (typical)	83.6 dBW	83.5 dBW	83.6 dBW
Command carrier modulation	FM	FM	FM
Telemetry beacon frequency	12200 - 12003 MHz	12200 - 12003 MHz	12200 - 12003 MHz
Beacon modulation	PM	PM	PM
Beacon EIRP (max)	10.0 dBW	22.0 dBW	10.0 dBW
On-station ranging accuracy	21 m	21 m	21 m

TABLE D-9

## COMMAND RF LINK BUDGET

Parameter	Bicone Antenna Transfer Orbit, 14500.0 MHz	Spot Beam On-station, 14500.0 MHz
Ground station, EIRP, dBW	83.6	83.5
Polarization loss, dB	-0.1	-0.1
Path loss, $1/(4^1 r^2)$ , dB-m <sup>2</sup>	-162.5	-162.5
Incident power, dBW/M <sup>2</sup>	-79.0	-79.1
Isotropic area, $\lambda^2/4^1$ , dB-m <sup>2</sup>	-44.2	-44.2
Antenna gain, $\pm 20^\circ$ on omni, dBi	-0.6	38.6
RF losses to tracking command receiver, dB	-1.55	-10.0
Receiver input power, dBW	-125.5	-94.8
Receiver command threshold, dB	-135	-135
Margin above command threshold, dB	9.7	40.2

TABLE D-10

## TELEMETRY LINK BUDGET (ON-STATION)

Parameter	Value
Telemetry EIRP, min. at Castle Rock, CO	15.9 dBW
Path loss	-162.5 dB
Isotropic area	-42.6 dB
Atmospheric absorption (clear sky)	-0.2 dB
TT&C station G/T	37.2 dB/K
Link C/T	-155.9 dBW/K
Link C/N <sub>0</sub>	76.6 dB-Hz
Subcarrier modulation index	-5.0 dB
Subcarrier C/N <sub>0</sub>	71.6 dB-Hz
Implementation loss	-2.5 dB
Telemetry Eb/N <sub>0</sub> (bit rate = 4 Kbps)	33.1 dB
Eb/N <sub>0</sub> required for 10 <sup>-6</sup> BER	11.0 dB
Margin	22.1 dB

## 2. Transmission Performance

### a. Overview

Figure E-1 describes the digital transmission architecture; it is nearly identical to the architecture currently used by DIRECTV. The uplink equipment digitizes and compresses video and/or audio for each service. It then multiplexes the data streams for several services along with control information into a single constant rate bit stream for each transponder. This composite stream is coded with a Reed Solomon "outer code" and then a convolutional "inner" code bringing the total bit rate including all FEC to 40 Mbps. This stream is QPSK modulated and transmitted on one of the uplink frequencies.

The selected video channel is received by an end user's receiver/ decoder. The signal is QPSK demodulated and automatically Viterbi and Reed Solomon decoded at the appropriate code rate. The signal is then decrypted and digitally decompressed to reconstruct the original analog signal.

### b. Signal Characteristics

- Wideband QPSK Modulation
- Single carrier per transponder
- 20 million QPSK symbols per second
- 24 MHz bandwidth
- Transponder operation at saturation
- 23.6 Mbps information rate utilizing 130/147 Reed Solomon and 2/3 convolutional code
- Eb/No threshold of 5.1 for 23.6 Mbps
- Spectral control: Typically >99% of each information stream is bit-by-bit encrypted pseudo-randomly. Resultant stream FEC encoded.

Details on the DSS® format are provided in ITU 10-11S Draft Recommendation "Common Functional Requirements for the Reception of Digital Multiprogramme Television Emissions by Satellites Operating in the 11/12 GHz Frequency Range," which is in process at the ITU as a proposed world standard.

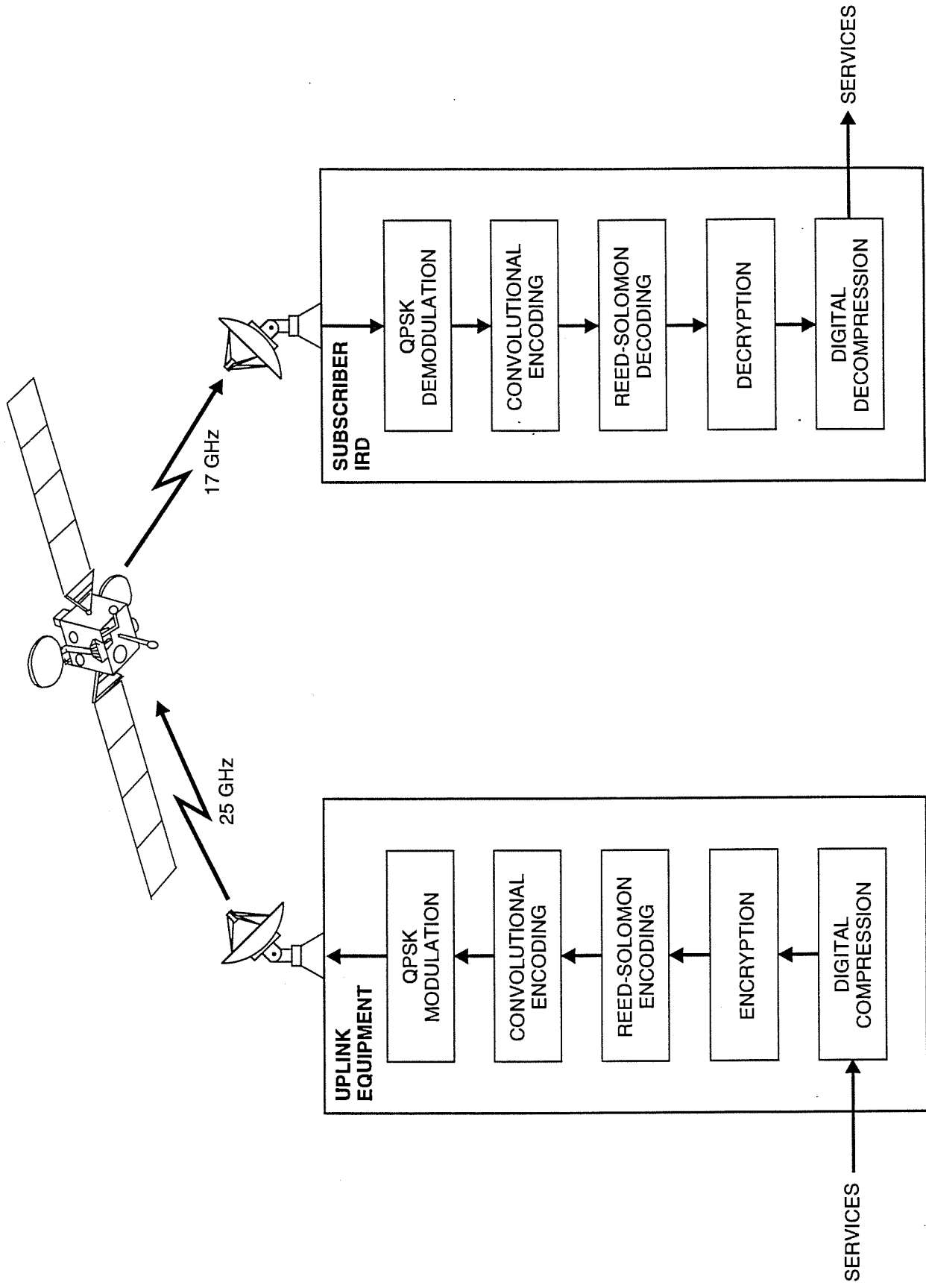
### c. Link Budget

Table E-1 gives a representative link budget for the Type I ( or DSS modulation) for Chicago under clear weather conditions and with rain on the uplink and, separately, with rain on the downlink. It is assumed that the occurrence of simultaneous heavy rainfall on both the uplink and downlink is not statistically significant. The Crane rain model has been assumed. The spacecraft transmit antenna pattern is shaped to allow the use of 45 cm. antennas over most of CONUS at an availability of at least 99.7%.

Feeder link antennas were assumed to be 9 meters in diameter with an efficiency of 62%. The customer's receiving station was assumed to have a receive system noise figure of 1.2 dB and an aperture efficiency of 70%. The latter figure assumed an off-set parabolic dish similar to existing 12 GHz products.

The satellite transponders include 40 dB of automatic gain control (AGC). In addition, the uplinks include 20 dB of transmitter output control. The combined result allows the transponder to remain saturated through a 60 dB uplink rain fade.





**DIGITAL TELEVISION TRANSMISSION ARCHITECTURE**

**FIGURE E-1**

**TABLE E-1  
DIGITAL TELEVISION LINK BUDGET**

	<u>Clear</u>	<u>Rain Up</u>	<u>Rain Down</u>
<b><u>Uplink:</u></b>			
Transmit EIRP, dBW	76.1	96.1	76.1
Uplink path loss, dB	-212.0	-212.0	-212.0
Atmospheric loss, dB	-1.5	-1.5	-1.5
Uplink rain loss, dB	0.0	-20.0	0.0
Satellite G/T, dB/K	0.0	0.0	0.0
Bandwidth, dB-Hz	-73.8	-73.8	-73.8
Boltzmann's constant, dBW	228.6	228.6	228.6
<b>Uplink C/N (thermal), dB</b>	<b>17.4</b>	<b>17.4</b>	<b>17.4</b>
<b><u>Downlink:</u></b>			
Satellite EIRP, dBW	53.7	53.7	53.7
Downlink path loss, dB	-208.9	-208.9	-208.9
Atmospheric loss, dB	-0.9	-0.9	-0.9
Downlink rain loss, dB	0.0	0.0	-2.6
Rain temp increase, dB	0.0	0.0	-2.3
Pointing loss, dB	-0.5	-0.5	-0.5
Ground G/T, dB/K	15.4	15.4	15.4
Bandwidth, dB-Hz	-73.8	-73.8	-73.8
Boltzmann's constant, dBW	228.6	228.6	228.6
<b>Downlink C/N (thermal), dB</b>	<b>13.6</b>	<b>13.6</b>	<b>8.7</b>
<b><u>Totals:</u></b>			
Uplink C/N (thermal), dB	21.4	21.4	21.4
Downlink C/N (thermal), dB	13.6	13.6	8.7
Crosspol interference, dB	20.9	20.8	20.8
Adjacent sat. interference., dB (4.5° spacing)	11.9	11.9	11.9
<b>Total C/(N+I), dB</b>	<b>9.1</b>	<b>9.1</b>	<b>6.6</b>
<b>Total Eb/(N+I)o, dB</b>	<b>9.1</b>	<b>9.1</b>	<b>6.7</b>
<b>Required Eb/(N+I)o, dB</b>	<b>5.1</b>	<b>5.1</b>	<b>5.1</b>
<b>Margin, dB</b>	<b>4.6</b>	<b>4.6</b>	<b>2.2</b>

d. Availability Analysis

Attenuation due to rainfall and other effects have a significant impact on satellite system performance at 17.3-17.8 GHz. The analysis shown in Table E-1 provides a typical example of availability results in the planned coverage area of the DIRECTV expansion satellites. The rain-related degradations expected on a satellite link are a complex function of frequency, rain climate, required link availability, earth station latitude and altitude, and the elevation angle to the satellites. Fortunately, decades of research from various sources has provided us very good analytical methods for predicting these rain-related effects. Furthermore, on-going availability monitoring by DIRECTV has substantiated the general success of the Crane analytical model in predicting rain-related unavailability. DIRECTV also has experience in transmitting at 17 GHz since its uplink station has operated continuously in that band, with very little outage, since June, 1994.

ITEM E. Interference Analysis

1. Internal Interference

a. Cross-polarization

The satellite antenna cross-polarization isolation will be 27 dB or better for both transmit and receive antennas over the coverage regions. The earth station cross-polarization isolation will be 35 dB or better for the large uplink antennas and 20 dB or better for the small customer antennas.

The link cross-polarization isolation between channels of opposite polarization is the power summation of the earth station and satellite antenna polarization isolations and the depolarization effects of rainfall, modified by the differential EIRP or incident flux density for the uplink and downlink, respectively. The depolarization due to rainfall is a function of frequency, rain attenuation, incident wave polarization and the elevation angle.

The uplink polarization was intentionally selected as linear, rather than circular, because it is less susceptible to de-polarization due to rain. Also, if uplink stations must be installed in high rain regions, they will be operated, in general, on one polarization only. This will reduce the likelihood of a simultaneous rain-induced depolarization events on both polarizations simultaneously.

b. Out-of-band Interference

Since each transponder will be operated only in a single carrier mode, out-of-band emissions will be entirely a function of the digital pulse shape and channel filters. These issues will be part of the detailed design effort on the end-to-end communications

path.

## 2. Adjacent Satellite Interference

Use of the 17.3-17.8 GHz band for BSS space-to-Earth transmissions is not constrained by spacecraft spacing provisions of the ITU Region 2 plan. The DIRECTV expansion satellites will be designed to operate in a 4.5 degree orbital spacing environment. The system design permits operation of similar satellites within 4.5 degrees of any of the DIRECTV satellites -- that is, the planned DIRECTV system can tolerate the same level and type of interference that the DIRECTV system itself generates. The use of 4.5 degree spacing will result in a dramatic increase in BSS capacity, as more satellites can be accommodated than is possible in the BSS band at 12.2-12.7 GHz.

## 3. Coexistence with Other Satellite Systems

The DIRECTV expansion system must coexist with other satellite systems, including the existing BSS systems which utilize 17.3-17.8 GHz as an uplink frequency. Analysis indicates that potential interference with existing BSS systems will be mitigated by the following factors:

- Satellites at the same orbital location will be physically separated by at least 45 miles.
- The transmit and receive antennas are high gain, pointed at the earth and have low sidelobes at 90° off axis.
- The receive antennas of the existing BSS satellites are recessed into the spacecraft structure and hence have even greater isolation than would be otherwise expected.

Existing uplink stations using the spectrum at 17.3-17.8 GHz may create interference into DIRECTV customer receive terminals operating in the vicinity of those stations, since the customer antennas will operate at the same frequency. DIRECTV believes that such cases will be extremely limited in scope, and can be easily addressed through reasonable interference protection measures that will not burden the uplink operator.

## 4. Coexistence with Terrestrial Systems

The Commission recently has relocated digital electronic messaging service ("DEMS") licensees to the 24 GHz band, and DIRECTV has petitioned for reconsideration of that decision. The degree to which DIRECTV's proposed expansion service can co-exist with DEMS operations at 24 GHz will be addressed in the context of the DEMS reconsideration petition and related proceedings.

ITEM G. Preferred Locations

DIRECTV requests that it be granted authority to operate from three orbital locations centered around 101 W.L.: 96.5° W.L., 101° W.L. and 105.5° W.L. These locations satisfy DIRECTV's requirements for significantly increasing the capacity of its existing system, integrating the expansion system with its existing business, covering the desired service areas, and using common spacecraft designs.

1. Number of Requested Locations

Deployment of all six expansion satellites will significantly increase DIRECTV's capacity for nationwide services. This dramatic increase is necessary to meet increased multichannel competition and to provide the new services expected by the American public early in the 21st century. DIRECTV faces significant competition from both satellite and terrestrial operators, including monopoly cable operators that have announced high-capacity hybrid fiber-coax systems. To meet this competition, DIRECTV expects to offer a variety of new services, including innovative multimedia offerings spurred by the continuing explosion in Internet usage. At this time DIRECTV does not intend to provide direct Internet access but to provide scheduled broadcast multimedia services in Internet format. DIRECTV also requires new capacity to transmit existing services with improved quality. The deployment of digital cable and the ATSC terrestrial broadcasting standard will increase consumer quality expectations. In the short term, DIRECTV can meet this need by improving its existing MPEG encoding algorithms, but in the long term, increased bandwidth is required. One high-definition ATSC signal requires five times the capacity used today by DIRECTV to transport one NTSC signal. For DIRECTV to be a major player in the national acceptance of ATSC, DIRECTV must have access to significantly more space segment.

2. Orbital Arc Limitations and Service Capabilities

DIRECTV requests orbital locations at and near 101° W.L. in order to permit integration of the proposed expansion system with DIRECTV's existing DBS business. DIRECTV intends for existing and future DIRECTV customers to utilize a single 18 inch (nominal) dish with multiple feeds. With adjacent satellites only 4.5° off-axis, a single aperture can be utilized, with minimal degradation, to receive from all three orbital locations. This consumer "outdoor unit" will include a dual-band low noise block converter (LNB). Existing customers could potentially utilize their existing dish with an upgraded feed and LNB package or a new antenna/feed/LNB mounted on the existing pole or bracket.

The requested orbital positions provide good coverage of all fifty states. Visibility is limited in northern and western portions of Alaska, but this is balanced by the desirability of a high elevation angle to the southeastern area of the U.S. with its relatively high population and very high rainfall.

The 17.3-17.8 GHz downlink frequencies of the proposed system permit excellent beam shaping over the desired coverage area. It is also desired that the same antenna design be used for all six satellites. This reduces engineering and production costs, and permits any satellite to back up any other. These various goals are maximized if the assigned orbital locations are all in close proximity, as requested.

3. Availability of Desired Location

DIRECTV is unaware of any other applications for the requested frequencies at the requested orbital locations.

4. Miscellaneous and Alternatives

Each satellite will be capable of orbital relocation during its lifetime in order to accommodate possible new orbital assignments by the Commission. Any shifts, however, would cause severe disruptions in service. The ground network associated with the satellite is expected to consist of millions of customer terminals. These earth stations would have to be repointed in case of a change in orbital location. This would result in a significant cost, a significant loss of revenue, and disruption of service to all users.

ITEM H. Schedule

It is requested that the Commission's actions permit the launch of the first expansion spacecraft in 1999.

1. Contract Milestones

The dates by which the following matters are expected to be resolved are as follows:

- a. Spacecraft RFP issued -- if an RFP is issued, this event will occur within six months of the date of the grant of the construction permit.
- b. Spacecraft contractor selected -- the contractor will be selected within one (1) year of the date of the grant of the construction permit.
- c. Spacecraft contract executed -- the contract will be executed within one (1) year of the date of the construction permit.
- d. Launch service contract executed -- the contract will be executed at least eighteen (18) months before launch.

- e. Financing completed -- as set forth in Item J, DIRECTV's majority-owner, Hughes Electronics Corporation has sufficient current assets to fund the construction, launch and first-year operating costs of the satellites applied for in this application.

## 2. Spacecraft Milestones

The planned schedule for major milestones for the first spacecraft is as follows:

- a. Start of design and construction within one-hundred-eighty days of the grant of the construction permit.
- b. Completion of construction within thirty-six months of the grant of the construction permit.
- c. Launch within six months following completion of construction.
- d. In service within sixty days after launch.

All other spacecraft in the system will be deployed within six years after grant of the construction permit.

## ITEM I. System Costs

Table I-1 provides the estimated capital costs and operating costs for the first year of system. The figures include the directly-related satellite operating costs given a 12-year lifetime for each satellite. The total cost of the space and TT&C systems includes the construction cost of the spacecraft and launch vehicle, launch vehicle services, launch insurance, associated specialized ground equipment and pre-operating expenses. The satellite costs are based on estimates from a major manufacturer, Hughes Space and Communications Company. The costs of the launch vehicle and other associated items are based on current industry practice. Operating costs include the costs associated with the OCC, TT&C, on-orbit insurance and general and administrative.

The cost estimates do not include any costs associated with use of the communications payload. Specifically, the estimates do not include the uplink and other broadcasting facilities, and do not include customer terminal costs.

TABLE I-1

INVESTMENT AND OPERATING COSTS

Capital Expenditures (\$M)

First spacecraft, launch, insurance, TT&C station	\$ 269
Spacecraft 2 through 6 with launch, insurance	<u>\$1130</u>
Total construction cost	\$1399

Operating Expenses (\$M/year) (First year)

TT&C operations, insurance	\$ 8
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ITEM J.      Financial Qualifications

For BSS systems, the Commission has not required a prior demonstration of financial qualifications, but has relied on the applicant meeting strict due diligence milestones once the system is authorized. *See* 47 C.R.F. § 100.19. Nevertheless, DIRECTV has financial resources available to cover the estimated costs of construction, launch and first year of operations for the proposed expansion system.

DIRECTV's majority owner is Hughes Electronics Corporation (HE). The majority owner, in turn, is wholly-owned by the General Motors Corporation. The only minority owner of DIRECTV is AT&T Corporation, with a 2.5% interest.

The HE financial statement for 1996 is attached as Exhibit J. It demonstrates more than sufficient current assets and operating income to fund the costs of the proposed expansion system.

ITEM K.      Legal Qualifications

DIRECTV is a fully qualified DBS licensee. DIRECTV's legal qualifications are a matter of public record.

ITEM L.      Type of Operations

DIRECTV plans to operate the majority of the satellite capacity on a non-broadcast, non-common carrier basis, as it operates its current satellite capacity at 101° W.L. DIRECTV may sell and/or lease a portion of its expansion capacity on a non-common carrier basis for complementary business purposes.

ITEM M.      Public Interest Considerations

Grant of this request will serve the public interest in various respects. The grant will spur further technological innovation and continue to promote a healthy, thriving U.S. satellite industry, which the Commission has nurtured during the last three decades. In particular the proposed expansion system will continue to advance innovation in the DBS industry, which only recently has emerged as a nascent but fast-developing source of technological and service innovation in the MVPD market. The grant will provide increased competition in the market for MVPD services and the attendant benefits of lower prices and better services for consumers. The increased national digital distribution capacity will foster increased outlets and opportunities for television, film, educational, informational and multimedia program content development. The increased national capacity also will give DIRECTV the opportunity to speed acceptance of the new ATSC format, one of the Commission's major goals. New capacity will expand nationwide consumer access to educational and training programming. The new services provided by DIRECTV, especially its planned

multimedia news and information services, can improve individual consumer productivity and national business competitiveness. Finally, the existing DIRECTV service, as a major factor in the lives of millions of Americans, deserves the continuing support of the Commission in order to expand and remain a viable service provider.

1. Technological Innovation

The proposed use of new spectrum band by DIRECTV will spur technological development because of the anticipated high demand for small receive-only customer terminals. This will drive costs down and further increase customer demand.

2. Support of Competition

DIRECTV competes in a video distribution market that continues to be monopolized by cable television providers. As recently as January 1997, the Commission determined that “incumbent franchised cable systems continue to be the primary distributors of multichannel video programming,” available to 96.7% of all television households in the United States and serving 62.1 million subscribers as of 1995, that “[l]ocal markets for the delivery of video programming generally remain highly concentrated”, and that “structural conditions remain in place that could permit the exercise of market power by incumbent cable systems.”<sup>3</sup>

DIRECTV and other DBS providers represent the most promising alternative for meaningful MVPD competition to cable television. Use of the proposed expansion capacity will permit DIRECTV to continue to expand its programming to meet competition from expanded terrestrial capabilities, and to develop innovative service offerings to counter cable operators’ tremendous MVPD market power.

3. Opportunities for Content Developers

DIRECTV and its DBS competitors already have created increased opportunities for program developers that would not have existed with cable delivery alone. New national programming services such as The History Channel, Fox News and Discovery’s Animal Planet may never have reached the marketplace without the channel capacity and national reach of DBS. New services of this type provide significant employment and export opportunities for American business.

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<sup>3</sup> 1996 Competition Report at ¶¶ 4, 2.

4. Acceptance of the ATSC Format

The evolution of terrestrial broadcasting from NTSC to the ATSC format will be a complex and expensive undertaking for broadcasters, television set manufacturers and consumers. DIRECTV can facilitate this transition by broadcasting ATSC format signals on a national basis. Because one ATSC signal consumes the capacity of nearly an entire transponder, DIRECTV requires access to more capacity to be a significant force in the national rollout of ATSC. Indeed, supporting these types of advanced signal transmissions was one of the original purposes of designating the 17.3-17.8 GHz and 24.75-25.25 GHz bands for BSS.

5. Educational and Informational Programming

The increased capacity available to DIRECTV will permit increased national access to educational and informational programming, including non-commercial educational and informational programming intended by Congress to be carried on DBS systems pursuant to 47 U.S.C. § 335. Increasing consumer access to such programming is an important public interest objective that will be served by the proposed system.

6. Services Important to the Nation's Economy

In addition to their entertainment value, many DIRECTV services already play an important role in the U.S. economy. Channels such as Bloomberg, CNBC and CNN-fn provide comprehensive, time-critical news and information to professional and private investors. DIRECTV's new Planet Earth channel brings specialized news and information to America's farmers and farming-related businesses. This channel and its important national reach probably would not have come into existence without DIRECTV.

Even more economically valuable services will be delivered via the DIRECTV-to-PC service planned for introduction this year. These services will deliver realtime news, stock price information, weather and similar information directly to personal computers in homes and businesses.

Additional capacity will permit DIRECTV to continue to expand its news and information service offerings.

7. DIRECTV- Related Employment

After less than three years of operation, DIRECTV has created substantial employment opportunities within its partner companies. The U.S. employment dedicated to DIRECTV support is estimated at greater than 6,000. This figure includes Customer Service Representatives who take service orders and the employees of firms providing billing and mailing services. Including the activities of consumer electronics distribution,

sales and installation, the number of individuals that benefit economically from DIRECTV's success is believed to approach 100,000. Access to additional spectrum will ensure employment stability in the face of increased competition.

8. DIRECTV Customers

DIRECTV is currently part of everyday life in more than 2.5 million households in the United States. Collectively these subscribers have invested over \$1 billion in their dishes and receivers, and expect service to continue for years to come. DIRECTV's access to additional capacity will help to maintain the viability of the company and permit it to provide new and more competitive services in the future.

ITEM N      Conclusion

DIRECTV respectfully requests that the foregoing application for an expansion BSS system be granted promptly so that DIRECTV can initiate operations using expansion capacity by the year 2000.

Respectfully submitted,

DIRECTV ENTERPRISES, INC.

By:



Name: L. William Butterworth  
Title: Executive Vice President

June 5, 1997

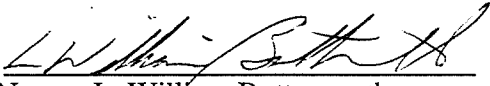
CERTIFICATION AND SIGNATURE

DIRECTV Enterprises, Inc. ("DIRECTV") waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and requests construction and launch and operating authority in accordance with this Application. All statements made in the attached exhibits are a material part hereof, and are incorporated herein as if set out in full in this Application.

The undersigned certifies individually and on behalf of DIRECTV that the statements made in this Application are true, complete, and correct to the best of his knowledge and belief, and are made in good faith.

DIRECTV Enterprises, Inc.


By:

  
Name: L. William Butterworth  
Title: Executive Vice President

June 5, 1997

CERTIFICATION OF PERSON RESPONSIBLE  
FOR PREPARING ENGINEERING INFORMATION  
SUBMITTED IN THIS APPLICATION

I hereby certify that I am the technically qualified person responsible for preparation of the engineering information contained in this Application, that I am familiar with Parts 25 and 100 of the Commission's Rules, that I have either prepared or reviewed the engineering information submitted in this Application, and that it is complete and accurate to the best of my knowledge.

By:   
Paul R. Anderson  
Director, Communications Systems  
DIRECTV Enterprises, Inc.

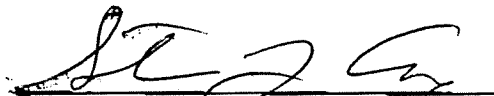
June 4, 1997

**CERTIFICATION**

**DIRECTV Enterprises, Inc. certifies that neither it nor any of its officers or directors are subject to a denial of federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti Drug Abuse Act of 1988, 21 U.S.C. § 853a.**

**DIRECTV Enterprises, Inc.**

**By:**



**Name: Steven J. Cox**

**Title: Senior Vice President**

June \_\_, 1997



**HUGHES ELECTRONICS CORPORATION AND SUBSIDIARIES**  
**RESPONSIBILITIES FOR CONSOLIDATED FINANCIAL STATEMENTS**

The following consolidated financial statements of Hughes Electronics Corporation and subsidiaries were prepared by management which is responsible for their integrity and objectivity. The statements have been prepared in conformity with generally accepted accounting principles and, as such, include amounts based on judgments of management.

Management is further responsible for maintaining a system of internal accounting controls that is designed to provide reasonable assurance that the books and records reflect the transactions of the companies and that its established policies and procedures are carefully followed. Perhaps the most important feature in the system of control is that it is continually reviewed for its effectiveness and is augmented by written policies and guidelines, the careful selection and training of qualified personnel, and a strong program of internal audit.

Deloitte & Touche LLP, an independent auditing firm, is engaged to audit the consolidated financial statements of Hughes Electronics Corporation and subsidiaries and issue reports thereon. The audit is conducted in accordance with generally accepted auditing standards which comprehend the consideration of internal accounting controls and tests of transactions to the extent necessary to form an independent opinion on the financial statements prepared by management. The Independent Auditors' Report appears on the next page.

The Board of Directors, through its Audit Committee, is responsible for assuring that management fulfills its responsibilities in the preparation of the consolidated financial statements and engaging the independent auditors. The Committee reviews the scope of the audits and the accounting principles being applied in financial reporting. The independent auditors, representatives of management, and the internal auditors meet regularly (separately and jointly) with the Committee to review the activities of each, to ensure that each is properly discharging its responsibilities, and to assess the effectiveness of the system of internal accounting controls. It is management's conclusion that the system of internal accounting controls at December 31, 1996 provides reasonable assurance that the books and records reflect the transactions of the companies and that its established policies and procedures are complied with. To ensure complete independence, Deloitte & Touche LLP has full and free access to meet with the Committee, without management representatives present, to discuss the results of the audit, the adequacy of internal accounting controls, and the quality of the financial reporting.

/s/ C. MICHAEL ARMSTRONG

C. Michael Armstrong  
 Chairman of the Board and  
 Chief Executive Officer

/s/ CHARLES H. NOSKI

Charles H. Noski  
 Vice Chairman and  
 Chief Financial Officer

/s/ ROXANNE S. AUSTIN

Roxanne S. Austin  
 Senior Vice President,  
 Treasurer and Controller

**HUGHES ELECTRONICS CORPORATION AND SUBSIDIARIES**  
**INDEPENDENT AUDITORS' REPORT**

To the Stockholder and Board of Directors of  
Hughes Electronics Corporation:

We have audited the Consolidated Balance Sheet of Hughes Electronics Corporation and subsidiaries as of December 31, 1996 and 1995 and the related Consolidated Statement of Income and Available Separate Consolidated Net Income and Consolidated Statement of Cash Flows for each of the three years in the period ended December 31, 1996. These financial statements are the responsibility of Hughes Electronics Corporation's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with generally accepted auditing standards. 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 and subsidiaries at December 31, 1996 and 1995 and the results of their operations and their cash flows for each of the three years in the period ended December 31, 1996 in conformity with generally accepted accounting principles.

As discussed in Note 1 to the consolidated financial statements, effective January 1, 1994 Hughes Electronics Corporation changed its method of accounting for postemployment benefits.

/s/ DELOITTE & TOUCHE LLP  
DELOITTE & TOUCHE LLP

Los Angeles, California  
January 28, 1997

HUGHES ELECTRONICS CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENT OF INCOME AND  
AVAILABLE SEPARATE CONSOLIDATED NET INCOME

	Years Ended December 31,		
	1996	1995	1994
	(Dollars in Millions Except Per Share Amounts)		
Revenues			
Net sales			
Outside customers .....	\$10,661.5	\$ 9,528.8	\$ 9,108.7
General Motors and affiliates .....	5,082.6	5,185.5	4,953.6
Other income — net .....	173.8	57.5	37.1
Total revenues .....	<u>15,917.9</u>	<u>14,771.8</u>	<u>14,099.4</u>
Costs and expenses			
Cost of sales and other operating charges, exclusive of items listed below .....	12,083.9	11,325.1	10,943.4
Selling, general, and administrative expenses .....	1,505.6	1,234.2	1,018.3
Depreciation and amortization .....	560.3	487.7	470.2
Amortization of GM purchase accounting adjustments related to Hughes Aircraft Company .....	122.3	123.4	123.8
Interest expense — net .....	11.2	7.5	15.1
Total costs and expenses .....	<u>14,283.3</u>	<u>13,177.9</u>	<u>12,570.8</u>
Income before income taxes .....	1,634.6	1,593.9	1,528.6
Income taxes .....	605.7	645.6	572.8
Income before cumulative effect of accounting change .....	1,028.9	948.3	955.8
Cumulative effect of accounting change .....	—	—	(30.4)
Net income .....	1,028.9	948.3	925.4
Adjustments to exclude the effect of GM purchase accounting adjustments related to Hughes Aircraft Company .....	122.3	159.5	123.8
Earnings Used for Computation of Available Separate Consolidated Net Income .....	<u>\$ 1,151.2</u>	<u>\$ 1,107.8</u>	<u>\$ 1,049.2</u>
Available Separate Consolidated Net Income			
Average number of shares of General Motors Class H common stock outstanding (in millions) (numerator) .....	98.4	95.5	92.1
Class H dividend base (in millions) (denominator) .....	399.9	399.9	399.9
Available Separate Consolidated Net Income .....	<u>\$283.3</u>	<u>\$264.6</u>	<u>\$241.6</u>
Earnings attributable to General Motors Class H common stock on a per share basis			
Before cumulative effect of accounting change .....	\$2.88	\$2.77	\$2.70
Cumulative effect of accounting change .....	—	—	(0.08)
Net earnings attributable to General Motors Class H common stock .....	<u>\$2.88</u>	<u>\$2.77</u>	<u>\$2.62</u>

Reference should be made to the notes to consolidated financial statements.

**HUGHES ELECTRONICS CORPORATION AND SUBSIDIARIES**  
**CONSOLIDATED BALANCE SHEET**

	December 31,	
	1996	1995
	(Dollars in Millions Except Per Share Amount)	
<b>ASSETS</b>		
Current assets		
Cash and cash equivalents .....	\$ 1,161.3	\$ 1,139.5
Accounts and notes receivable		
Trade receivables (less allowances) .....	1,200.6	1,235.6
General Motors and affiliates .....	113.4	146.7
Contracts in process, less advances and progress payments of \$1,010.4 and \$1,327.2 .....	2,507.1	2,469.2
Inventories (less allowances) .....	1,528.5	1,225.5
Prepaid expenses, including deferred income taxes of \$428.0 and \$484.4 .....	568.1	594.3
Total current assets .....	7,079.0	6,810.8
Property-net .....	2,886.6	2,739.2
Telecommunications and other equipment, net of accumulated depreciation of \$362.3 and \$274.5 .....	1,133.5	1,175.1
Intangible assets, net of amortization of \$1,579.1 and \$1,415.1 .....	3,466.0	3,573.7
Investments and other assets — principally at cost (less allowances) .....	1,915.0	1,675.6
Total assets .....	\$16,480.1	\$15,974.4
<b>LIABILITIES AND STOCKHOLDER'S EQUITY</b>		
Current liabilities		
Accounts payable		
Outside .....	\$ 896.4	\$ 748.7
General Motors and affiliates .....	27.5	52.2
Advances on contracts .....	868.9	838.3
Notes and loans payable .....	248.1	432.5
Income taxes payable .....	132.9	190.8
Accrued liabilities .....	2,025.8	2,046.3
Total current liabilities .....	4,199.6	4,308.8
Long-term debt and capitalized leases .....	34.5	258.8
Postretirement benefits other than pensions .....	1,658.9	1,610.6
Other liabilities and deferred credits .....	1,407.2	1,270.5
Commitments and Contingencies		
Stockholder's equity		
Capital stock (outstanding, 1,000 shares, \$0.10 par value) and additional paid-in capital .....	6,347.2	6,338.1
Net income retained for use in the business .....	2,968.8	2,323.9
Subtotal .....	9,316.0	8,662.0
Minimum pension liability adjustment .....	(113.5)	(108.6)
Accumulated foreign currency translation adjustments .....	(22.6)	(27.7)
Total stockholder's equity .....	9,179.9	8,525.7
Total liabilities and stockholder's equity .....	\$16,480.1	\$15,974.4

Certain amounts for 1995 have been reclassified to conform with 1996 classifications.

Reference should be made to the notes to consolidated financial statements.

**HUGHES ELECTRONICS CORPORATION AND SUBSIDIARIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**

**NOTE 1: Summary of Significant Accounting Policies**

***Organization and Consolidation***

The consolidated financial statements include the accounts of Hughes Electronics Corporation (Hughes) and its domestic and foreign subsidiaries that are more than 50% owned. Investments in associated companies in which at least 20% of the voting securities is owned are accounted for under the equity method of accounting.

Effective December 31, 1985, General Motors Corporation (General Motors or GM) acquired Hughes Aircraft Company and its subsidiaries for \$2.7 billion in cash and cash equivalents and 100 million shares of GM Class H common stock having an estimated value of \$2,561.9 million, which carried certain guarantees.

On February 28, 1989, GM and the Howard Hughes Medical Institute (Institute) reached an agreement to terminate GM's then-existing guarantee obligations with respect to the Institute's holding of GM Class H common stock. Under terms of the agreement as amended, the Institute received put options exercisable under most circumstances at \$30 per share on March 1, 1991, 1992, 1993, and 1995 for 20 million, 10 million, 10.5 million, and 15 million shares, respectively. The Institute exercised these put options at \$30 per share on March 1, 1991, March 2, 1992, and March 1, 1993. On February 15, 1995, GM and the Institute entered into an agreement under which GM assisted the Institute in selling 15 million shares of GM Class H common stock at \$38.50 per share. The March 1, 1995 put option expired unexercised.

The acquisition of Hughes Aircraft Company was accounted for as a purchase. The purchase price exceeded the net book value of Hughes Aircraft Company by \$4,244.7 million, which was assigned as follows: \$500.0 million to patents and related technology, \$125.0 million to the future economic benefits to GM of the Hughes Aircraft Company Long-Term Incentive Plan (LTIP), and \$3,619.7 million to other intangible assets, including goodwill. The amounts assigned to patents and related technology are being amortized on a straight-line basis over 15 years and other intangible assets, including goodwill, over 40 years. The amount assigned to the future economic benefits of the LTIP was fully amortized in 1990.

For the purpose of determining earnings per share and amounts available for dividends on the common stocks of General Motors, the amortization and disposal, if any, of these intangible assets is charged against earnings attributable to GM \$1½ par value common stock and amounted to \$122.3 million, \$159.5 million and \$123.8 million in 1996, 1995, and 1994, respectively. The 1995 amount included a \$36.1 million charge, included in other income, for the write-off of such purchase accounting adjustments related to the disposition of certain non-strategic business units.

The earnings of Hughes and its subsidiaries since the acquisition of Hughes Aircraft Company form the base from which any dividends on the GM Class H common stock are declared. These earnings include income earned from sales to GM and its affiliates, but exclude purchase accounting adjustments (See Notes 2 and 7).

On January 16, 1997, GM and Hughes announced a series of planned transactions designed to address strategic challenges and unlock stockholder value in the three Hughes business segments (See Note 18).

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

The preparation of 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 that differ from those estimates.

**HUGHES ELECTRONICS CORPORATION AND SUBSIDIARIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — Continued**

***Inventories***

Inventories are stated at the lower of cost or market principally using the first-in, first-out (FIFO) or average cost methods.

<u>Major Classes of Inventories</u>	<u>1996</u>	<u>1995</u>
	(Dollars in Millions)	
Productive material, work in process, and supplies .....	\$1,383.1	\$1,060.4
Finished product .....	145.4	165.1
Total .....	<u>\$1,528.5</u>	<u>\$1,225.5</u>

***Property and Depreciation***

Property is carried at cost. Depreciation of property is provided for based on estimated useful lives (3 to 45 years) generally using accelerated methods.

***Telecommunications and Other Equipment***

Telecommunications and other equipment includes satellite transponders and other equipment subject to operating leases or service agreements. Such equipment is carried at Hughes' direct and indirect manufacturing cost and is amortized over the estimated useful lives (7 to 23 years) using the straight-line method. The net book value of equipment subject to operating leases was \$412.4 million and \$299.8 million at December 31, 1996 and 1995, respectively.

***Intangible Assets***

Intangible assets, principally the excess of cost over the fair value of identifiable net assets of purchased businesses, are amortized using the straight-line method over periods not exceeding 40 years. Hughes periodically evaluates the recoverability of goodwill and other intangible assets by assessing whether the unamortized intangible asset can be recovered over its remaining life through undiscounted cash flows generated by underlying tangible assets.

***Income Taxes***

The provision for income taxes is based on reported income before income taxes. 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. Provision has been made for U.S. Federal income taxes to be paid on that portion of the undistributed earnings of foreign subsidiaries that has not been deemed permanently reinvested.

Hughes and its domestic subsidiaries join with General Motors in filing a consolidated U.S. Federal income tax return. The portion of the consolidated income tax liability recorded by Hughes is generally equivalent to the liability it would have incurred on a separate return basis.

***Research and Development***

Expenditures for research and development are charged to costs and expenses as incurred and amounted to \$730.0 million in 1996, \$761.7 million in 1995 and \$699.3 million in 1994.

**HUGHES ELECTRONICS CORPORATION AND SUBSIDIARIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — Continued**

***Financial Instruments***

Hughes enters into foreign exchange-forward contracts to reduce its exposure to fluctuations in foreign exchange rates. Foreign exchange-forward contracts are accounted for as hedges to the extent they are designated as, and are effective as, hedges of firm foreign currency commitments.

***Foreign Currency Transactions***

Foreign currency transaction net gains (losses) included in consolidated operating results amounted to \$5.4 million in 1996, \$(0.5) million in 1995, and \$(4.2) million in 1994.

***Market and Credit Risk Concentrations***

Sales under United States Government contracts were 34.5%, 35.5%, and 37.6% of net sales in 1996, 1995, and 1994, respectively. Sales to General Motors and affiliates, consisting of various automotive electronic component parts, were 32.3% of total sales in 1996, and 35.2% in 1995 and 1994.

Financial instruments which potentially subject Hughes to concentrations of credit risk consist principally of highly liquid investments purchased with original maturities of 90 days or less. Hughes places these investments with high-quality counterparties and, by policy, limits the amount of credit exposure to any one counterparty.

***Accounting Changes***

Effective January 1, 1996, Hughes adopted Statement of Financial Accounting Standards (SFAS) No. 123, Accounting for Stock-Based Compensation, and as permitted by this standard, will continue to apply the recognition and measurement principles of Accounting Principles Board Opinion No. 25 to its stock options. Hughes has calculated the proforma effects of applying SFAS No. 123 and determined that such effects are not significant in relation to reported net income and earnings per share.

Effective January 1, 1996, Hughes also adopted SFAS No. 121, Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to Be Disposed Of. This Statement establishes accounting standards for the impairment of long-lived assets, certain identifiable intangibles, and goodwill related to those assets to be held and used, and for long-lived assets and certain identifiable intangibles to be disposed of. The adoption of this new accounting standard did not have a material effect on Hughes' consolidated operating results or financial position.

Effective January 1, 1994, Hughes adopted SFAS No. 112, Employers' Accounting for Postemployment Benefits. The Statement requires accrual of the costs of benefits provided to former or inactive employees after employment, but before retirement. The unfavorable cumulative effect of adopting this Standard was \$30.4 million, net of income taxes of \$19.2 million, or \$0.08 per share of GM Class H common stock. The charge primarily related to extended disability benefits which are accrued on a service-driven basis.

**NOTE 2: Related-Party Transactions**

***Sales, Purchases, and Administrative Expenses***

The amounts due from and to GM and affiliates result from sales of products to and purchases of materials and services from units controlled by GM. Purchases from GM and affiliates, including computer systems services provided by Electronic Data Systems Corporation prior to its split-off from GM, and common administrative expenses allocated by GM, amounted to approximately \$77.9 million, \$233.7 million, and \$257.1 million, in 1996, 1995, and 1994, respectively.

**HUGHES ELECTRONICS CORPORATION AND SUBSIDIARIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — Continued**

*Incentive Plans*

Certain eligible employees of Hughes participate in various incentive plans of GM and its subsidiaries.

**NOTE 3: Incentive Plan**

Under the Hughes Electronics Corporation Incentive Plan (the Plan), as approved by the GM Board of Directors in 1987, 1992, and 1995, shares, rights, or options to acquire up to 20 million shares of GM Class H common stock may be granted through May 31, 1997.

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 expire 10 years from the dates of grant and are subject to earlier termination under certain conditions.

Changes in the status of outstanding options were as follows:

<u>GM Class H common stock</u>	<u>Shares Under Option</u>	<u>Weighted Average Exercise Price</u>
Outstanding at January 1, 1994.....	6,366,008	\$25.19
Granted .....	1,612,640	36.75
Exercised .....	(712,107)	24.48
Terminated .....	<u>(202,220)</u>	<u>34.22</u>
Outstanding at December 31, 1994 .....	7,064,321	27.64
Granted .....	1,537,350	39.94
Exercised .....	(1,929,393)	24.81
Terminated .....	<u>(14,425)</u>	<u>34.17</u>
Outstanding at December 31, 1995 .....	6,657,853	31.29
Granted .....	1,501,900	61.31
Exercised .....	(864,889)	28.58
Terminated .....	<u>(128,075)</u>	<u>42.94</u>
Outstanding at December 31, 1996 .....	<u>7,166,789</u>	<u>\$37.70</u>
Exercisable at December 31, 1996 .....	<u>4,965,289</u>	<u>\$30.40</u>

The following table summarizes information about the Plan stock options outstanding at December 31, 1996:

<u>Range of Exercise Prices</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>
\$15.00 to \$24.99	829,669	4.6	\$20.74	829,669	\$20.74
25.00 to 34.99	2,179,755	5.5	27.36	2,179,755	27.36
35.00 to 44.99	2,692,090	7.9	38.45	1,955,865	37.89
45.00 to 54.99	—	—	—	—	—
55.00 to 65.00	1,465,275	9.3	61.31	—	—
<u>\$15.00 to \$65.00</u>	<u>7,166,789</u>	<u>7.1</u>	<u>\$37.70</u>	<u>4,965,289</u>	<u>\$30.40</u>

At December 31, 1996, the maximum number of shares for which additional options and other rights may be granted under the Plan was 2,314,449 shares.



**HUGHES ELECTRONICS CORPORATION AND SUBSIDIARIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — Continued**

**NOTE 4: Pension Programs**

Hughes' total pension expense amounted to \$97.5 million in 1996, \$39.0 million in 1995 and \$54.9 million in 1994.

Substantially all the employees of Delco Electronics participate in the defined benefit pension plans of General Motors. Plans covering represented employees generally provide benefits of negotiated stated amounts for each year of service as well as significant supplemental benefits for employees who retire with 30 years of service before normal retirement age. The benefits provided by the plans covering salaried employees are generally based on years of service and the employee's salary history. Certain nonqualified pension plans covering executives are based on targeted wage replacement percentages and are unfunded. The accumulated plan benefit obligation and plan net assets for the employees of Delco Electronics are not determined separately; however, GM charged Delco Electronics \$53.1 million, \$50.9 million, and \$93.3 million, for benefits earned by these employees in 1996, 1995, and 1994, respectively.

Substantially all of Hughes' non-automotive employees are covered by Hughes' bargaining and non-bargaining 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 executives. The net pension expense (credit), related to these plans covering non-automotive employees, included the components shown below:

	<u>1996</u>	<u>1995</u>	<u>1994</u>
	(Dollars in Millions)		
Benefits earned during the year . . . . .	\$ 161.3	\$ 110.5	\$ 146.7
Interest accrued on benefits earned in prior years . . . . .	413.4	403.6	377.0
Actual return on assets . . . . .	(1,253.1)	(1,198.3)	(104.7)
Net amortization and deferral . . . . .	<u>722.8</u>	<u>672.3</u>	<u>(457.4)</u>
Net retirement plan expense (credit) . . . . .	<u>\$ 44.4</u>	<u>\$ (11.9)</u>	<u>\$ (38.4)</u>

Costs are actuarially determined using the projected unit credit method and are funded in accordance with U.S. Government cost accounting standards to the extent such costs are tax-deductible. SFAS No. 87, Employers' Accounting for Pensions, requires the recognition of an additional pension liability to increase the amounts recorded up to the unfunded accumulated benefit obligation. The adjustment required to recognize the minimum pension liability required by SFAS No. 87 is recorded as an intangible asset to the extent of unrecognized prior service cost and the remainder, net of applicable deferred income taxes, is recorded as a reduction of Stockholder's Equity. At December 31, 1996 and 1995, the additional minimum pension liability recorded was \$210.8 million and \$204.9 million, respectively, of which \$113.5 million and \$108.6 million, respectively, was recorded as a reduction of Stockholder's Equity.

Plan assets are invested primarily in listed common stock, cash and short-term investment funds, U.S. Government securities, and other investments.

The weighted average discount rates used in determining the actuarial present values of the projected benefit obligation shown in the table on the next page were 7.5% and 7.25% at December 31, 1996 and 1995, respectively. The rate of increase in future compensation levels was 5.0% in 1996 and 1995. The expected long-term rate of return on assets used in determining pension cost was 9.5% for 1996 and 1995.

**HUGHES ELECTRONICS CORPORATION AND SUBSIDIARIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — Continued**

The following table sets forth the funded status of the Hughes non-automotive employee plans and the amounts included in the Consolidated Balance Sheet:

	December 31,			
	1996		1995	
	Assets Exceed Accum. Benefits	Accum. Benefits Exceed Assets	Assets Exceed Accum. Benefits	Accum. Benefits Exceed Assets
	(Dollars in Millions)			
Actuarial present value of benefits based on service to date and present pay levels				
Vested .....	\$4,437.0	\$ 330.7	\$4,685.3	\$ 327.5
Nonvested .....	403.7	3.9	225.6	4.7
Accumulated benefit obligation .....	4,840.7	334.6	4,910.9	332.2
Additional amounts related to projected pay increases .....	549.3	13.8	456.7	11.0
Total projected benefit obligation based on service to date....	5,390.0	348.4	5,367.6	343.2
Plan assets at fair value .....	7,094.9	70.2	6,397.7	65.9
Plan assets in excess of (less than) projected benefit obligation.....	1,704.9	(278.2)	1,030.1	(277.3)
Unamortized net amount resulting from changes in plan experience and actuarial assumptions .....	(564.0)	208.6	173.3	193.3
Unamortized net asset at date of adoption .....	(106.6)	—	(161.9)	—
Unamortized net amount resulting from changes in plan provisions .....	(13.0)	15.9	(13.8)	22.6
Adjustment for unfunded pension liabilities .....	—	(210.8)	—	(204.9)
Net prepaid pension cost (accrued liability) .....	<u>\$1,021.3</u>	<u>\$(264.5)</u>	<u>\$1,027.7</u>	<u>\$(266.3)</u>

**NOTE 5: Other Postretirement Benefits**

Substantially all of the employees of Delco Electronics participate in various postretirement medical, dental, vision, and life insurance plans of General Motors. Hughes maintains a program for eligible non-automotive 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 benefits if they retire from Hughes between the ages of 55 and 65.

The total non-pension postretirement benefit cost of Hughes and its subsidiaries included the components set forth as follows:

	1996	1995	1994
	(Dollars in Millions)		
Benefits earned during the year .....	\$ 36.2	\$ 33.9	\$ 50.1
Interest accrued on benefits earned in prior years .....	116.5	123.3	130.3
Net amortization .....	(11.0)	(16.5)	7.6
Total non-pension postretirement benefit cost .....	<u>\$141.7</u>	<u>\$140.7</u>	<u>\$188.0</u>

**HUGHES ELECTRONICS CORPORATION AND SUBSIDIARIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — Continued**

The following table displays the components of Hughes' obligation recognized for postretirement benefit plans included in the Consolidated Balance Sheet:

	December 31,	
	<u>1996</u>	<u>1995</u>
	(Dollars in Millions)	
Accumulated postretirement benefit obligation attributable to		
Current retirees .....	\$ 808.3	\$ 857.1
Fully eligible active plan participants .....	254.2	221.1
Other active plan participants .....	<u>562.0</u>	<u>547.5</u>
Accumulated postretirement benefit obligation .....	1,624.5	1,625.7
Unrecognized net amount resulting from changes in plan experience and actuarial assumptions .....	<u>103.7</u>	<u>62.4</u>
Net postretirement benefit obligation .....	1,728.2	1,688.1
Less current portion .....	<u>69.3</u>	<u>77.5</u>
Net long-term postretirement benefit obligation .....	<u>\$1,658.9</u>	<u>\$1,610.6</u>

The assumed weighted average discount rates used in determining the actuarial present value of the accumulated postretirement benefit obligation were 7.56% and 7.25% at December 31, 1996 and 1995, respectively. The assumed weighted average rate of increase in future compensation levels related to pay-related life insurance benefits was 4.5% at December 31, 1996 and 4.4% at December 31, 1995.

The assumed weighted average health care cost trend rate was 7.91% in 1996, decreasing linearly each successive year until it reaches 5.31% in 2006, after which it remains constant. A one percentage point increase in each year of this annual trend rate would increase the accumulated postretirement benefit obligation at December 31, 1996 by approximately \$150 million, and increase the service and interest cost components of the 1996 postretirement benefit expense by approximately \$17 million.

Hughes has disclosed in the consolidated financial statements certain amounts associated with estimated future postretirement benefits other than pensions and characterized such amounts as "accumulated postretirement benefit obligations", "liabilities", or "obligations." 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 AND SUBSIDIARIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — Continued**

**NOTE 6: Income Taxes**

The income tax provision consisted of the following:

	<u>1996</u>	<u>1995</u>	<u>1994</u>
	(Dollars in Millions)		
Taxes currently payable			
U.S. Federal .....	\$390.7	\$ 664.6	\$532.2
Foreign .....	11.2	13.4	10.3
U.S. state and local .....	<u>102.8</u>	<u>138.4</u>	<u>100.5</u>
Total .....	<u>504.7</u>	<u>816.4</u>	<u>643.0</u>
Deferred tax (assets) liabilities — net			
U.S. Federal .....	97.9	(130.0)	(62.2)
Foreign .....	0.3	2.0	1.3
U.S. state and local .....	<u>2.8</u>	<u>(42.8)</u>	<u>(9.3)</u>
Total .....	<u>101.0</u>	<u>(170.8)</u>	<u>(70.2)</u>
Total income tax provision .....	<u>\$605.7</u>	<u>\$ 645.6</u>	<u>\$572.8*</u>

\* Excluding effect of accounting change.

The deferred income tax benefit in 1994 included a \$63.0 million credit that resulted from an adjustment to the beginning of the year valuation allowance because of a change in circumstances with respect to Hughes' ability to realize the benefit from a capital loss carryforward.

Income before income taxes included the following components:

	<u>1996</u>	<u>1995</u>	<u>1994</u>
	(Dollars in Millions)		
U.S. income .....	\$1,547.1	\$1,494.7	\$1,448.1
Foreign income .....	<u>87.5</u>	<u>99.2</u>	<u>80.5</u>
Total .....	<u>\$1,634.6</u>	<u>\$1,593.9</u>	<u>\$1,528.6</u>

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

	<u>1996</u>	<u>1995</u>	<u>1994</u>
	(Dollars in Millions)		
Expected tax at U.S. statutory income tax rate .....	\$572.1	\$557.9	\$535.0
U.S. state and local income taxes .....	68.6	62.2	59.3
Purchase accounting adjustments .....	42.8	55.8	43.3
Foreign sales corporation tax benefit .....	(27.2)	(22.2)	(19.2)
Change in valuation allowance .....	—	—	(63.0)
Other .....	<u>(50.6)</u>	<u>(8.1)</u>	<u>17.4</u>
Consolidated income tax provision .....	<u>\$605.7</u>	<u>\$645.6</u>	<u>\$572.8*</u>

\* Excluding effect of accounting change.

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**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — Continued**

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

	December 31,			
	1996		1995	
	Deferred Tax Assets	Deferred Tax Liabilities	Deferred Tax Assets	Deferred Tax Liabilities
	(Dollars in Millions)			
Postretirement benefits other than pensions .....	\$ 763.6	\$ —	\$ 704.9	\$ —
Profits on long-term contracts .....	370.7	142.3	384.5	203.5
Leveraged leases .....	119.6	—	74.9	—
Employee benefit programs .....	148.9	387.8	185.2	393.3
Depreciation .....	—	496.2	—	479.5
Special provision for restructuring .....	29.0	—	56.4	—
Other .....	313.2	251.6	445.2	220.3
Subtotal .....	<u>1,745.0</u>	<u>1,277.9</u>	<u>1,851.1</u>	<u>1,296.6</u>
Valuation allowance .....	(33.6)	—	(22.8)	—
Total deferred taxes .....	<u>\$1,711.4</u>	<u>\$1,277.9</u>	<u>\$1,828.3</u>	<u>\$1,296.6</u>

Provision has been made for U.S. Federal income taxes to be paid on that portion of the undistributed earnings of foreign subsidiaries that has not been deemed permanently reinvested. At December 31, 1996 and 1995, undistributed earnings of foreign subsidiaries amounted to approximately \$462.3 million and \$397.4 million, respectively. Repatriation of all accumulated foreign earnings would have resulted in tax liabilities of \$122.6 million and \$110.3 million, respectively, for which Hughes has provided deferred tax liabilities of \$93.4 million and \$82.8 million, respectively.

At December 31, 1996, Hughes had \$73.6 million of foreign operating loss carryforwards which expire in varying amounts between 1997 and 2001. The valuation allowance includes a provision for all of the foreign operating loss carryforwards. In addition, Hughes had \$19.6 million of capital loss carryforwards, of which \$12.3 million will expire in 1998 and \$7.3 million will expire in 2000. No valuation allowance has been provided for the capital loss carryforwards.

**NOTE 7: Earnings Attributable to General Motors Class H Common Stock on a Per Share Basis and Available Separate Consolidated Net Income**

Earnings attributable to General Motors Class H common stock on a per share basis have been determined based on the relative amounts available for the payment of dividends to holders of the GM Class H common stock. 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).

Dividends on the GM Class H common stock are declared by GM's Board of Directors out of the Available Separate Consolidated Net Income of Hughes earned since the acquisition of Hughes Aircraft Company by GM. The Available Separate Consolidated Net Income of Hughes is determined quarterly and is equal to the separate consolidated net income of Hughes, excluding the effects of GM purchase accounting adjustments arising from the acquisition of Hughes Aircraft Company (Earnings Used for Computation of Available Separate Consolidated Net Income), multiplied by a fraction, the numerator of which is a number equal to the weighted average number of shares of GM Class H common stock outstanding during the period and the denominator of which was 399.9 million during the fourth quarters of 1996, 1995, and 1994.

The denominator used in determining the Available Separate Consolidated Net Income of Hughes is adjusted as deemed appropriate by the GM Board of Directors to reflect subdivisions or combinations of the GM Class H common stock and to reflect certain transfers of capital to or from Hughes. The GM Board's

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discretion to make such adjustments is limited by criteria set forth in GM's Certificate of Incorporation. In this regard, the GM Board has generally caused the denominator to decrease as shares are purchased by Hughes, and to increase as such shares are used, at Hughes expense, for Hughes employee benefit plans or acquisitions.

Dividends may be paid on GM Class H common stock only when, as, and if declared by the GM Board of Directors in its sole discretion. The current policy of the GM Board with respect to GM Class H common stock is to pay cash dividends approximately equal to 35% of the Available Separate Consolidated Net Income of Hughes for the prior year. Notwithstanding the current dividend policy, the dividends paid on the GM Class H Common Stock during 1996, 1995, and 1994 were based on an annual rate higher than 35% of the Available Separate Consolidated Net Income of Hughes for the preceding year.

**NOTE 8: Property — Net**

	Estimated Useful Lives (Years)	1996	1995
		(Dollars in Millions)	
Land and improvements .....	10-40	\$ 187.6	\$ 189.7
Buildings and unamortized leasehold improvements ...	5-45	1,361.5	1,293.3
Machinery and equipment .....	3-13	3,140.3	2,874.2
Furniture, fixtures, and office machines .....	5-15	139.1	118.3
Construction in progress .....	—	348.5	439.9
Total .....		5,177.0	4,915.4
Less accumulated depreciation .....		2,378.1	2,244.2
Net real estate, plants, and equipment .....		2,798.9	2,671.2
Special tools — less amortization.....	3	87.7	68.0
Property — net .....		<u>\$2,886.6</u>	<u>\$2,739.2</u>

**NOTE 9: Notes and Loans Payable and Long-Term Debt and Capitalized Leases**

	1996	1995	
		(Dollars in Millions)	
Loans payable to banks .....	\$ 10.2	\$ 15.1	
Current portion of long-term debt .....	151.4	7.2	
Current portion of GM term loans .....	58.8	85.0	
Other .....	27.7	325.2	
Total notes and loans payable .....	<u>\$248.1</u>	<u>\$432.5</u>	
Foreign bank debt .....	\$ 27.1	\$ 53.8	
Term loans			
GM .....	58.8	143.8	
Other .....	150.0	150.0	
Other debt .....	—	2.9	
Total .....	235.9	350.5	
Less current portion .....	210.2	92.2	
Long-term debt .....	25.7	258.3	
Capitalized leases .....	8.8	.5	
Total long-term debt and capitalized leases .....	<u>\$ 34.5</u>	<u>\$258.8</u>	

At December 31, 1996, Hughes had \$550.0 million and \$650.0 million of unused credit available under short-term lines of credit and an unsecured revolving credit loan agreement, respectively. The unsecured

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revolving credit loan agreement provides for a commitment of \$650.0 million through January 2000, subject to a facility fee of 0.10% per annum. Borrowings under the agreement bear interest at a rate which approximates the London Interbank Offered Rate plus 0.175%. No amounts were outstanding under the agreement or the short-term lines of credit at December 31, 1996.

At December 31, 1996, foreign bank debt included \$27.1 million denominated in British pounds sterling, bearing interest at rates ranging from 5.9% to 7.1%, with maturity dates from 1997 to 2003.

The GM term loan bears interest at 6.1% with a maturity date in 1997. The other term loans consisted of notes payable to an insurance company bearing interest at rates ranging from 7.7% to 8.0% with maturity dates in 1997.

Other notes and loans payable for 1995 included \$302.7 million related to the acquisition of Magnavox Electronic Systems Company (see Note 13). The note, which bore interest at a rate of 5.3%, was repaid in full on January 5, 1996.

Annual maturities of long-term debt and capitalized leases are \$210.2 million in 1997, \$2.4 million in 1998, \$2.5 million in 1999, \$2.8 million in 2000, \$3.1 million in 2001, and \$23.7 million thereafter.

Property with a net book value of \$14.8 million at December 31, 1996 was pledged as collateral under such debt.

**NOTE 10: Accrued Liabilities**

	<u>1996</u>	<u>1995</u>
	(Dollars in Millions)	
Payrolls and other compensation .....	\$ 671.3	\$ 553.2
Provision for losses on contracts .....	356.3	408.4
Accrual for restructuring .....	32.9	115.9
Other .....	<u>965.3</u>	<u>968.8</u>
Total .....	<u>\$2,025.8</u>	<u>\$2,046.3</u>

Certain amounts for 1995 have been reclassified to conform with 1996 classifications.

**HUGHES ELECTRONICS CORPORATION AND SUBSIDIARIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — Continued**

**NOTE 11: Stockholder's Equity**

The authorized capital stock of Hughes consists of 1,000 shares of \$0.10 par value common stock. At December 31, 1996, 1995, and 1994, 1,000 shares having an aggregate par value of \$100 were issued and outstanding. All of the outstanding capital stock of Hughes is held by General Motors.

	<u>1996</u>	<u>1995</u>	<u>1994</u>
	(Dollars in Millions)		
<b>Capital stock and additional paid-in capital</b>			
Balance at beginning of the year .....	\$6,338.1	6,326.5	\$6,323.1
Tax benefit from exercise of GM Class H common stock options ..	<u>9.1</u>	<u>11.6</u>	<u>3.4</u>
Balance at end of the year .....	<u>\$6,347.2</u>	<u>\$6,338.1</u>	<u>\$6,326.5</u>
<b>Net income retained for use in the business</b>			
Balance at beginning of the year .....	\$2,323.9	\$1,743.6	\$1,138.2
Net income .....	1,028.9	948.3	925.4
Cash dividends paid to General Motors .....	<u>(384.0)</u>	<u>(368.0)</u>	<u>(320.0)</u>
Balance at end of the year .....	<u>\$2,968.8</u>	<u>\$2,323.9</u>	<u>\$1,743.6</u>
<b>Minimum pension liability adjustment</b>			
Balance at beginning of the year .....	\$ (108.6)	\$ (76.1)	\$ (120.4)
Change during the year .....	<u>(4.9)</u>	<u>(32.5)</u>	<u>44.3</u>
Balance at end of the year .....	<u>\$ (113.5)</u>	<u>\$ (108.6)</u>	<u>\$ (76.1)</u>
<b>Accumulated foreign currency translation adjustments</b>			
Balance at beginning of the year .....	\$ (27.7)	\$ (18.2)	\$ (12.8)
Change during the year .....	<u>5.1</u>	<u>(9.5)</u>	<u>(5.4)</u>
Balance at end of the year .....	<u>\$ (22.6)</u>	<u>\$ (27.7)</u>	<u>\$ (18.2)</u>

As sole stockholder of Hughes, GM is able to cause Hughes to pay cash dividends and make advances to or otherwise enter into transactions with GM as GM deems desirable and appropriate. GM reserves the right to cause Hughes to pay cash dividends to GM in such amounts as GM determines are desirable under the then prevailing facts and circumstances. Such amounts may be the same as, greater than, or less than the cash dividends paid by GM on its Class H common stock. There is no fixed relationship, on a per share or aggregate basis, between the cash dividends that may be paid by GM to holders of its Class H common stock and the cash dividends or other amounts that may be paid by Hughes to GM.

**NOTE 12: Special Provision for Restructuring**

In 1992, Hughes recorded a special restructuring charge of \$1,237.0 million primarily attributable to redundant facilities and related employment costs. The special charge comprehended a reduction of Hughes' worldwide employment, a major facilities consolidation, and a reevaluation of certain business lines that no longer met Hughes' strategic objectives. Restructuring costs of \$92.4 million, \$208.8 million and \$228.3 million were charged against the reserve during 1996, 1995, and 1994, respectively. In addition, in 1994 the restructuring reserve was increased by \$35.0 million primarily due to changes in the estimated loss on disposition of a subsidiary. The remaining liability at December 31, 1996 of \$42.0 million relates primarily to reserves for excess facilities and other site consolidation costs. Approximately \$40.7 million of this total will require future cash outflows. It is expected that these costs will be expended predominantly during the next year.



**HUGHES ELECTRONICS CORPORATION AND SUBSIDIARIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — Continued**

**NOTE 13: Acquisitions and Divestitures**

In December 1996, Hughes announced that it had reached an agreement to acquire the Marine Systems Division of Alliant Techsystems, Inc. for \$141.0 million in cash. The Marine Systems Division is a leader in lightweight torpedo manufacturing and the design and manufacturing of underwater surveillance, sonar and mine warfare systems. The acquisition was completed in the first quarter of 1997.

In September 1996, Hughes and PanAmSat Corporation entered into an agreement to merge their respective satellite services operations into a new publicly-held company. Hughes would contribute its Galaxy® satellite services business in exchange for a 71.5% interest in the new company. Current PanAmSat stockholders would receive a 28.5% interest in the new company and \$1.5 billion in cash. The source of the cash component of the consideration is expected to be new debt financing, which will be an obligation of the new company. PanAmSat is a leading provider of international satellite services. The transaction, which is contingent upon receiving certain regulatory approvals, is expected to close during the second quarter of 1997.

In March 1996, Hughes sold a 2.5% equity interest in DIRECTV®, a wholly-owned subsidiary of Hughes, to AT&T for \$137.5 million, with options to increase their ownership interest under certain conditions. The sale resulted in a \$120.3 million pre-tax gain which is included in other income.

In February 1995, Hughes acquired substantially all of the assets of CAE-Link Corporation for \$176.0 million in cash. CAE-Link is an established supplier of simulation, training, and technical services, primarily to the U.S. military and NASA. In December 1995, Hughes acquired all of the stock of Magnavox Electronic Systems Company (Magnavox) for \$382.4 million, consisting of cash of \$70.5 million, a note payable of \$302.7 million, and estimated additional amounts to be paid of \$9.2 million. Magnavox is a leading supplier of military tactical communications, electronic warfare, and command and control systems. In addition, Hughes acquired several other enterprises with operations that complement existing technological capabilities at aggregate purchase prices, paid in cash, of \$28.7 million and \$63.0 million in 1996 and 1995, respectively.

All acquisitions were accounted for using the purchase method of accounting. The operating results of the entities acquired were consolidated with those of Hughes from their respective acquisition dates. These acquisitions did not have a material impact on the operating results of Hughes. The purchase price of each acquisition was allocated to the net assets acquired, including intangible assets, based upon their estimated fair values at the date of acquisition.

During 1995, Hughes divested several non-strategic enterprises generating aggregate proceeds of approximately \$127.2 million and a net loss of approximately \$8.2 million, which included the write-off of \$30.1 million of purchase accounting adjustments related to GM's acquisition of Hughes Aircraft Company. Also in 1995, Hughes recorded a \$46.0 million charge for the estimated loss on disposition of a business unit (including \$6.0 million related to the write-off of GM purchase accounting adjustments) and completed the divestiture of Hughes LAN Systems, for which a pre-tax charge of \$35.0 million was taken in 1994.

**NOTE 14: Derivative Financial Instruments and Risk Management**

Hughes is a party to financial instruments with off-balance sheet risk in the normal course of business to reduce its exposure to fluctuations in foreign exchange rates. The primary class of derivatives used by Hughes is foreign exchange-forward contracts. These instruments involve, to varying degrees, elements of credit risk in the event a counterparty should default and market risk as the instruments are subject to rate and price fluctuations. Credit risk is managed through the periodic monitoring and approval of financially sound counterparties. Market risk is mitigated because the derivatives are used to hedge underlying transactions. Cash receipts or payments on these contracts normally occur at maturity. Hughes holds derivatives only for purposes other than trading.

**HUGHES ELECTRONICS CORPORATION AND SUBSIDIARIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — Continued**

Foreign exchange-forward contracts are legal agreements between two parties to purchase and sell a foreign currency, for a price specified at the contract date, with delivery and settlement in the future. Hughes uses these agreements to hedge risk of changes in foreign currency exchange rates associated with certain firm commitments denominated in foreign currency.

The total notional amount of foreign exchange-forward contracts Hughes held at December 31, 1996 and 1995 was approximately \$223 million and \$289 million, respectively. Hughes' open contracts extend for periods averaging six months.

**NOTE 15: Fair Value of Financial Instruments**

For notes and loans payable and long-term debt and capitalized leases, the estimated fair value (which approximates book value) was \$283.2 million and \$694.9 million at December 31, 1996 and 1995, respectively. Such fair value is based on the quoted market prices for similar issues or on the current rates offered to Hughes for debt of similar remaining maturities. The carrying value of debt with an original term of less than 90 days is assumed to approximate fair value.

The fair values of derivative financial instruments reflect the estimated amounts Hughes would receive or pay to terminate the contracts at the reporting date, which takes into account the current unrealized gains or losses on open contracts that are deferred and recognized when the offsetting gains and losses are recognized on the related hedged items. The fair value of foreign exchange-forward contracts is estimated based on foreign exchange rate quotes at the reporting date. At December 31, 1996 and 1995, the estimated fair value of open contracts, which were in a net gain position, was \$4.5 million and \$10.7 million, respectively.

For all financial instruments not described above, fair value approximates book value.

**NOTE 16: Segment Reporting**

Hughes operates within the field of modern high-technology electronics for use in Telecommunications and Space, Automotive Electronics, and Aerospace and Defense Systems business segments. The Telecommunications and Space segment includes satellite construction, ownership and operation, communication services, ground equipment, and direct-to-home satellite television entertainment services. Radios, controls for engines and transmissions, navigation and communication systems, monitors and sensors for air bags, controllers for anti-lock brakes, climate control, dashboard instrumentation, vehicle security electronics, and other automotive electronic products are included in the Automotive Electronics segment. The Aerospace and Defense Systems segment includes missile systems, command and control systems, torpedoes and sonar systems, electro-optical systems, airborne radar and communication systems, military training and simulation systems, air traffic control systems, information systems, and guidance and control systems. Intercompany transfers between segments are not material. Information concerning operations by segment is shown on the next page:

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**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — Continued**

	<u>Telecom. &amp; Space</u>	<u>Automotive Electronics</u>	<u>Aerospace &amp; Defense Systems</u>	<u>Corporate &amp; Other</u>	<u>Total</u>
	(Dollars in Millions)				
Revenues					
1996 .....	\$4,114.9	\$5,350.8	\$6,338.4	\$ 113.8	\$15,917.9
1995 .....	3,092.7	5,561.3	5,945.4	172.4	14,771.8
1994 .....	2,596.2	5,221.7	6,023.6	257.9	14,099.4
Operating Profit (Loss) (1)					
1996 .....	\$ 238.8	\$ 654.0	\$ 593.8	\$ (14.6)	\$ 1,472.0
1995 .....	168.2	869.0	587.1	(80.4)	1,543.9
1994 .....	250.0	794.8	562.7	(100.9)	1,506.6
Identifiable Assets at Year End (2)					
1996 .....	\$4,874.7	\$3,394.9	\$7,544.7	\$ 665.8	\$16,480.1
1995 .....	4,309.0	3,267.4	7,718.4	679.6	15,974.4
1994 .....	3,727.8	3,429.8	6,712.0	980.9	14,850.5
Depreciation and Amortization (1)					
1996 .....	\$ 215.8	\$ 195.9	\$ 258.5	\$ 12.4	\$ 682.6
1995 .....	199.3	151.4	232.9	27.5	611.1
1994 .....	161.8	142.2	259.4	30.6	594.0
Capital Expenditures (3)					
1996 .....	\$ 449.8	\$ 196.0	\$ 171.1	\$ 23.3	\$ 840.2
1995 .....	436.5	264.7	109.8	9.3	820.3
1994 .....	399.3	166.4	159.5	21.1	746.3

Certain amounts for 1995 have been reclassified to conform with 1996 classifications.

- (1) Includes purchase accounting adjustments associated with GM's purchase of Hughes Aircraft Company of \$122.3 million in 1996 (\$21.0 million, \$100.9 million, and \$0.4 million related to Telecommunications and Space, Aerospace and Defense Systems, and Corporate and Other, respectively), \$123.4 million in 1995 (\$21.0 million, \$100.9 million, and \$1.5 million related to Telecommunications and Space, Aerospace and Defense Systems, and Corporate and Other, respectively) and \$123.8 million in 1994 (\$21.0 million, \$100.9 million, and \$1.9 million related to Telecommunications and Space, Aerospace and Defense Systems, and Corporate and Other, respectively).
- (2) Identifiable assets include the unamortized purchase accounting adjustments associated with the purchase of Hughes Aircraft Company as detailed below:

	<u>Telecom. &amp; Space</u>	<u>Aerospace &amp; Defense Systems</u>	<u>Corp. &amp; Other</u>	<u>Total</u>
1996 .....	\$468.0	\$2,247.8	\$ 7.7	\$2,723.5
1995 .....	489.0	2,348.7	8.1	2,845.8
1994 .....	510.0	2,449.6	45.7	3,005.3

- (3) Telecommunications and Space includes expenditures related to telecommunications and other equipment amounting to \$187.9 million, \$274.6 million, and \$255.8 million in 1996, 1995, and 1994, respectively.

**HUGHES ELECTRONICS CORPORATION AND SUBSIDIARIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — Continued**

A reconciliation of operating profit shown on the previous page to Income before Income Taxes shown in the Consolidated Statement of Income and Available Separate Consolidated Net Income follows:

	<u>1996</u>	<u>1995</u>	<u>1994</u>
	(Dollars in Millions)		
Operating Profit .....	\$1,472.0	\$1,543.9	\$1,506.6
Other Income — net .....	173.8	57.5	37.1
Interest Expense — net .....	(11.2)	(7.5)	(15.1)
Income before Income Taxes .....	<u>\$1,634.6</u>	<u>\$1,593.9</u>	<u>\$1,528.6</u>

Export sales from the U.S. were as follows:

	<u>1996</u>	<u>1995</u>	<u>1994</u>
	(Dollars in Millions)		
Africa .....	\$ 42.2	\$ 25.4	\$ 25.8
Asia .....	1,168.1	948.9	758.2
Canada .....	721.3	861.8	876.3
Europe .....	1,296.8	929.4	678.6
Mexico .....	196.2	143.4	96.9
Other Latin America .....	115.5	76.0	90.3
Middle East .....	250.9	327.0	370.1
Total .....	<u>\$3,791.0</u>	<u>\$3,311.9</u>	<u>\$2,896.2</u>

**NOTE 17: Commitments and Contingencies**

Hughes signed agreements in 1995 and 1996 to procure commercial satellite launches, a significant number of which are expected to be used in connection with satellites ordered by outside customers. The agreements provide for launches beginning in 1998 and also contain options for additional launch vehicles. The total amount of the commitment, which is dependent upon the number of options exercised, market conditions, and other factors, could exceed \$2 billion.

In December 1994, Hughes entered into an agreement with Computer Sciences Corporation (CSC) whereby CSC provides a significant amount of the non-automotive data processing services required by Hughes. Baseline service payments to CSC are expected to aggregate approximately \$1.5 billion over the term of the eight-year agreement. The contract is cancelable by Hughes with substantial early termination penalties.

Minimum future commitments under operating leases having noncancelable lease terms in excess of one year, primarily for real property and satellite transponders, aggregating \$2,552.5 million, are payable as follows: \$274.8 million in 1997, \$244.5 million in 1998, \$265.9 million in 1999, \$289.7 million in 2000, \$208.8 million in 2001, and \$1,268.8 million thereafter. Certain of these leases contain escalation clauses and renewal or purchase options. Rental expenses under operating leases were \$279.4 million in 1996, \$257.9 million in 1995, and \$306.2 million in 1994.

Hughes has issued or is a party to various guarantees and letter of credit agreements totaling \$813.4 million at December 31, 1996. In the Company's past experience, virtually no claims have been made against these financial instruments.

Hughes and its subsidiaries are subject to potential liability under government regulations and various claims and legal actions which are pending or may be asserted against them. The aggregate ultimate liability of Hughes and its subsidiaries under these government regulations, and under these claims and actions, was not determinable at December 31, 1996. In the opinion of management of Hughes, such liability is not expected to have a material adverse effect on Hughes' consolidated operations or financial position.

**HUGHES ELECTRONICS CORPORATION AND SUBSIDIARIES**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — Continued**

Hughes has maintained a suit against the U.S. Government since September 1973, regarding the Government's infringement and use of a Hughes patent (the "Williams Patent") covering "Velocity Control and Orientation of a Spin Stabilized Body," principally satellites. On June 17, 1994, the U.S. Court of Claims awarded Hughes damages of \$114 million. Because Hughes believed that the record supported a higher royalty rate, it appealed that decision. The U.S. Government, contending that the award was too high, also appealed. On June 19, 1996, the Court of Appeals for the Federal Circuit affirmed the decision of the Court of Claims which awarded Hughes \$114 million in damages, together with interest. The U.S. Government petitioned the Court of Appeals for the Federal Circuit for a rehearing. That petition was denied in October of 1996. The U.S. Government has filed a petition with the U.S. Supreme Court seeking certiorari. In the opinion of management of Hughes, there is a reasonable possibility that this matter could be resolved in the near term. While no amount has been recorded in the financial statements of Hughes to reflect the \$114 million award, a resolution of this matter could result in a gain that would be material to the earnings of General Motors attributable to Class H common stock.

**NOTE 18: Subsequent Event**

On January 16, 1997, GM and Hughes announced a series of planned transactions that would impact the defense electronics, automotive electronics, and telecommunications and space businesses of Hughes. The transactions would include:

- The tax-free spin-off of 100% of the Hughes defense business, to holders of GM's \$1½ par value and Class H common stocks;
- The tax-free merger of the Hughes defense business with Raytheon Company (Raytheon) immediately following the spin-off, after which there would be outstanding two classes of Raytheon/Hughes defense common stock;
- The transfer of Delco Electronics (Delco), the automotive electronics subsidiary of Hughes, from Hughes to GM's Delphi Automotive Systems and a reallocation of the derivative interest in the earnings of Delco currently held by Class H common stockholders to holders of \$1½ par value common stock; and
- The recapitalization of Class H common stock into a tracking stock linked solely to the telecommunications and space business of Hughes. GM would continue to own 100% of Hughes, which would hold and operate its existing telecommunications and space business.

The distribution of stock in the Hughes defense business to holders of GM Class H and \$1½ par value common stock would be in a ratio that would be determined by GM's Board of Directors to be fair to both classes of stockholders and would reflect: (1) a pro rata spin-off of the Hughes defense business to holders of GM Class H and \$1½ par value common stock; (2) a partial reallocation of the Hughes defense business from holders of GM \$1½ par value common stock to holders of Class H common stock in exchange for the derivative interest in the earnings of Delco currently held by the Class H stockholders; and (3) other effects of and factors relating to the planned transactions. Such a distribution ratio will be set by GM's Board of Directors at a time closer to GM's distribution of the solicitation statement/prospectus pursuant to which GM stockholders will be asked to approve the transactions.

**HUGHES ELECTRONICS CORPORATION AND SUBSIDIARIES**

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — Concluded**

The planned transactions are subject to approval by holders of GM \$1 $\frac{2}{3}$  par value and Class H common stock. In addition, the merger of the Hughes defense business with Raytheon, which is contingent upon the spin-off of the Hughes defense business, is subject to approval by the stockholders of Raytheon. The planned transactions also are subject to a variety of regulatory approvals and actions, including anti-trust clearance and receipt of rulings by the Internal Revenue Service that the spin-off of the Hughes defense business would be tax-free to GM and its stockholders.

The spin-off is not being proposed in a manner that would result in the recapitalization of Class H common stock into \$1 $\frac{2}{3}$  par value common stock at a 120% exchange ratio, as currently provided for under certain circumstances in GM's Restated Certificate of Incorporation.

No assurances can be given that the above transactions will be completed; however, management of GM and Hughes and GM's Board of Directors expect to solicit stockholder approval during the third quarter of 1997, after certain conditions are satisfied.

**HUGHES ELECTRONICS CORPORATION AND SUBSIDIARIES**  
**SUPPLEMENTAL INFORMATION**

**Selected Quarterly Data (Unaudited)**

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
	(Dollars in Millions Except Per Share Amounts)			
<b>1996 Quarters</b>				
Revenues .....	<u>\$3,736.7</u>	<u>\$4,062.5</u>	<u>\$3,822.6</u>	<u>\$4,296.1</u>
Income before income taxes .....	\$ 472.5	\$ 448.3	\$ 366.2	\$ 347.6
Income taxes .....	<u>191.4</u>	<u>172.3</u>	<u>144.7</u>	<u>97.3</u>
Net income .....	<u>\$ 281.1</u>	<u>\$ 276.0</u>	<u>\$ 221.5</u>	<u>\$ 250.3</u>
Earnings used for computation of available separate consolidated net income .....	\$ 311.7	\$ 306.6	\$ 252.0	\$ 280.9
Average number of shares of General Motors Class H common stock outstanding (in millions) .....	97.4	98.2	98.8	99.3
Class H dividend base (in millions) .....	399.9	399.9	399.9	399.9
Available separate consolidated net income .....	<u>\$ 76.0</u>	<u>\$ 75.2</u>	<u>\$ 62.3</u>	<u>\$ 69.8</u>
Net earnings attributable to General Motors Class H common stock on a per share basis .....	<u>\$ 0.78</u>	<u>\$ 0.77</u>	<u>\$ 0.63</u>	<u>\$ 0.70</u>
Stock price range of General Motors Class H common stock				
High .....	\$ 63.38	\$ 68.25	\$ 61.38	\$ 59.25
Low .....	\$ 45.00	\$ 57.50	\$ 53.13	\$ 49.50

**Selected Quarterly Data (Unaudited)**

	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>
	(Dollars in Millions Except Per Share Amounts)			
<b>1995 Quarters</b>				
Revenues .....	<u>\$3,578.8</u>	<u>\$3,723.6</u>	<u>\$3,441.3</u>	<u>\$4,028.1</u>
Income before income taxes .....	\$ 403.3	\$ 436.3	\$ 310.6	\$ 443.7
Income taxes .....	<u>165.4</u>	<u>178.8</u>	<u>121.6</u>	<u>179.8</u>
Net income .....	<u>\$ 237.9</u>	<u>\$ 257.5</u>	<u>\$ 189.0</u>	<u>\$ 263.9</u>
Earnings used for computation of available separate consolidated net income .....	\$ 268.9	\$ 288.4	\$ 256.1	\$ 294.4
Average number of shares of General Motors Class H common stock outstanding (in millions) .....	94.2	95.4	95.9	96.5
Class H dividend base (in millions) .....	399.9	399.9	399.9	399.9
Available separate consolidated net income .....	<u>\$ 63.3</u>	<u>\$ 68.8</u>	<u>\$ 61.4</u>	<u>\$ 71.1</u>
Net earnings attributable to General Motors Class H common stock on a per share basis .....	<u>\$ 0.67</u>	<u>\$ 0.72</u>	<u>\$ 0.64</u>	<u>\$ 0.74</u>
Stock price range of General Motors Class H common stock				
High .....	\$ 41.75	\$ 41.63	\$ 42.75	\$ 50.00
Low .....	\$ 33.25	\$ 37.75	\$ 39.13	\$ 39.50

**HUGHES ELECTRONICS CORPORATION AND SUBSIDIARIES**  
**SUPPLEMENTAL INFORMATION — Concluded**

**Selected Financial Data (Unaudited)**

	<u>1996</u>	<u>1995</u>	<u>1994</u>	<u>1993</u>	<u>1992</u>
	(Dollars in Millions Except Per Share Amounts)				
Revenues .....	\$15,917.9	\$14,771.8	\$14,099.4	\$13,517.5	\$12,297.1
Earnings (Loss) used for computation of available separate consolidated net income (loss) .....	\$ 1,151.2	\$ 1,107.8	\$ 1,049.2	\$ 921.6	\$ (921.6)
Average number of shares of General Motors Class H common stock outstanding (in millions) .....	98.4	95.5	92.1	88.6	75.3
Class H dividend base (in millions) .....	399.9	399.9	399.9	399.9	399.9
Available separate consolidated net income (loss) .....	\$ 283.3	\$ 264.6	\$ 241.6	\$ 204.5	\$ (142.3)
GM Class H cash dividends .....	\$ 94.4	\$ 87.9	\$ 73.8	\$ 64.1	\$ 53.3
Dividend payout ratio (1) .....	35.7%	36.4%	36.0%	N/A	51.0%
Earnings (Loss) attributable to General Motors Class H common stock on a per share basis before cumulative effect of accounting changes .....	\$ 2.88	\$ 2.77	\$ 2.70	\$ 2.30	\$ (0.11)
Earnings (Loss) attributable to General Motors Class H common stock on a per share basis after cumulative effect of accounting changes .....	\$ 2.88	\$ 2.77	\$ 2.62	\$ 2.30	\$ (2.29)
Capital expenditures(2) .....	\$ 840.2	\$ 820.3	\$ 746.3	\$ 580.0	\$ 558.5
Cash and cash equivalents .....	\$ 1,161.3	\$ 1,139.5	\$ 1,501.8	\$ 1,008.7	\$ 702.7
Working capital .....	\$ 2,879.4	\$ 2,502.0	\$ 2,695.5	\$ 2,165.2	\$ 1,692.4
Total assets .....	\$16,480.1	\$15,974.4	\$14,850.5	\$14,117.1	\$14,209.2
Long-term debt and capitalized leases .....	\$ 34.5	\$ 258.8	\$ 353.5	\$ 416.8	\$ 711.0
Return on equity*(3) .....	11.6%	11.5%	12.1%	11.3%	(13.9)%
Income (Loss) before interest and taxes as a percent of capitalization (4) .....	18.3%	18.7%	19.0%	18.0%	(2.3)%
Pre-tax return on total assets (5) .....	10.1%	10.3%	10.6%	9.7%	(1.8)%

\* Includes unfavorable cumulative effect of accounting changes of \$30.4 million in 1994 and \$872.1 million in 1992.

- (1) GM Class H cash dividends divided by available separate consolidated net income for the prior year.
- (2) Includes expenditures related to telecommunications and other equipment amounting to \$187.9 million, \$274.6 million, \$255.8 million, \$131.1 million, and \$101.6 million in 1996, 1995, 1994, 1993, and 1992, respectively.
- (3) Net income (loss) divided by average stockholder's equity (General Motors' equity in its wholly-owned subsidiary, 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).
- (4) Income (Loss) before interest and taxes divided by average stockholder's equity plus average debt.
- (5) Income (Loss) before Income Taxes divided by average Total Assets.

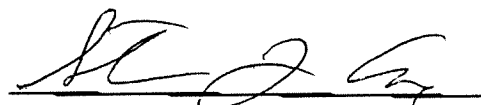


**DECLARATION of STEVEN J. COX**

I, Steven J. Cox, hereby declare under penalty of perjury that:

1. I am Senior Vice President of DIRECTV Enterprises, Inc.
2. The foregoing is a true and correct copy of the consolidated financial statement of Hughes Electronics Corporation (a parent company of DIRECTV Enterprises, Inc.) for the year ended December 31, 1996, including the report of Deloitte & Touche LLP, the company's independent certified public accountants, as published in the 1996 annual report of Hughes Electronics Corporation.

By:



Steven J. Cox  
Senior Vice President

June \_\_, 1997