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

In the Matter of Application of	)	
	)	
MOBILE COMMUNICATIONS	)	File Nos. 11-DSS-P-91(6)
HOLDINGS, INC.	)	18-DSS-P-91(18)
	)	11-SAT-LA-95
For Authority to Construct, Launch and Operate	)	12-SAT-AMEND-95
ELLIPSO, an Elliptical Low Earth Orbit Mobile	)	158-SAT-AMEND-96
Satellite System in the 1.6/2.4 GHz Bands	)	

CONSOLIDATED OPPOSITION TO PETITIONS TO DISMISS OR DENY

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SUMMARY

In outlining the Commission's 1997 agenda, Chairman Hundt recently endorsed the "straightforward" principle that "government should always be on the good side: the side of competition." Mobile Communications Holdings, Inc. (MCHI) wholeheartedly agrees and urges the Commission, in this case, to weigh in on the side of competition by expeditiously granting MCHI's pending license application for the ELLIPSO satellite system.

MCHI has filed a supplemental financial showing with the Commission which conclusively demonstrates that MCHI is financially qualified to implement the ELLIPSO system. The estimated cost of the system is $564 million. MCHI has submitted concrete evidence that more than $1 billion has been irrevocably committed to the ELLIPSO project. This includes more than $500 million in vendor financing from P.T. Tigamutiara Buanakhatulistiwa (TMBK), a member of the Mertju Buana Group of Indonesia, a major industrial conglomerate, and Spectrum Astro, a leading United States manufacturer of small satellites, and $650 million in other external funding from Vula Communications (Pty) Limited, a consortium including major Black trade unions, civic and business associations in South Africa, and the Artoc Group, an Egyptian multi-disciplinary, multinational conglomerate. These irrevocable commitments are evidenced by letters of commitment from each funding source which detail the funding terms and confirm that the funding is fully negotiated, irrevocable, and contingent only upon issuance of an FCC license.

In addition, MCHI has submitted objective information from major international banks, including PT Bank Jakarta and Bradesco, and other qualified financial experts with respect to each funding source which further corroborates the financial capability of MCHI's financial backers. Additional evidence is provided by Aon, a large and highly sophisticated financial entity, which,

on the basis of its own due diligence, has concluded, in comments filed with the Commission on January 9, 1997, that "MCHI's financial package (including the Vula, Artoc, TMBK/Yuzhnoye, Arianespace and Spectrum Astro agreements) is commercially solid, and will enable MCHI to move ahead promptly with construction, launch and operation of ELLIPSO once an FCC license is issued."

MCHI has put in place a highly-qualified team of technology partners and financial advisors, which are prepared to begin implementation of ELLIPSO as soon as a license is granted. These companies include Aon Corporation, a multi-billion dollar insurance brokerage firm with worldwide offices, which recently made a substantial equity investment in MCHI and will provide risk management and insurance services for the ELLIPSO project; Spectrum Astro; Israel Aircraft Industries, one of the premier aerospace companies in the world and an outstanding innovator in aerospace technology; and the Harris Corporation, a Fortune 200 company and the largest electronics company in the southeastern United States, which will manufacture the satellite communications payload.

MCHI's success has been achieved in the face of the nearly insurmountable obstacles created by the FCC when it deferred MCHI's license in January 1995 while granting licenses to MCHI's giant corporate competitors. These competitors have sought financing with the benefit of an FCC license in hand --- a benefit that has been denied to MCHI --- and now have more than a two-year lead on MCHI. Despite the significant obstacles placed in MCHI's path, regulatory and otherwise, the company's innovative technical design (a United States patent for the ELLIPSO system was granted on December 10, 1996) and creative market plan have continued to attract interest and attention in the marketplace. The bottom line, which has never been challenged, is that,

through the ELLIPSO system, MCHI will be able to provide the lowest cost, best quality (largely because of ELLIPSO's superior elevation angles) voice and data services worldwide in the industry. This is what makes ELLIPSO so attractive in the developing world.

It is the competitive threat posed by ELLIPSO that explains the vehemence with which MCHI's competitors -- TRW, Loral/Qualcomm and Motorola -- pursue their critique of MCHI in their latest round of filings. To date, MCHI's competitors have succeeded in denying MCHI, an innovative small business, entry to the marketplace and simultaneously denying consumers around the world the advantages of lower cost telephone services, contrary to long-standing Commission and national policy favoring entrepreneurship and competition in the telecommunications industry.

Significantly, the latest filings by MCHI's competitors totally ignore the regulatory implications of AMSC's withdrawal, and the consequent removal of the issue of mutual exclusivity in the Big LEO proceeding. All Big LEO applicants can be accommodated (and there are no other parties seeking access to the spectrum). Stringent financial standards are therefore not appropriate, as the Commission has said in recent domestic satellite and Little LEO proceedings. Thus, whatever may have been the justification for a stringent financial standard back in 1994, there is no longer any reason for this unreasonably high regulatory hurdle following AMSC's withdrawal.

While MCHI has met the strict financial standard, if the Commission should conclude otherwise, a waiver of the rules would serve the public interest in this case and should be granted given the absence of mutual exclusivity and other compelling public interest reasons. In this regard, it bears emphasis that MCHI's business agreements, and the underlying commercial arrangements, reflect significant investment decisions and strategies which in some cases involve national

policy considerations in countries outside the United States. By way of example, the formation of a South African consortium (Vula), and its decision to invest in the ELLIPSO system, were a direct result and in furtherance of the South African government's Black empowerment strategy. Vula's participation in ELLIPSO thus represents a major effort on the part of South Africa's Black majority to enter into the economic mainstream, an effort which is contingent upon issuance of an FCC license to MCHI.

In short, grant of MCHI's application will serve the public interest and promote important national policy and Congressional goals (as set forth in Section 257 of the Telecommunications Act of 1996) including a competitive satellite market, removal of entry barriers for entrepreneurial small business telecommunications companies, and telecommunications infrastructure development worldwide. MCHI urges the Commission to grant the ELLIPSO application expeditiously in light of these and other compelling public interest considerations, and allow MCHI the opportunity to compete in the marketplace with a level playing field.

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CONSOLIDATED OPPOSITION TO
PETITIONS TO DISMISS OR DENY

Mobile Communications Holdings, Inc. (MCHI), by its attorneys, hereby opposes the December 27, 1996 "Petition to Deny" filed by TRW Inc., the December 27, 1996 "Petition to Dismiss or Deny" filed by L/Q Licensee, Inc., and the December 24, 1996 "Consolidated Petition to Dismiss or Deny" filed by Motorola Satellite Communications, Inc. with respect to MCHI's above-captioned application for a license to construct, launch and operate the ELLIPSO satellite system.[1/]

1/ As a threshold issue, TRW, LQL and Motorola lack standing to file a petition to deny against MCHI and their pleadings must therefore be treated as informal objections. "[T]he classes of parties which have standing to file a petition to deny under the Federal Communications Act ... are closely circumscribed." National Broadcasting Co. v. FCC, 362 F.2d 946, 954 (D.C. Cir. 1966). Standing is limited to those alleging objectionable electrical interference or economic injury. Id. There can be no claim of objectionable electrical interference here because the Commission explicitly held in the 1994 Big LEO Order that five systems can co-exist in the allocated spectrum. See Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Mobile Satellite

Footnote continued on next page

I. BACKGROUND

On September 16, 1996, MCHI filed an "Amendment to ELLIPSO Satellite System Application" which, in combination with the cumulative record in this proceeding, conclusively demonstrates MCHI's legal, technical and financial qualifications to be a Commission licensee. As the Commission is aware, MCHI filed its initial application for licensing of the ELLIPSO satellite system in November 1990, more than six years ago, and was the first to have done so.[2/] Over the past six years, MCHI has participated actively in the various rulemaking and licensing proceedings relating to the Big LEOs, including participation in the 1992 and 1995 World Radiocommunication Conferences and the ITU World Policy Forum in 1996. In November 1994, MCHI submitted a detailed amendment to its application including a substantial financial package. Although the Bureau decided in January 1995 to defer MCHI's application, and the Commission affirmed the

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Footnote continued from previous page

Service in the 1610-1626.5/2483.5-2500 MHz Frequency Bands, *Report and Order,* 9 FCC Rcd 5936, 5955 at para.44 (1994) (the "Big LEO Order") ("All five applicants proposing LEO systems agree that our plan provides a basis for accommodating five LEO systems.") It bears emphasis that the Commission (and the parties) always contemplated that the systems would coordinate among themselves and the process of coordination further negates any possibility of interference between the systems. See id. at 5962, para. 61 ("the CDMA applicants have represented that sharing is feasible.") In addition, there is sufficient feeder link spectrum to accommodate all of the proposed systems.

Thus, the basis for standing, if at all, must rest on economic competition resulting from MCHI's operation. Yet, none of the parties has even alleged economic competition as a grounds to meet the standing requirements under the Communications Act.

2/ The significance of MCHI's filing status, in light of McElroy Electronics Corporation v. FCC, 86 F.3d 248 (D.C. Cir. 1996), a copy of which was attached to MCHI's September 16 amendment, has yet to be considered by the Court of Appeals. On facts virtually identical to those presented by MCHI, the D.C. Circuit in McElroy found that a Commission public notice triggered a cut-off period and that subsequent filers were not entitled to compete against filers who met the cut-off date.

Bureau's decision in June 1996, MCHI continues to believe that sufficient financial information was provided in its previous filings to demonstrate financial qualifications.[3/]

Moreover, the Big LEO financial standard, as adopted in 1994 and as subsequently applied, has been increasingly criticized as inherently discriminatory towards small businesses and anti-competitive, contrary to the intent and clear language of the 1996 Telecommunications Act. On April 24, 1996, the Small Business Administration sent a letter to the Commissioners criticizing the Commission's deferral in 1995 of MCHI's licensing request and urging the Commission to reexamine its overly stringent financial qualification standards. In a September 30, 1996 colloquy, during the floor debate on the 1997 Omnibus Consolidated Appropriations bill, Congressional concern was expressed with the use of stringent financial standards for new satellite services.[4/] The colloquy clarified that in the case of the strict financial standard imposed by the FCC in satellite cases, "rather than making a judgment on what the FCC may feel is a company's financial ability to compete, perhaps the FCC should focus more on technical considerations for licenses, leaving the ultimate success or failure of an applicant to the marketplace where it appropriately belongs." On October 3, 1996, a bi-partisan group of seven Senators wrote to Chairman Hundt expressing concern that the stringent financial standard appears, within the sense of the

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3/ In January 1995, the Bureau reached its own conclusions about the nature of commitments made by MCHI's partners without seeking further clarification or additional factual information about those commitments, which would have made clear the solid nature of those commitments. The Bureau's approach in 1995 can be contrasted with its recent willingness to grant conditional licenses to Ku-band domestic satellite applicants subject to submission of additional financial information. See, e.g., Echostar Satellite Corporation, *Memorandum Opinion and Order,* DA 96-1943, released November 21, 1996.

4/ Congressional Record-Senate S11931 (September 30, 1996). For the Commission's convenience, copies of the Congressional and SBA materials are attached in Exhibit 7.

Telecommunications Act of 1996, to "unduly constrain future marketplace competition" by creating "an artificial barrier which effectively denies future public access to lower cost services and stifles small company entrepreneurship."

On September 16, 1996, MCHI submitted an amendment containing supplemental financial information to further corroborate its financial qualifications. These materials included an affidavit by MCHI's Chairman and Chief Executive Officer and additional evidence with respect to the following financial package: (1) an irrevocable commitment of US$350 million from Vula Communications (Pty) Limited, a consortium of South African companies with millions of members including major South African labor unions and their pension funds and the country's largest Black business and civic associations, for the purchase of certain exclusive territorial service distribution rights and a 12% equity interest in MCHI; (2) an irrevocable commitment of US$300 million from the Artoc Group, a multi-disciplinary, multi-national holding company headquartered in Cairo, Egypt for the purchase of certain exclusive service distribution rights;[5/] (3) an irrevocable vendor financing commitment of US$300 million to cover launch of sixteen first-generation ELLIPSO satellites from P.T. Tigamutiara Buanakhatulistiwa (TMBK), a member of the Mertju Buana Group of Indonesia; (4) an irrevocable vendor financing commitment for US$206 million from Spectrum Astro, Inc., a leading United States manufacturer of small satellites, for construction of the sixteen first-generation ELLIPSO satellites.

5/ The Chairman of Artoc, Mohammed Gabr, is co-chairman with Vice President Gore of the US-Egyptian Trade Council. See Exhibit 2. It is noteworthy that ELLIPSO brings together for the first time a major Egyptian corporation (Artoc) and the major Israeli high-technology company, Israel Aircraft Industries, in a mutual business enterprise.

On September 16, 1996, MCHI also submitted copies of the underlying business agreements for each of these funding commitments with a Request for Confidentiality to protect these proprietary agreements from public disclosure. On October 29, 1996, the Commission returned these agreements to MCHI, agreeing with MCHI that "[n]othing in the Commission's rules requires that an applicant submit its actual business agreements in order to demonstrate that it has met the Commission's financial requirements." Letter from Donald H. Gips, Chief, International Bureau, to Jill Abeshouse Stern (October 29, 1996). The Bureau expressly authorized MCHI to provide the information required by Rule 25.140 in another form "such as letters of commitment from its partners to the business agreements."

On November 13, 1996, MCHI submitted a "Supplement to ELLIPSO Satellite System Application" which included the following letters of commitment: (1) a letter from Mr. Headbush, Chairman of Vula Communication (Pty) Limited; (2) a letter from Mr. Helmy, Chairman of Artoc Suez; (3) a joint letter from Mr. Probosutedjo, Chairman of TMBK, and General Pustoviy, Chief of the Science Directorate at the State Design Office Yuzhnoye;[6/] and (4) a letter from Mr. Thompson, President of Spectrum Astro, Inc. These letters summarize the key terms of the underlying business agreements, including (1) the identity of the parties; (2) the amount committed; (3) detailed terms of the transactions; and (4) a statement in each case that the commitment is non-contingent and subject only to issuance of an FCC license. In addition, each letter confirms that the party has the financial capability to perform its commitment.

[6/] Yuzhnoye is the developer of the Cyclone, Zenit and Kodak launch vehicles which will be used by the Indonesian launch consortium headed by TMBK. See Exhibit 3-C.

MCHI's amendment was accepted for filing pursuant to Public Notice, Report No. SPB-69, released November 27, 1996. TRW, Motorola and LQL have now filed petitions to deny or dismiss MCHI's amended application. As more fully discussed below, none of the petitions provides any bona fide reason why MCHI's application should be denied or dismissed, and the Commission should move forward expeditiously to grant MCHI's application.

II. SUMMARY

The critical points made in this opposition, which should inform the Commission's deliberations, are the following.

First, MCHI has complied fully with the Commission's Big LEO rules, including the financial qualification standards. MCHI has submitted letters of commitment from its investors and financiers evidencing the existence of irrevocably committed funds, subject only to issuance of an FCC license.[7/] These letters provide solid evidence that sufficient funds have been irrevocably committed to the ELLIPSO project, and that MCHI's financial backers have the capability to perform these commitments. Although the Commission's Big LEO rules do not explicitly impose a specific evidentiary showing with respect to the financial capability of an external investor, MCHI has attached additional, objective evidence from third parties that conclusively demonstrates, in each case, the financial capability of its external funding sources.

7/ MCHI remains willing to make its business agreements available for inspection with appropriate safeguards to ensure confidentiality, if the Commission so directs. MCHI believes, however, that all terms of the agreements that are material to the Commission's deliberations have been fully disclosed in the commitment letters previously submitted and in the additional materials submitted herewith.

Second, grant of MCHI's application will not prevent any other Big LEO applicant or system from moving forward. With the withdrawal of AMSC's Big LEO application, all of the proposed Big LEO systems can be accommodated. No new applicants are seeking authorization for the subject frequency bands. The rationale for a strict financial standard (assuming one could be rationalized) has thus evaporated. In this regard, the Commission recently stated in the Little LEO rulemaking that:

> in cases where there are more applicants than the spectrum can accommodate, a grant to an under-financed space station applicant may preclude a capitalized applicant from implementing its system, and delay service to the public. In these cases, we have required a stringent financial showing. Where grant to an under-financed applicant will not prevent grant of other applications, the required demonstration has been less stringent.[8/]

While MCHI believes that it has fully met the strict financial standard, if the Commission should conclude otherwise, then a waiver should be granted on the basis of the policy most recently articulated in the Little LEO NPRM and other important national policy considerations discussed below in greater detail.

III. MCHI HAS FULLY COMPLIED WITH THE BIG LEO FINANCIAL RULES

The Commission's Big LEO rules allow applicants to rely upon internal and/or external funding to demonstrate financial qualifications under Commission Rule 25.140. In the case of external funding, the financing must be "irrevocably" committed. This has been defined by the Commission as financing that "has been approved and does not rest on contingencies which require

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8/ In the Matter of Amendment of Part 25 of the Commission's Rules to Establish Rules and Policies Pertaining to the Second Processing Round of the Non-Voice, Non-Geostationary Mobile Satellite Service, IB Docket No. 96-220, *Notice of Proposed Rulemaking*, FCC 96-426, released October 29, 1996, at para. 39 (emphasis added) ("Little LEO NPRM").

action by either party to the loan or equity investment." Big LEO Order, supra, 9 FCC Rcd at 5950, para. 32. The Commission has made clear that a lender is not required to lend the applicant the entire sum at once; "funding can be staggered to reflect the system's implementation schedule or the applicant's need to access those funds." Id. at 5951, n. 46. The Commission has also emphasized that "the term 'irrevocable' was not intended to be construed in so literal a fashion that the condition would be impossible to satisfy." [9/]

Admittedly, the strict financial standard imposes an extremely high evidentiary threshold on an entrepreneurial company. As the Commission is well aware, there have been relatively few satellite cases in which an entrepreneurial company has been able to meet the stringent financial standard on the basis of external funding (and, even then, the successful applicants have usually obtained financing commitments with a conditional license in hand.)[10/] Nonetheless, MCHI has met this challenge and obtained more than $1 billion in external funding commitments for the EL-LIPSO system. These commitments are described below.

9/ Advanced Business Communications, Inc., 58 R.R. 2d 153, 164, n. 63 (1985).

10/ See, e.g., Orion Network Systems, Inc., *Memorandum Opinion and Order*, DA 96-1938, released November 21, 1996 (conditional license granted to Orion Network Systems, Inc. for a new domestic fixed satellite conditioned upon provision of evidence of financial qualifications, or documentation justifying a waiver of the financial requirements, within 120 days).

A. External Funding Commitments

1. Exclusive Distributor Arrangements

(a) Vula Communications (Pty) Limited

Vula has committed to pay US$350 million for exclusive distribution rights in Sub-Saharan Africa and a 12% equity interest in MCHI. This commitment is non-contingent and subject only to issuance of an FCC license as confirmed in the letter of commitment previously provided by Mark Headbush, Chief Executive Officer, of Vula. This investment is not a loan; thus, there is no interest or repayment terms.

To correct various misinterpretations reflected in the comments filed on or about December 27, 1996, MCHI is submitting herewith in **Exhibit 1**: (1) a certification by current Vula shareholders which confirms their commitment to the ELLIPSO project, and their capability to ensure that Vula performs its financial obligations under the agreement (**Exhibit 1-A**);[11/] (2) a letter from Vula's auditor, Ian Pierce & Associates, confirming that Vula's shareholders have assets and operating income in excess of $350 million (**Exhibit 1-B**); (3) a letter from Vula's corporate lawyers, Jowell, Glyn & Marais, confirming Vula's shareholding (**Exhibit 1-C**);[12/] and (4) a letter from Boland Bank indicating its support for the ELLIPSO project and willingness to manage Vula's participation in the project (**Exhibit 1-D**).

11/ This letter is provided as a supplement to the Vula commitment letter submitted on November 13, 1996 which is being resubmitted in Exhibit 1-A for the Commission's convenience.

12/ This letter confirms the current stockholding in Vula and thus supersedes the prior letter from Ernst & Young. As with any corporation, stock percentages are not static and may change over time.

Among other things, the materials attached in Exhibit 1 confirm that the Vula shareholders "stand behind VULA's commitment and have the capability to ensure that VULA performs its financial obligations under the MCHI agreement." **Exhibit 1-A**. Further, the participants in the VULA consortium represent "some 250,000 members of two of South Africa's major Black trade unions, the major Black business grouping with some 180,000 members and the major association of Black civic organization with some 800,000 members." Id.

(b) The Artoc Group

Artoc has agreed to purchase exclusive territorial service rights from MCHI for an investment of US$300 million by Artoc.[13/] MCHI has previously submitted an excerpt from the business agreement between MCHI and Artoc evidencing Artoc's irrevocable commitment to pay US$300 million for these rights; and a letter from Shawki & Co., Artoc's auditors, confirming Artoc's financial capability to meet its commitment.[14/] While MCHI believes that these materials are self-explanatory, in order to clear up the apparent confusion suffered by its competitors, MCHI is

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13/ MCHI's competitors erroneously argue that critical information has been redacted (by MCHI) from Mr. Helmy's letter for purposes of the FCC submission. In fact, the blank spaces in Mr. Helmy's letter indicate changes in the text of the letter prior to signature, which were approved by Mr. Helmy (as the initials reflect). To correct any misimpression that this may inadvertently have created, a declaration from Mr. Helmy is included in Exhibit 2 which confirms the irrevocable nature of the commitment made by Artoc and the relevant terms.

14/ The accountant's letter has been challenged by MCHI's competitors because, they argue, the letter qualifies the nature of Artoc's commitment. It bears emphasis that Artoc's commitment is defined by its contractual agreements, not by an inadvertent characterization of the terms of those agreements by Artoc's accountant. The Shawki letter was submitted as objective evidence of Artoc's financial capability, and is relevant only on this limited point.

submitting herewith, in **Exhibit 2,** a declaration from Chairman Helmy confirming Artoc's irrevocable, non-contingent commitment and the material terms of the commitment.

2. Vendor Financing Agreements

(a) TMBK/Yuzhnoye

MCHI has received a vendor financing commitment of US$300 million towards ELLIPSO launch costs from TMBK.[15/] A commitment letter, jointly signed by TMBK and Yuzhnoye, was submitted by MCHI on November 13, 1996 in order to confirm the relevant terms of the September 4, 1996 vendor financing agreement between the parties. Pursuant to the agreement, TMBK will provide vendor financing in the amount of US$300 million and has agreed to provide financing for equivalent launch capability in the event that development of the Indonesian launch site does not proceed as planned, as clearly stated in the letter submitted by MCHI on November 13, 1996.[16/]

TMBK is a member of the Mertju Buana Group, which is a major industrial and agribusiness conglomerate in Indonesia. The breadth of Mertju Buana's commercial activities is reflected

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15/ Although MCHI's competitors try to suggest that TMBK is a new party, it is not. TMBK is one of the signatories to the September 4, 1996 agreement, between MCHI, TMBK and Yuzhnoye, which was submitted by MCHI on September 16, 1996 to the Commission under a request for confidentiality. TMBK together with its parent, Mertju Buana, is the "launch consortium" referred to by MCHI in its September 16, 1996 filing.

16/ MCHI has pointed out that the TMBK and Arianespace commitments may be duplicative. This duplication does not, as MCHI's competitors contend, somehow cancel out both commitments. To the contrary, both commitments are valid and MCHI has the ability to select the launch provider (and financial package) that best meets the requirements of the ELLIPSO project in its first and subsequent phases. MCHI notes that the Bureau, in its January 1995 decision, explicitly found the Arianespace commitment sufficient to meet the external financing standard.

in the attached news articles in **Exhibit 3-A**. Also included in **Exhibit 3-A** is a letter from P.T. Bank Jakarta, signed by its President Director Drs. Waldjimin, which confirms that the assets and operating income of TMBK and Mertju Buana exceed US$300 million. For the Commission's convenience, a copy of the TMBK commitment letter is being resubmitted herewith in **Exhibit 3-B**.

(b) Spectrum Astro

Spectrum Astro has agreed to provide $206 million in vendor financing for construction of the ELLIPSO satellites. MCHI previously provided Spectrum's letter of commitment confirming the terms of the June 26, 1996 agreement between the parties. In **Exhibit 4** to this filing, MCHI provides supplemental information in response to the December 27, 1996 petitions consisting of (1) a declaration from W. David Thompson, President of Spectrum Astro, clarifying the terms of the vendor financing commitment and Spectrum Astro's capabilities (**Exhibit 4-A**); (2) a letter from AEC-Able (Able) confirming its commitment to provide a substantial cash discount on the price of the solar arrays (an important component of the satellites) in return for an equity interest in MCHI (**Exhibit 4-B**);[17/] and (3) a commitment letter from Israel Cajai, President of Interacoes Urantia-Cajai, Ltda., which has agreed to provide any back-up financing to Spectrum Astro, up to $206 million, that may be required for Spectrum to meet its vendor financing commitment to MCHI (**Exhibit 4-A-1**).

17/ The cash discount is significant because it will reduce Spectrum's cash requirements for manufacturing the satellites which, in turn, will reduce Spectrum's potential need for back-up financing to provide the committed vendor financing. See Exhibit 4-A.

With respect to the capability of Spectrum Astro's financial backer, the following additional documentation is enclosed in **Exhibit 4**: (1) an independent valuation of US$180 million for one of Mr. Cajai's mineral holdings in a gold and diamond mining area by the Brazilian government's National Mineral Production Department (**Exhibit 4-A-2**); and (2) a financial certification from Bradesco, one of the largest banks in Brazil, which values Mr. Cajai's total assets at R$12.5 billion (approximately US$11.25 billion based on current exchange rates) (**Exhibit 4-A-3**).

B. Internal Funding Commitments

While the external funding commitments received by MCHI are more than sufficient to cover the costs of construction, launch and first-year operation of the ELLIPSO system, it bears emphasis that MCHI has also received management commitments from its shareholders, including, for example, IAI and Spectrum Network Systems (SNS).[18/] A letter reconfirming the SNS commitment (submitted with MCHI's November 1994 amendment), and a balance sheet for the

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18/ IAI's continued involvement in and support for the ELLIPSO project is entirely consistent with the Spectrum Astro commitment, contrary to TRW's argument. In this regard, Spectrum's declaration (see Exhibit 4-A) indicates that IAI will have a work share in the project.

As MCHI's competitors are well aware, the Commission has found MCHI's previously-submitted commitments inadequate (with the exception of Arianespace) and, pending a ruling on appeal of the Commission's June 1996 decision, MCHI had no choice but to develop additional funding sources in order to meet the Commission's September 16, 1996 filing deadline. MCHI has previously alerted the Commission to the inescapable fact that the deferral of MCHI's license for two years has adversely impacted MCHI and certain of its business arrangements. In this regard, MCHI's competitors have capitalized on MCHI's regulatory disadvantage to undermine MCHI's business arrangements, with the LQL/Rostelcom situation being a notable example. MCHI should not be penalized for changes in its financial package due to circumstances beyond its control, including regulatory delay.

year ended June 30, 1996 for this publicly-traded Australian telecommunications company reflecting assets in excess of $54 million (Australian), are attached in **Exhibit 5**.

The foregoing external and internal funding commitments fully satisfy the Commission's Big LEO rules. In this regard, MCHI notes that Aon Corporation, a highly sophisticated financial entity, has independently assessed MCHI's financial package as "commercially solid" and has itself invested in MCHI. See **Exhibit 6**. Aon's assessment reflects a marketplace view of the strength of MCHI's financial commitments that should be given great weight by the Commission.

IV. MCHI HAS PROVIDED CONCLUSIVE EVIDENCE THAT SUFFICIENT FUNDS ARE IRREVOCABLY COMMITTED TO THE ELLIPSO PROJECT

MCHI has provided conclusive evidence that sufficient funds are irrevocably committed to the ELLIPSO project, and its competitors have failed to show otherwise.

A. MCHI Has Submitted Letters Of Commitment Which Confirm The Material Terms Of The Underlying Business Agreements

In their comments, MCHI's competitors attack MCHI's evidentiary showing by arguing that letters of commitment from MCHI's funding sources are insufficient to meet the informational requirements of Rule 25.140. This argument is totally without merit, and merely represents another back-door attempt by MCHI's competitors to review MCHI's proprietary business agreements. MCHI was expressly authorized by the Commission to submit commitment letters in lien of the business agreement, and such letters -- each of which confirms the material terms of the respective agreement -- have been submitted by MCHI.

In order to meet the Big LEO financial standard, if an applicant lacks sufficient internal assets to fund the system, it is required to submit additional information about its funding sources "as listed" in Rule 25.140(d)(2). The rule identifies various external funding sources including (i) loans or credit arrangements; (ii) sales or placements of equity or other ownership interests; and (iii) grants or other external funding commitments. Subsections (i) and (iii) of Rule 25.140(d)(2) request that the applicant supply the terms of the loan or other external funding arrangement, as the case may be, including such information as the identity of the creditor or grantor, the amount committed, letters of commitment, and detailed terms of the transaction, including the details of any contingencies.

The language of Rule 25.140 does not require submission of the underlying business agreements. In fact, the Chief of the International Bureau expressly confirmed MCHI's interpretation of Rule 25.140, in an October 29, 1996 letter to MCHI's counsel, and authorized MCHI to submit "letters of commitment from its partners to the business agreements." Consistent with Rule 25.140, and the ruling of the International Bureau, MCHI chose not to resubmit its proprietary business agreements (which had been submitted on September 16, 1996 for the Commission's review) and, instead, chose to submit letters of commitment from each of its external funding sources which confirm the respective commitments and supply the information requested by Rule 25.140.

TRW, Motorola and LQL are not content with the Bureau's October 29, 1996 ruling, and again seek to force wholesale disclosure of MCHI's proprietary business agreements without any justification for doing so. The Commission should reject, yet again, the efforts by MCHI's competitors to review these business agreements purely for their own commercial advantage.

The Commission's primary concern in this licensing proceeding is with the financial resources available to MCHI to fund construction and launch of the ELLIPSO system. To reach this determination, the identity of the parties and the non-contingent nature of the commitment are relevant; there are many other business terms, however, which are not relevant to the licensing issue (although potentially relevant to competitors who wish to force disclosure in order to gain additional competitive advantage). Abundant evidence on all terms relevant to the FCC licensing process is provided in the letters of commitment and the additional declarations attached to this pleading.

In each case, the commitment letter identifies (1) the parties; (2) the amount committed; and (3) detailed terms of the transaction. Each letter explicitly states that the underlying agreement has been fully negotiated and the commitment is non-contingent, subject only to issuance of an FCC license. Detailed information is provided in the TMBK and Spectrum Astro letters with respect to the interest rate, repayment terms, convertibility feature of debentures to be issued to cover the launch and satellite construction costs, and a statement that there will be no security interest in the facilities. The letters from Artoc and Vula are similarly specific (although the underlying business arrangement does not involve a loan and therefore there are no interest or repayment terms.)

In each case, a senior executive of the company providing the commitment to MCHI has stated for the record that its commitment is non-contingent and subject only to the issuance of an FCC license. Certainly, the views of the contracting party that it has entered into a binding, "irrevocable" agreement with MCHI should be given great weight. To do otherwise is to question the veracity of the parties involved. MCHI finds this critique insulting, to say the least, and notes

the apparent double standard endorsed by Motorola, TRW and LQL (whose executives were credited in 1995 despite contradictions between statements by, for example, one of those executives and SEC documents.)

While MCHI believes that its evidentiary showing fully meets the requirements of Rule 25.140, it remains willing to supply additional contract terms if deemed relevant by the Commission and/or to resubmit the underlying business agreements for review under appropriate safeguards if the Commission so directs and if such review is deemed necessary to corroborate the letters of commitment submitted by MCHI.

B. MCHI'S Commitments Are Irrevocable And Non-Contingent

Not content with unequivocal letters of commitment from MCHI's funding sources (each of which states that the commitment is subject only to FCC licensing), MCHI's competitors speculate wildly about possible contingencies in the underlying business agreements that might somehow qualify these irrevocable commitments. Each of MCHI's funding sources has made clear that the committed funding is non-contingent; to state the obvious, this means that there are no contingencies.

To cite one example of the overreaching arguments made by MCHI's competitors, TRW and Motorola both attack MCHI's vendor financing agreements on the grounds that the convertible debentures to be issued to TMBK and Spectrum Astro are a "major contingency" because MCHI has not released a "schedule revealing how much equity will be exchanged for each dollar of financing utilized" (Motorola petition at 16) or provided details as to the "value or amount of these securities" (TRW petition at 28). These arguments reflect a basic lack of understanding of

the nature of convertible debentures, and demonstrate the lengths to which MCHI's competitors are reaching to discredit MCHI's financial package.

In fact, the terms of the convertible debentures have been fully negotiated and the use of this well-established financing vehicle does not constitute an impermissible contingency. In the case of both TMBK and Spectrum Astro, the shares of stock will be convertible at a fair market value equal to the price of the launch or the satellites (as the case may be), and the parties are limited to a maximum amount of stock (10% of Ellipsat International stock in the case of TMBK and 6% of MCHI stock in the case of Spectrum Astro). See, e.g., Exhibit 4-A.[19/]

Rather than conceding the creative nature of MCHI's financial package, which will allow MCHI to access more than $1 billion in funding while preserving much of its equity structure, MCHI's competitors prefer to tilt at windmills. Further reflecting their fundamental lack of understanding of the nature of MCHI's funding commitments, MCHI is criticized for not supplying repayment terms, interest charges and other loan-related information for the Artoc and Vula commitments.[20/] In fact, these commitments do not involve debt financing, and are essentially agreements to pay MCHI for the exclusive right to distribute ELLIPSO services in their regions. Thus, there are no interest payments, repayment requirements, security, collateral or other terms

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19/ The agreements, in fact, contain fully negotiated, highly specific and sophisticated provisions as to what constitutes "fair market value" under a variety of circumstances. These provisions, in MCHI's view, have no relevance to the licensing issue.

20/ See, e.g., TRW petition at 21; Motorola petition at 13.

typical of loans in the Vula and Artoc agreements (contrary to petitioners' attempts to suggest otherwise.)[21/]

While MCHI believes that the letters of commitment from its funding sources fully demonstrate the irrevocable nature of those commitments, additional materials, in the form of declarations, are submitted herewith to correct certain misinterpretations reflected in the petitions. In particular, MCHI is including a declaration from Abdel Hamid Helmy, Chairman of Artoc Suez and Board Member of the Artoc Group (**Exhibit 2-A**), a declaration from W. David Thompson, President of Spectrum Astro (**Exhibit 4-A**), and a joint certification from the Vula stockholders (**Exhibit 1-A**).

V. MCHI HAS CONCLUSIVELY DEMONSTRATED THE FINANCIAL CAPABILITY OF ITS INVESTORS AND FINANCIERS

Contrary to the contentions of MCHI's competitors, MCHI has conclusively demonstrated the financial capability of its financial backers. In the letters of commitment previously submitted, each of MCHI's funding sources confirmed its ability to perform its respective financial commitments. In order to address the criticism of its competitors, MCHI is submitting herewith additional, objective evidence which confirms the financial capability of its financial backers.

21/ Similarly ineffective are the petitioners' efforts to suggest that the payment schedules in each agreement have not been sufficiently detailed. In each commitment letter, the parties confirmed that all funding will be disbursed within two years of issuance of the FCC license. This is more than adequate to meet the Commission's implementation schedule (which requires that construction of the first two satellites be completed within four years of licensing and construction commenced on the remaining satellites within three years of licensing.) See, e.g., Motorola Satellite Communications, Inc., *Order and Authorization*, 11 FCC Rcd 13952 (1996). Funding within two years of FCC licensing will thus exceed the actual cash requirements for system implementation. To the extent that more detailed payment schedules may be relevant, this information is included in the attached materials. See, e.g., Exhibit 2-A.

The Commission's Big LEO rules do not explicitly require an applicant to provide documentary evidence with respect to the financial capability of parties providing external funding commitments. In fact, the Commission's Big LEO rules are wholly silent on the showing of financial capability in the case of an external investor or financier.

Leaving aside the question of the Commission's ability to impose an ex post facto requirement that is not explicit in its rules, it should be emphasized that MCHI has, in fact, provided abundant evidence of the financial capability of its external funding sources. MCHI has entered into arm's-length commercial agreements with sophisticated business entities, and MCHI reasonably assured itself of the financial capabilities of the parties to perform their commitments. In the commercial world, one expects contracting parties to enter into agreements in good faith, i.e., they are expected to perform their obligations under the agreements, and MCHI had and has no reason to doubt the ability of the parties to perform their commitments.

Moreover, each of the parties has provided MCHI with a letter of commitment, previously filed with the Commission, which confirms its capability to perform its financial obligations under the pertinent agreement. None of the petitioners has offered any evidence that the contracting parties lack the ability to perform their commitments. Instead, they seek to impose a higher level of proof upon MCHI than is justified by the Commission's rules.[22/]

22/ Although the petitioners have cited a number of broadcast licensing cases in an effort to impose a more onerous evidentiary standard, these cases actually support MCHI's position by underscoring the relevance of the specific FCC information requirements in each radio service. The broadcast application form expressly requires broadcast applicants to certify, not document, their financial qualifications at the time of filing. In one of the cases cited by Motorola, Northampton Media Associates, 4 FCC Rcd 5517, 5519 (1989), the Commission held that, under a pre-1989 version of the broadcast application form (which did not require supporting documentation to be in existence at the time of the

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While MCHI believes that the materials previously submitted contain sufficient evidence of the financial capability of its external funding sources, also included herewith are additional letters from objective third parties familiar with the financial capabilities of the parties which further attest to those financial capabilities. This documentation includes (1) a letter from the Bank of Jakarta confirming that the assets and operating income of TMBK and Mertju Buana exceed US$300 million (**Exhibit 3-A**); (2) a letter from Ian Pierce & Associates, Vula's accountant, confirming that the assets and operating income of Vula's shareholders exceed US$350 million (**Exhibit 1-B**); (3) a financial certification from Bradesco confirming that the assets of Israel Cajai, Spectrum Astro's financial backer, exceed US$11 billion (**Exhibit 4-A-3**); (4) a financial statement for SNS confirming assets in excess of (Australian) $54 million (**Exhibit 5**); and (5) a letter from Artoc's auditors, Shawki & Co. which was submitted on November 13, 1996. We note

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certification), it was sufficient that, at the time of filing, the applicant had an oral agreement with a friend to fund the application and the applicant had "no reason to doubt their assurance that they were financially qualified." See also Bennett Gilbert Gaines, 8 FCC Rcd 1405, 1410 (1993).

Moreover, the cases cited by petitioners establish that, under the post-1989 broadcast standard, the broadcast applicant need not have personal knowledge of the finances of an individual who promises to fund start up expenses, where the financial worth is confirmed on the basis of "objective supporting data or disinterested third parties." CHM Broadcasting Ltd. Partnership v. FCC, 24 F.3d 1453, 1458 n.3 (D.C. Cir. 1994). This evidence need only be "objective information" not limited to a financial statement or balance sheet. Id. at 1458.

Even if the Commission should decide to adopt the broadcast standard in the Big LEO context (presumably following appropriate public notice and comment), MCHI has met this standard by confirming, before filing its application, the financial capability of its backers on the basis of objective information with respect to their financial worth. In addition, objective information further corroborating the financial capability of MCHI's backers is being submitted with this filing.

again that Aon Risk Services, in connection with its investment in MCHI, has examined the credibility of MCHI's funding sources and has pronounced them to be solid.

VI. MCHI HAS FULLY COMPLIED WITH ALL OTHER BIG LEO RULES

Although MCHI's application has been repeatedly subjected to challenges by its competitors, it is significant that no party has ever questioned MCHI's technical qualifications. In fact, MCHI complies fully with all of the Big LEO technical rules.

Perhaps concerned that the Commission would not buy their denigration of MCHI's financial showing, Motorola and TRW attack the cost of ELLIPSO's space segment: Motorola by discovering inflation, and TRW by presenting the unsupported opinions of several of its employees that ELLIPSO's communications payload is underpriced. Yet it is the same payload and same cost structure which failed to attract a word of criticism from November 1994 until now.

TRW erroneously claims that MCHI has not correctly calculated the mass of its satellite (and a related suggestion that this invalidates MCHI's estimated costs). This claim is wholly false and is based upon TRW's unsupported, simplistic "rule of thumb" that satellite payloads should weigh around 100 grams per watt consumed. MCHI seriously doubts whether the complex process of satellite design can be reduced to such an imprecise, simplistic formula.[23/]

23/ In fact, payload mass depends on a multitude of factors including the number of beams, their interconnection, the technology chosen for RF power generation and for frequency multiplexing, the complexity of the antenna steering mechanisms, and the required EIRP. These complex interrelationships cannot be reduced to a simplistic mass/power analysis as TRW attempts to do.

Moreover, even assuming the existence of an historical "rule of thumb," TRW fails to show that past cost models, based on experience with large, geostationary satellites (typically government satellites in TRW's case), are relevant to Big LEO satellite systems which require an entirely new approach and methodology. Mathematical cost models that have been used in the past for large geostationary satellites (including a model used by the Air Force for government procurements which TRW cites), are clearly not applicable to commercial constellations of smaller satellites, and particularly those that MCHI intends to deploy. Among the unique design features of the ELLIPSO satellites (which impact cost) are the following: ELLIPSO's streamlined commercial procurement process, high-volume oriented production-line satellite manufacturing techniques, proprietary weight-saving designs and components, and a shorter satellite lifetime requirement (which reduces size and redundancy requirements of many components). To state the obvious, TRW's satellite design is very different from ELLIPSO's and cannot be used as a generally applicable "rule of thumb" as TRW attempts to do.

MCHI stands by its cost structures which, in any event, are based on pricing of parts, labor and contracts for satellite construction and not simplistic, weight-based formulas.[24/] TRW's unsupported and superficial criticism of ELLIPSO's payload weight, and Motorola's cost-related arguments, must therefore be rejected.[25/]

24/ Substantiating MCHI's estimates are the vendor financing commitments, and related contracts, to provide satellite manufacturing and launch services for the ELLIPSO system, which confirm that MCHI's estimates are based on commercial reality. The inflation argument does not take into account the manufacturing efficiencies and technological advances that, in many cases, have reduced the cost of small satellites and launch services since MCHI's application was first filed.

25/ Although MCHI stands by its cost estimates, it is worth noting that, in any event, the cost

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VII. ALTHOUGH MCHI COMPLIES FULLY WITH THE COMMISSION'S RULES, IF THE COMMISSION SHOULD CONCLUDE OTHERWISE, A WAIVER SHOULD BE GRANTED

MCHI believes that it has fully complied with the Commission's Big LEO rules and should be awarded a license. As fully discussed above, MCHI has conclusively demonstrated its qualifications, technical, legal and financial, to be a Commission licensee. If the Commission should decide that MCHI has not fully met any of the pertinent Commission rules, including the information requirements set forth in Rule 25.140, MCHI requests that a waiver of the particular Commission rule or rules be granted, as necessary to award a license to MCHI.[26/] A waiver in these circumstances would serve the public interest for reasons elaborated below.

First, and most importantly, there is no justification for applying a stringent financial standard in this case given the fact that all of the Big LEO applicants can be accommodated. The rationale for a strict financial test --- as most recently articulated by the Commission in the Little LEO rulemaking --- is based on the possibility that an under-capitalized applicant may prevent another applicant from moving forward.[27/] Whatever the justification for a strict financial test

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arguments are irrelevant. Even assuming arguendo that the argument has merit (which it does not), MCHI has demonstrated committed funds more than sufficient to cover any unexpected cost overruns. Similarly, contrary to Motorola's arguments, interest expenses (which only occur in connection with the vendor financing arrangements) have a negligible impact, if any, on the estimated costs because interest charges under MCHI's vendor financing agreements are covered by the debentures and thus are not incurred until commercial service commences.

26/ See Commission Rule 1.3.

27/ See Little LEO NPRM, supra, at para. 39. See also Satellite Communications, 104 F.C.C. 2d 650, 663-4 (1986). As discussed above, the argument by MCHI's competitors that they will be burdened by the necessity of coordinating with additional systems is wholly irrelevant to the issue of financial qualifications (or to the issue of mutual exclusivity).

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when the financial rules were first adopted in 1994, the withdrawal of AMSC means that all Big LEO systems can be accommodated. It bears emphasis that no other applicants have sought licensing in the Big LEO bands. While theoretically the FCC could initiate a rulemaking to revise the Big LEO rules, such a rulemaking would clearly be a waste of administrative resources and a source of unnecessary delay. It is far easier and efficient simply to grant a waiver of the rules if necessary to accommodate the unique circumstances of this case.[28/]

Second, grant of a license to MCHI would allow important international telecommunications development activities to move forward. MCHI's investors include international entities who have a strong interest in using the ELLIPSO system to provide telecommunications infrastructure in their regions. In the case of South Africa, MCHI's investors envision ELLIPSO as an element in South Africa's Black empowerment efforts and in telecommunications infrastructure development in Sub-Saharan Africa.[29/] Denial of MCHI's application would deny the ability of

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The CDMA systems have agreed that they can share the available spectrum, and intra-service coordination has always been anticipated by the parties. See Big LEO Order, supra, 9 FCC Rcd at 5955. In addition, sufficient feeder link spectrum exists for all of the proposed systems.

28/ This approach would also be consistent with recent Commission decisions in the satellite field including the DISCO I proceeding where the Commission adopted a two-step financial showing for domestic satellite applicants in uncongested portions of the orbital arc. The Commission will issue a conditional permit where the applicant includes specific information regarding attempts to obtain adequate financing and an explanation as to why such financing could not be obtained, along with a public interest justification. In the Matter of Amendment of the Commission's Regulatory Policies Governing Domestic Fixed Satellites and Separate International Satellite Systems, *Report and Order*, 11 FCC Rcd 2429 (1996).

29/ The letter from Vula's stockholders confirms this point (see **Exhibit 1-A**). See also January 13, 1997 letter from Rep. Towns **(Exhibit 7)**.

other countries, and their telecommunications sectors, to evaluate and decide for themselves which satellite system best meets their national needs.

Third, grant of MCHI's application will provide consumers with a lower cost communications alternative. Through ELLIPSO's innovative design (patent issued December 10, 1996),[30/] MCHI is able to reduce overall system costs and, ultimately, costs to the consumer. Of all the Big LEO systems, ELLIPSO is the only system with service costs comparable to terrestrial cellular. It is this pricing structure that has attracted significant interest in the developing world, where there is growing recognition that the ELLIPSO system is more than a rich man's toy and indeed may allow countries to extend their existing telephone infrastructure at affordable rates.

Finally, and perhaps most importantly, grant of MCHI's application will provide competition in the provision of Big LEO services, consistent with long-standing Commission policy most recently reflected in Chairman's Hundt's 1997 FCC Agenda, issued December 26, 1996, in which he said "government should always be on the good side: the side of competition."[31/] The continued exclusion of MCHI from the marketplace can only be characterized as anti-competitive.[32/] Not only does this exclusionary conduct deny consumers the benefits of

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30/ A copy of U.S. Patent 5,582,367 for an "Elliptical Orbit Satellite, System, and Deployment With Controllable Coverage Characteristics" is attached as **Exhibit 8.**

31/ FCC Chairman Reed E. Hundt, The Hard Road Ahead - An Agenda for the FCC in 1997, (December 26, 1996) at 17 (hereinafter referred to as "FCC Agenda"). See also Remarks of Scott Blake Harris, WTAC Symposium, Honolulu, Hawaii, January 18, 1996 ("Competition among systems will benefit consumers --- private and commercial --- through lower prices and more innovative service.")

32/ In our view, the best explanation for the strength and inventiveness of the opposition is in fact fear of competition and the consequent determination to rely upon the regulatory

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competition (including lower costs), but it denies market entry to an innovative small business contrary to well-established national policy recently articulated in Section 257 of the Telecommunications Act of 1996 (as clarified by the Senate colloquy and Congressional correspondence), and by the Small Business Administration in its letters to the Commissioners.[33/] Chairman Hundt's 1997 Agenda acknowledges that:

> Small and entrepreneurial businesses deserve special attention as we examine ways to remove barriers to their entry into communications markets...The procompetitive role of small and entrepreneurial new entrants will be an important factor in realizing Congress' goal of fostering a diversity of media voices, promoting vigorous economic competition and serving the public interest.[34/]

As has been conclusively shown, encouragement of small businesses stimulates wider commercial opportunities. In MCHI's case, implementation of ELLIPSO will provide significant opportunities for a broad range of businesses, in the United States and abroad in the provision of hardware, software and services for the ELLIPSO system. Examples of this economic "ripple effect" include Aon Corporation, which will provide risk management and insurance services for

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> process rather than the marketplace to defeat MCHI. That explains why Iridium, Globalstar and Odyssey, just prior to the ITU's Policy Forum in October 1996, made their extraordinary announcement regarding mutual support (among the three licensed systems) in spectrum allocation on a global basis, with the clear implication that other systems need not be provided for.

33/ See Congressional Record, supra, at S11931 (emphasis added).

> Section 257 directs the Commission to develop meaningful opportunities for small businesses to participate in the ownership and provision of telecommunication services. This language applies to all Commission activities in the area of telecommunications. It does not make exception for activities such as the application of financial qualification standards.

34/ FCC Agenda, supra (emphasis added).

ELLIPSO, and vendors such as Spectrum Astro, Harris, IAI, AEC-Able and others. This industrial participation is dependent upon issuance of an FCC license to MCHI.[35/]

Over the past six years, MCHI has shown itself to be committed to implementing the ELLIPSO system and has spent millions of dollars in designing and marketing its system. Despite this sustained effort, MCHI's competitors continue to try to depict MCHI as a paper system or, alternatively, to suggest invidiously that MCHI's sole motivation is to "flip" a license. Surely, if this were MCHI's intention, there are quicker and easier ways to turn a quick profit than to undertake the major regulatory, technical and marketing efforts that have been required over the past six years.

MCHI has received numerous offers, from larger companies, over the past six years to sell a controlling interest in the company. In fact, it might have been easier to meet the Commission's financial test if MCHI had been willing to transfer control to a larger company (with a more substantial balance sheet). That MCHI chose not to do so reflects its commitment to implementing the ELLIPSO system and to fulfilling the dream of its founders to play a major role in the ultimate success of the project. MCHI hopes that this commitment is apparent from MCHI's patent, the significant business relationships that MCHI has established around the world, and the persistence which MCHI has shown.

35/ Indeed, not only are MCHI's contractual arrangements contingent upon issuance of an FCC license, but an FCC license is a prerequisite to financing as a matter of financial reality. Financial experts from Bear Stearns and Unterberg Harris recently confirmed this point. See Communications Daily, July 25, 1996 at 7. See also Letter to William Kennard from Mark Grannis, Counsel to Teledesic, dated August 20, 1996 ("The real world consequence of not having an FCC license is that it is extremely difficult to enter into formal agreements with potential industrial service providers and investment partners around the world.")

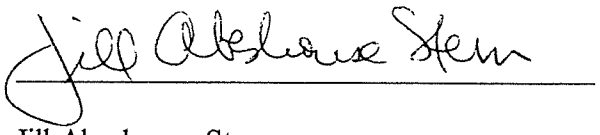
For these reasons, grant of MCHI's application would serve the public interest and the Commission has tools available, including waivers, if necessary, to achieve this result.

VIII. CONCLUSION

For the foregoing reasons, the Commission should promptly grant MCHI's pending application for licensing of the ELLIPSO system and authorize MCHI to proceed expeditiously with implementation of ELLIPSO and the publicly beneficial services it will provide.

Respectfully submitted,

MOBILE COMMUNICATIONS
HOLDINGS, INC.

By: 

Jill Abeshouse Stern
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2300 N Street, N.W.
Washington, D.C. 20037-1128
(202) 663-8380

Its Attorneys

January 23, 1997

City of Washington)
)
District of Columbia)

ss:

AFFIDAVIT OF DAVID CASTIEL

I, David Castiel, being duly sworn hereby depose and state as follows:

1. I am the Chairman and Chief Executive Officer of Mobile Communications Holdings, Inc.

2. I have reviewed the foregoing "Opposition to Petitions to Dismiss or Deny".

3. All of the facts contained in the foregoing document, except those as to which official notice may be taken, are true and correct to the best of my knowledge, information and belief.

David Castiel

District of Columbia)
)
)

ss:

I, Julie Anne Werner, a Notary Public in and for the District of Columbia, do hereby state that on this 23rd day of January, 1997, David Castiel personally appeared before me and attested that the above information is true and correct to the best of his knowledge and belief.

Notary Public

My Commission Expires: JULIE ANNE WERNER
A Notary Public of District of Columbia
~~My Commission Expires March 14~~, 1998

401065-01 / DOCSDC1

EXHIBIT 1

Exhibit 1-A

Vula Communications

27219 George Street
Glen Austin
Midrand
1685

Telephone : 011 314 4871
Facsimile : 011 314-4539

PO Box 6642
Halfway House
1685

Ref: /nr

13 November 1996

Dr David Castiel
President & CEO
Mobile Communications Holdings Inc.
1120 19th Street, N.W.
Suite 450
Washington, D C
20036

Dr Castiel,

By this letter, Vula Communications (Pty) Limited ("Vula") confirms its commitment to pay Mobile Communications Holdings Inc. (MCHI) US $350 million, pursuant to an agreement between MCHI and Vula dated 12 September 1996, in exchange for an equity interest in MCHI and the sale of distribution rights for the ELLIPSO system in Sub-Saharan Africa.

The commitment is non-contingent and is subject only to issuance of an FCC license for the ELLIPSO system. The agreement sets forth a payment schedule pursuant to which the $350 million will be payable in instalments over a two year period commencing 30 days after issuance of the FCC license. The agreement does not provide for a chattel mortgage or secured interest in any facility.

This letter also confirms that Vula has the capability to perform its financial obligations under the agreement. Members of the Vula consortium include Vula Investments, Communications Workers Investment Company, National Union of Metalworkers of South Africa (NUMSA) and the Metal Industries Provident (Retirement) Fund, Sanco Investment Holdings (Pty) Ltd, and the National African Federated Chamber of Commerce (NAFCOC) and Nafcoc Investment Holding Company.

Sincerely,

MARK HEADBUSH
CHIEF EXECUTIVE OFFICER
VULA COMMUNICATIONS
(PTY) LIMITED

Vula Communications

2/219 George Street
Glen Austin
Midrand
1685

PO Box 6642
Halfway House
1685

Telephone : 011 314 4071
Facsimile : 011 314 4039

6 January 1997

Per facsimile: 091 202 4664493

MCHI
Suite 480
1120 19th Street NW
Washington DC 20036
UNITED STATES OF AMERICA

Dear Sirs

This certification is being provided by the undersigned parties for submission to the Federal Communications Commission (FCC) in support of the application of Mobile Communications Holdings, Inc., (MCHI). In particular, this certification is intended to correct certain misunderstandings that are reflected in the comments filed with the FCC on 27 December 1996, with respect to MCHI and its agreement with VULA Communications (Pty) Limited (VULA).

The undersigned parties hereby declare that the following is true and correct to the best of the their knowledge and belief.

1. The undersigned parties represent all of the current stockholders of VULA. Each of the parties hold the below equity interest in VULA. The parties have entered into a Shareholder's Agreement which reflects these initial investment percentages

VULA Investments	26%
Communication Workers Union Investment Holdings (Pty) Ltd	18%
National African Chamber of Commerce Investment Holdings (Pty) Ltd	14%
South African National Civic Organisation Investment Holdings (Pty) Ltd	14%
National Union of Metal Workers of South Africa Investment Holdings (Pty) Ltd	14%
Manyano Trust	14%

2. The undersigned parties are fully aware of and support VULA's agreement with Mobile Communications Holdings, Inc. (MCHI) which provides for the sale of exclusive territorial service rights in Sub-Saharan Africa and a 12% equity interest in MCHI to VULA in return for VULA's irrevocable commitment to pay US$350-million to MCHI upon issuance of a FCC license on an agreed schedule of payments over a two year period commencing upon issuance of the license

3. The undersigned parties stand behind VULA's commitment and have the capability to ensure that VULA performs its financial obligations under the MCHI agreement. In addition, VULA is engaged in discussions with major South African financial institutions, including Boland Financial Services (Pty) Ltd and First National Bank (Pty) Ltd which have expressed strong interest in managing and co-ordinating a loan syndication for the project should it be necessary.

4. The ELLIPSO project and VULA's participation in ELLIPSO represent a major effort on the part of South Africa's Black majority to enter into the economic mainstream. The VULA investment is in furtherance of the South African government's Black economic empowerment effort and enjoys broad support within the South African government. The participants in the VULA consortium represent some 250 000 members of two of South Africa's major black trade unions, the major Black business grouping with some 180 000 members and the major association of Black civic organisations with some 800 000 members.

COMMUNICATION WORKERS UNION
INVESTMENT HOLDINGS (PTY) LTD

BY: _____

VULA INVESTMENTS (PTY) LTD

BY: _____

MANYANO TRUST

BY: _____

The following shareholders were unavailable for signature due to the respective Chief Executive Officer being on annual vacation.

NATIONAL AFRICAN CHAMBER OF COMMERCE
INVESTMENT HOLDINGS (PTY) LTD

SOUTH AFRICAN NATIONAL CIVIC ORGANISATION
INVESTMENT HOLDINGS (PTY) LTD

NATIONAL UNION OF METAL WORKERS OF SA
INVESTMENT HOLDINGS (PTY) LTD

Yours sincerely

MARK HEADBUSH
CHIEF EXECUTIVE OFFICER

Exhibit 1-B

Ian Pierce & Associates

Chartered Accountants (SA)
33 Dudley Road
Cnr Bolton and Dudley Road
Parkwood 2193
P.O.Box 1002 Parklands 2121
Tel (011) 880-6094
Fax (011) 880-1824

January 6, 1997

Dr. David Castiel
Chairman and Chief Executive Officer
Mobile Communications Holdings, Inc
1120 19th Street, N.W.
Suite 480
Washington, D.C. 20036

Dear Dr. Castiel

This letter is being provided at the request of Vula Communications (Pty) Limited (Vula) in connection with Vula's investment in the ELLIPSO™ satellite system. We understand that this letter may be submitted to the Federal Communications Commission (FCC) for association with the pending satellite license application of Mobile Communications Holdings, Inc. (MCHI). We are familiar with the agreements between Vula and MCHI which provide for a sale of exclusive territorial service and other rights by MCHI in return for Vula's commitment of US$350-million.

Vula and its shareholders are privately-held entities and their financial statements are not customarily disclosed to the public. However, in our capacity as Vula's financial advisors, we are familiar with the financial resources available to Vula and its shareholders and confirm that they have the capability to perform their financial obligations to MCHI. To the best of our knowledge, as of the date of this letter, the assets of the Vula shareholders combined are in excess of US$350-million.

Sincerely yours

IAN PIERCE & ASSOCIATES

EXHIBIT 3

Exhibit 3-A

PT. BANK JAKARTA

Head Office
Jl. Menteng Raya 29, Jakarta 10340 - Indonesia
Phone : 3142951 - 3142952 - 3101428
Telex : 61819 Mega Ia - Fax. 3142950

Our Ref. : 025 /Dir/BJ/I/97 Jakarta, January 2, 1997

Dr. David Castiel
Chairman and Chief Executive Officer
Mobile Communications Holdings, Inc.
1120 19th Street, N.W.
Suite 460
Washington, D.C. 20036

Dear Dr. Castiel,

This letter is being provided at the request of PT. Tigamutiara Buanakhatulistiwa (TMBK) and the Mertju Buana Group in connection with TMBK's investment in the ELLIPSO™ satellite system. We understand that this letter may be submitted to the Federal Communications Commission (FCC) for association with the pending satellite license application of Mobile Communications Holdings, Inc. (MCHI). We are familiar with the September 4, 1996 agreement between TMBK and MCHI which provides for vendor financing in the amount of US$.300 million for launch and launch related services for the ELLIPSO™ system.

TMBK and Mertju Buana (the "Companies") are privately-held entities and their financial statements are not customarily disclosed to the public. However, (in our capacity as financial advisor to the Companies) we are familiar with the financial resources available to TMBK and Mertju Buana and confirm that they have the capability to perform their financial obligations to MCHI. To the best of our knowledge, as of the date of this letter, the assets and annual operating income of TMBK and Mertju Buana exceed US$. 300 million.

Sincerely yours,

PT. BANK JAKARTA

DRS. WALDJIMIN
President Director

FOCUS - 1 OF 6 STORIES

July, 1996

SECTION: Vol. 38 ; No. 7 ; Pg. 57; ISSN: 0033-409X

LENGTH: 10735 words

HEADLINE: Asia/Australasia: total P&B output: 80.6 million tons; total pulp output: 35.0 million tons.Annual Review

BYLINE: Hoshino, Seiya ; Cao Pufang ; Zhu Yin-ce ; Lee, C.B. ; Phaskorn Buranawit ; Lai, Larry ; Yie-Lie ; Ben-Tora, Jacov ; Rao, A.R.K. ; Siddique, Hifzul ; Cebi, Ismet Riza ; Anjom, Khosrow ; Musa, Z.A. ; Waslin, Jane

BODY:

... 121% in 1999, before it falls back to 117% in 2000. During the next 5 years, kraft paper will be the main source of demand (60% of total consumption), with printing/writing accounting for 19%, paperboard at 13%, newsprint at 12%, household and sanitary paper at 3% and the rest, miscellaneous.

Phaskorn Buranawit

INDONESIA: Records smashed as pulp production pushes past two million tons

The seemingly irresistible rise of the Indonesian pulp and paper industry continued in 1995 as total paper and board output rose by 12.3% to 3.43 million tons, and total pulp production climbed an incredible 53.8% to edge past the two million ton mark. Orders for new pulp and paper machines are still a regular feature on the news pages, so the trend looks set to continue into 1996 and well beyond.

Among the many projects unveiled just in the past 12 months:

* Asia Pacific Resources International (APRIL) announced a feasibility study into a one million ton/yr pulp line for its subsidiary, Riau Andalan, as well as two woodfree PMs for the Kerinci mill in Sumatra. Riau Andalan only decided that it was going ahead with the first 280,000 ton/yr PM last June. The Korean papermaker, Hansol, is also involved in the paper mill project

* Aspex Paper opted for a third PM to increase newsprint capacity at its Bogor mill by 200,000 tons/yr

* Indah Kiat ordered a new 1,600 ton/day bleached hardwood pulp line for its mill in Perawang as well as two PMs for the Serang mill

* a Thai/Indonesian joint venture between Siam Pulp and Paper and Suryaraya Wahana has drawn up plans for a 350,000 ton/yr pulp mill in East Kalimantan

TABULAR DATA OMITTED

* Surya Agung Kertas ordered a $ 44 million fine paper machine for its Surabaya mill

* and, most recently, it was revealed that **Mertju Buana** and the state-owned forestry company, Inhutani II, have teamed up on a joint venture to build a one million ton/yr pulp mill in southern Kalimantan.

GDP growth of 7.5% provides the backdrop for the massive new investments that have helped push Indonesia's industrial production figures up 18% over the last year.

In volume terms, the pulp increase provides the most dramatic rise at 708,000 runs, as Indonesian pulp producers continue to make the most of the international advantage they have in terms of low production costs. But a 375,000 ton jump in P&B production is also an impressive achievement, even if a 5% drop in mill operating rates (to 74.1%) has come trailing in its wake.

Apparent consumption is up slightly on last year at 14 kg/yr. Although it is always difficult to say exactly what consumption is doing, strong GDP growth combined with favorable economic indicators and a 33% rise in the apparent consumption of corrugating materials all provide strong evidence that true consumption is shooting up.

Production of corrugating materials was up 35.4% on 1994, at 1.15 million tons, and represented the second largest area of growth for Indonesian pulp and papermakers after kraft pulp production.

Pulp imports showed a 4.6% drop compared to 1994 (655,000 tons), while exports soared (up 93.2%) to 470,000 tons in 1995. This still leaves Indonesia as a net importer in the pulp sector, but with all the expansions in the pipeline over the coming years, the deficit is set to be wiped out in the medium term. Another interesting development on the pulp side is that wastepaper imports have almost doubled over 1994 levels to two million tons.

TAIWAN: Consumption falls for the first time in more than a decade

In 1995, paper and board (P&B) production increased by just 1% on the back of a total consumption drop of 1%. Imports of P&B dropped ...

FOCUS - 5 OF 6 STORIES

Financial Times

August 20, 1987, Thursday

SECTION: SECTION I; Commodities & Agriculture; Pg. 28

LENGTH: 850 words

HEADLINE: The Politics Of Indonesian Cloves

BYLINE: John Murray Brown, Jakarta

BODY:

Until recently it was also the world's largest importer, with world prices largely determined by Indonesian domestic needs. In 1981 for example, when clove prices were 9,000 Pounds (pds) a tonne (cif), Zanzibar and Madagascar together supplied Dollars 120 m worth of high quality cloves to flavour the country's "kretek" cigarettes, demand for which was expanding.

That was under a trade protocol signed in 1973 which still stands but, officials suggest, will probably be waived this year because of Indonesia's domestic supply glut.

"If we are to import cloves, what are we to tell out farmers?" says Mr Hamid Ardjo of P T **Mertju Buana,** one of two companies controlling this US dollars 200m-a-year trade.

The clove has always been a political commodity - from the 17th century when European colonial powers fought over its monopoly to the gun-running operations of the clove cigarette makers during Indonesia's war of independence with the Dutch.

Today the trade is again the subject of some public attention, controlled as it is by President Suharto's brother, Mr Probosutejo and Mr Liem Sioe Liong, the country's leading Indonesian-Chinese businessman.

In April, President Suharto entered the debate, making a personal plea to smallholders to hold onto stock if mercahnts continued to offer low prices. Latest reports from the main growing areas of North Sulawesi suggest that prices are continuing to fall as farmers clear stock to meet short-term needs. Meanwhile, cash shortages are preventing the state-run co-operative (Kud) from entering the market to prop up prices, now as low as Rupiah 5,300 a kg (2 pds) compared with Rp 7,000 a year ago.

The crisis results, in part, from the Government's drive for self-sufficiency, prompted by the need to conserve scarce foreign exchange, to provide jobs for a labour force growing by 2 m every year, and to meet the demands of an expanding market for kretek cigarrettes (made of one part cloves to four parts tobacco).

The kretek industry is the country's largest private employer and the

Government's biggest single source of excise tax revenue.

Many private agriculturalists point out that the target would have been reached earlier but for the rapid spread of Sumatra disease, a problem which has decimated the crop in some areas, causing losses to farmers of more than Dollars 20 m a year and severely disrupting the rural economy.

Experts predict that this fungal disease, which kills the tree by attacking its water-carrying vessels, could wipe out plantations in all parts of Sumatra except Aceh in the north-west tip within two or three years, unless a cure is found.

Much will depend on a research ...

Exhibit 3-B

FAX IN

P.T. MERTJU BUANA

Our Ref. : 80 /Dr/MB/XI/96

Jakarta, November 9, 1996

Dr. David Castiel
President and CEO
Mobile Communications Holdings, Inc.
1120 19th Street, N.W.
Suite 480,
Washington, D.C. 20036

Dear Sir,

By this letter, PT. Tiganiutiara Buanakhatulistiwa (TMBK) (a member of the Mertju Buana Group of Indonesia) and the State Design Office Yuzhnoye (Yuzhnoye) confirm their respective financing commitments relating to launch services for the sixteen first-generation ELLIPSO™ satellites ("Required Launch Capability"). The terms of the commitments are fully negotiated and are memorialized in a final agreement between the parties dated September 4, 1996. This letter of commiument is being provided for submission to the FCC in connection with MCHI's license application.

TMBK hereby confirms its commitment to provide vendor financing in the amount of $300 million for the Required Launch Capability. TMBK's commitment is subject only to issuance of an FCC license for the ELLIPSO™ system and does not rest on contingencies that require action by either party. The agreement does not involve a chattel mortgage or security interest in any proposed facility. The terms of the agreement provide for issuance by MCHI of convertible debentures, non-convertible debentures and/or stock in Ellipsat International, a subsidiary of MCHI, upon successful completion of each launch. The agreement also provides for certain distributorship rights.

The principal amount of the debentures and the number of shares of stock will depend upon the amount of vendor financing acually utilized by MCHI. Pursuant to the terms of the agreement, the debentures bear interest at the rate equal to the US Dollars six month LIBOR (London Inter Bank Offered Rate) plus one percent (1%) payable semi-annually in arrears commencing three months after the date of introduction of commercial service for the ELLIPSO system. The principal of each debenture is payable in ten semi-annual installments begining six months after the commercial service date.

GEDUNG TEJA BUANA Lantai 3 Jl. Merdeka Raya No. 29 Telp. 3461388 Tlx. 61222 MB IA Fax. 3101301 Jakarta 10340

Our Ref : /Dt/MB/XI/96
Dated : November 9, 1996

TMBK is pleased to report that our proposal to the Indonesian government to establish a commercial satellite launching centre, has been received enthuasiastically, and is very confident that the Required Launch Capability will be available on time. Because the launch services contract with MCHI is important to the success of our project as a major first customer, TMBK is willing to, and hereby does, commit to provide financing to MCHI for equivalent launch capability in the event that the project in Indonesia does not proceed or, for any reason, is unable to provide the Required Launch Capability. Such financing will be in the same terms as in our Agreement dated September 4, 1996.

This letter also confirms that TMBK in its efforts to establish a Commercial Satellite Launching Centre in Indonesia, TMBK is supported by the full financial, managerial and political resources of the Mercu Buana Group, and therfore TMBK has the capability to perfom its financial obligations under the agreement and this letter.

Yours faithfully,

PT. Tigamutiara Buanakhatulistiwa

By : PROBOSUTEDJO

State Design Office Yuzhnoye
Main directorate for science,
development and testing
Ministry of Defence of Ukraine

By:

Igor Pustoviy,
Chief of main director

Exhibit 3-C

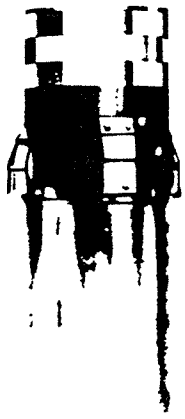
For Affordable Access To Orbit, Just Say "ЦИКЛОН"

In any language, Yuzhnoye's cost-effective Cyclone launch vehicle rates as one of the world's most reliable rockets. In service since 1969, Cyclone has accomplished over 200 successful launches to date.

Combine the Cyclone's outstanding performance record with Rockwell's extensive launch operations and payload integration experience, and you have a low-cost, low-risk way to place 8,000 pounds into space.

For more than 30 years, Rockwell has been making history in parallel with Yuzhnoye, the space pioneers of today's Ukraine. Now our Satellite Delivery Systems Group, in cooperation with the Yuzhnoye Design Office, is your point of contact for this new commercial launch venture.

Call 310-922-4216, fax us at 310-922-2349 or e-mail us at sdsystem@ssd.rockwell.com for more information on arranging a launch. You'll find that when it comes to reducing the cost of spaceflight, Cyclone is the only word you need to know.



КОНСТРУКТОРСКОЕ БЮРО "ЮЖНОЕ"
YUZHNOYE DESIGN OFFICE

Rockwell

EXHIBIT 4

Exhibit 4-A

DECLARATION

I, W. David Thompson, hereby declare that the following is true and correct to the best of my knowledge and belief.

1. I am the President of Spectrum Astro, Inc. headquartered in Gilbert, Arizona.

2. Background and Financial Condition:

Spectrum Astro is a leader in the research, design, development and manufacture of low-cost, high-performance space systems which incorporate advanced technologies for sophisticated military and scientific space missions and selected commercial applications. The company was named the 19th fastest-growing technology company in America between 1989 and 1993 by INC. magazine. The company currently employs 145 people who specialize in the research, development and manufacture of high-reliability space systems and related ground equipment. This staff achieves an output productivity of nearly 3 times the industry average, (measured in revenue per employee) yielding a staff equivalent to nearly 450 employees as measured at a "traditional" aerospace company. The company currently operates in 4 locations U.S.-wide (Gilbert, AZ; Los Angeles, CA; Denver, CO; and Washington, D.C.). We work with customers and potential customers in 30 foreign countries. We currently operate 34,295 square feet of space system engineering, manufacturing, integration and test floorspace at our Arizona headquarters. Spectrum Astro has signed 87 contracts with a total value of $131.1 million since 1988 and collected revenues to date of $60.4 million on those contracts. These current contracts have $58.9 million in current remaining contract backlog for work thru 1998. Spectrum Astro revenues for the year ending September 30, 1996 were $15.6 million. Based on conservatively weighed projections, the company projects revenues for FY-97 of $25.2 million from current contracts and new bookings during FY-97 of approximately $35 million, not including ELLIPSO and several other commercial space projects in development. The company holds a "good" financial rating from Dun & Bradstreet. The company has substantial cash reserves at this time and has no debt or other external financial obligations.

3. Qualifications For Space System Development:

Spectrum Astro is America's fastest low-cost developer of unique space systems, developing and launching new satellites on schedules averaging 14 months from contract go-ahead to launch. Much of this speed and efficiency results from Spectrum Astro's experience and capabilities developed under cutting-edge SDI and Air Force space technology contracts. This expertise has subsequently been diversified into NASA and now commercial business. Satellite projects completed and underway include the following: Spectrum has built and launched three high-performance infrared remote sensing satellites in the Miniature Sensor Technology Integration ("MSTI") series of satellites for the U.S. Department of Defense for ballistic missile defense missions (formerly known as SDI). Spectrum Astro was competitively selected in 1995 by NASA JPL over TRW, Lockheed Martin, Rockwell, OSC and other space

vehicle contractors as Prime Contractor for NASA's next-generation high performance small interplanetary spacecraft known as "New Millennium Deep Space-One." Spectrum was recently competitively selected from a field of 7 bidders by the USAF Phillips Laboratory as Prime Contractor for the USAF's next generation of small high performance technology demonstration satellites. In addition to these satellites, Spectrum provides a wide variety of satellite subsystem hardware, including such activities as: 1) The power and data handling subsystems for the Mars '98 Orbiter and Lander; 2) The Command and Data Handling Subsystem for the 1997 Lunar Prospector Mission to the Moon; 3) The spacecraft electronics for the "Gravity Probe B" space mission to validate a portion of Einstein's theory; 4) Control electronics for the semi-conductor research furnace on the International Space Station; and many other such activities. The complexity of the ELLIPSO satellites is actually lower than that involved in much of our previous DoD and NASA work.

4. On June 26, 1996, Spectrum Astro entered into an agreement with Mobile Communications Holdings, Inc. which provides in principal (a) MCHI will purchase from Spectrum and Spectrum will sell sixteen ELLIPSO satellites; (b) the purchase price for the satellites will be $256 million; (c) Spectrum has agreed to provide vendor financing to MCHI for an amount up to $206 million. The vendor financing provided by Spectrum Astro is irrevocable and does not rest on contingencies which require action by either party. The agreement provides that MCHI will issue stock in MCHI to Spectrum in an amount equivalent to the purchase price of each satellite upon successful completion of the satellite. Alternatively, Spectrum Astro may elect to receive a debenture in the principal amount of the satellite convertible into MCHI stock.

5. Spectrum may obtain a maximum of six percent (6%) of MCHI stock, with the remainder in the form of debentures which are payable in ten semi-annual installments of principal and semi-annual payments of interest in arrears (equal to the U.S. Dollar six month LIBOR rate plus one percent). Interest payments commence three months after the date of introduction of commercial service for the ELLIPSO system; and principal payments commence six months after the commercial service date. Regardless of the commercial service date, payments of principal and interest will commence thirty-six months after completion of the satellite in payment of which the debenture was issued. There is no chattel mortgage or security interest in the facilities.

6. With respect to the $206 million, a portion of that amount ($43,520,000) represents Spectrum Astro's profits that it is willing to defer until the beginning of ELLIPSO's commercial operations, and this does not involve cash outflow by Spectrum Astro. MCHI agreements from space hardware component vendors will reduce the cash requirement for the satellites by $28 million. A letter from AEC-Able, the solar array vendor, is attached.

7. This yields a projected cash flow from Spectrum Astro of $134,480,000 (the $206 million less deferred profit and vendor concessions) over a 36-month period, or approximately $45 million per year cash flow. While Spectrum Astro expects to be able to carry a portion of those costs with internal funds and ordinary short-term revolving credit from our bank, Bank of America, we have arranged an irrevocable commitment from a Brazilian company, Interacoes Urantia-Cajai Ltda., to provide up to $206 million in financing that is needed to meet Spectrum's vendor financing commitment in return for a profit-sharing agreement secured by a back-to-back pass-through of Spectrum Astro's equity and debenture positions in MCHI for the vendor financing. A commitment letter signed by Dr. Israel Marques Cajai, President of Interacoes Urantia, is attached (Attachment 1). Spectrum Astro has performed a due diligence on Dr. Cajai and Interacoes in Brazil, meeting with Cajai's attorney and Certified Public Accountant, and receiving certified and notarized financial statements from his bank.

8. We verified that Dr. Cajai originally trained as an architect and bioenvironmental engineer and is now a major landowner and industrialist in Brazil, with interests in land, farming, timber, gold mining and numerous other business activities.

9. On one property alone in the Interacoes portfolio of assets, we verified that Cajai was the owner of over 86,000 hectares of land (approximately 212,420 acres, or 331 square miles). An appraisal of the gold mineral value or a portion of that property by the Brazilian National Mineral Production Department (DNPM) yielded gold mining value alone of over U.S. $180 million, not including the value of alluvial diamonds which occur throughout, timber, agriculture potential, etc. This was certified by sworn public translator, Suzanne Apsan (Attachment 2).

10. In addition to numerous additional due diligence elements not filed here to protect sensitive commercial information, Spectrum Astro was provided a certified and notarized financial statement for Dr. Cajai's assets by the Brazilian bank Bradesco, a major commercial bank in Brazil, dated 10 October 1996, (Attachment 3, with sensitive personal address and telephone data redacted) which certifies substantial asset value well over the cost of the entire ELLIPSO project, let alone Cajai's $206 million commitment to Spectrum Astro. Based upon the Attachments and other due diligence information provided to Spectrum Astro, we are highly confident that Interacoes has the ability to meet their commitments.

11. Relationship to Israel Aircraft Industries:

Spectrum, as Prime Contractor for the satellites, intends to proceed to place major subcontracts for satellite component hardware with Israel Aircraft Industries (IAI) in satisfaction of their workshare agreements and commitments with MCHI. Spectrum Astro's position with MCHI does not conflict with IAI's at this time, as IAI will receive their workshare through subcontracts.

W. David Thompson

Dated: 8 JANUARY 1997

Exhibit 4-A-1

Exhibit 4-A-2

INTERAÇÕES URÂNTIA - CAJAI LTDA.
Israel Marques Cajai - Arquiteto e Ambientalista CREA/SP 75.921
Rua Capitão Cavalcante, 341 - Vila Mariana - São Paulo - S.P. - Brasil
Tel. 55 11 574-6711/Fax 55 11 549-4175

8 November 1996

Att: Mr. W. David Thompson, President
Mr. Miguel Salerno
Spectrum Astro, Inc.
1440 N.Fiesta Blvd.
Gilbert, AZ 85233
USA

Ref.: Assitence with ELLIPSO FCC Filing

Dear Mr.Thompson and Mr. Salerno,

First, we would like to thank you for the invitation to work together with you in this project, our company can represent and develop the project in the management area in Brazil and all Latin America.

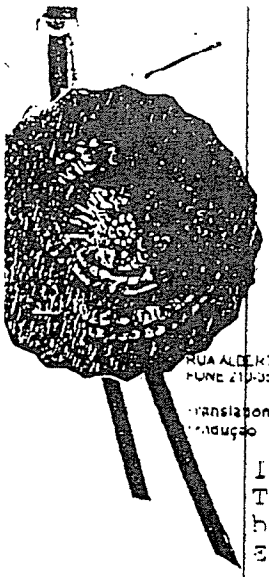
We would like to inform you that we are ready to work in this program.

This letter documents our agreement and irrevocable commitment to join with Spectrum Astro, Inc.to provide the financing of up to $206 million in support of Spectrum Astro, Inc. previous vendor financing commitment to Mobile Communications Holdings, Inc. to the development and manufacture of 16 satelites for the ELLIPSO space-based telecommunications project, according to the terms of our profit sharing agreement on this program. We have included a copy of our financial assest statement.

Please, do not hesitate to contact us should there be any questions in this matter

Sincerely,

INTERAÇÕES URÂNTIA - CAJAI LTDA.
Israel Marques Cajai-President



REPÚBLICA FEDERATIVA DO BRASIL

SUZANNE EVELYNE APSAN
OFÍCIO DE TRADUTORA PÚBLICA E INTÉRPRETE COMERCIAL
PUBLIC AND SWORN TRANSLATOR
IDIOMA INGLÊS - ENGLISH LANGUAGE

RUA ALBERTO CARDOSO DE MELLO NETO, 110 - APTO 61-B
FONE 210-3503 - SÃO PAULO - SP

MATRICULADA NA JUCESP SOB Nº 509
CPF (MF) 447.458-11

Translation Nº 02862 L. Fl.

Data: 17 DEZ 1996

I Suzanne Evelyne Apsan, the undersigned Sworn Translator and Commercial Interpreter, certify this to be the faithful translation from Portuguese into English of a document with the following tenor:

Serviços Topográficos Especializados de Precisão Ltda. STEP

APPRAISAL FOR MINING AREA OF GOLD AND DIAMOND

OWNER: ISRAEL MARQUES CAJAI, as per public instrument of right assignment drawn on sheets 169 and 170, book No. 027 on 12/11/96 at the 1st. Notary's Office in Grão Mogol County - Minas Gerais and duly transcribed at Title and Documents Registry Office in that County, book C-2, sheets 044v, under No. R-352, on 12/12/96 and registered at Real Estate Registry Office in same County under No. AV-15-791, sheets 208v, book 2-F, on 12/12/96 in the municipality of Grão Mogol - Minas Gerais - Brazil.

By this appraisal instrument we checked "in loco" and attest under the privileges and attributions conferred by Law as Geologist and Surveyor as follows.

Mining areas applied for at the National Mineral Production Department - Brazil:

Proceedings DNPM No. 831,954/86
Proceedings DNPM No. 832,358/86
Proceedings DNPM No. 830,804/88
Proceedings DNPM No. 830.805/88

and licenses thereof:

No. 1856 of 08/11/1995
No. 710 of 03/22/1995
No. 127 of 02/15/1995
No. 126 of 02/15/1995

02862

having a total area of 3.991.99 ha issued and published in the Federal Official Newspaper that were acquired from Mrs. Hilda Alkmim Ferreira de Pádua and Mr. Emanuel Ferreira de Pádua, a mining area of GOLD AND DIAMOND.

Said area makes part of a rural deed with a total area of 861,1919ha.

Value:

Value Calculus:

After an assiduous research in the areas under examination, there was verified in emerging mineralized rock 1,44 p.p.m of Au, being valuated 15 tons of GOLD.

As the gold quotation is US$12.00 per gram, we have

15,000,000 grams x US$12.00 = US$ 180,000,000.00 (ONE HUNDRED AND EICHTY MILLION US DOLLARS)

In the researches host rocks having a valuated amount of 300 tons of AU ore-GOLD were found. It is relevant to be pointed out in this careful geological work that the whole area of 3,991.99 ha (hectare) diamonds occur in several alluvion deposits.

Exploitation:

Having in view the geomorphology of the areas, the development and implementation of services in the mine shall be on the surface.

Checking of Hydric Resources:

Said areas are located on ESPINHAÇO massif next to the cities of Grão Mogol and Diamantina, and in their boundaries the springs of Canabrava, Manuel Joaquim and Ribeirão Ponte Alta, stream of Jequitinhonha River are

LEVEL 1 - 2 OF 2 STORIES

Source: Reuter Textline
Business Times (Singapore)

July 20, 1993

LENGTH: 1160 words

HEADLINE: SINGAPORE: S'PORE-BASED MEDICAL GROUPS PLAN MAJOR REGIONAL THRUST

BYLINE: By Jenny Lam

BODY:

SINGAPORE - Seven Singapore-based private hospital and medical groups are planning to expand into the Asia-Pacific in a big way. Their scope of interest ranges from consultancy services to building and managing various kinds of clinics and hospitals.

The move abroad is spurred by the saturated hospital market here and the ample opportunities overseas as Asia's healthy economic growth continues to spawn an affluent group seeking quality health care.

These factors, coupled with the high development costs and the high standard of experienced medical expertise available in Singapore, are prompting those involved in health care to look overseas. As Gleneagles International's business development director Dr Ronnie Tan pointed out: "The obvious thing is to reach out and be a provider in the region. This is the next phase of growth as we have gained experience here." Leading the pack in the venture are established hospital groups Gleneagles International (GI), which owns hospitals and medical centres in Singapore and Malaysia by the same name, and National Medical Enterprises Inc (NME), which owns Singapore's Mount Elizabeth Hospital and Medical Centre and East Shore Hospital.

GI, the health care arm of publicly listed Parkway Holdings, is aiming for a chain of hospitals and medical centres in Asia. In Indonesia, the group has signed a memorandum of understanding with the Lippo Group - a conglomerate with interests in banking, insurance and property - to study the feasibility of a chain of hospitals in Jakarta and Surabaya.

A current GI project is a 250-bed joint venture hospital in Medan with partners Indonesian food processing and property company PT **Mertju Buana** (the major shareholder) and Hongkong investment firm Alpeg International. The S$ 45-million hospital complex is to open by late 1995.

As for NME Inc, one of the largest health care groups in the US, its international division's president Michael Ford told BT that NME is studying prospects in Asian countries and that "there is no limit" to the company's investment in this area.

In Bangkok, NME Inc is finalising a deal for a 40-per cent share in Bumrungrad Medical Centre, a tertiary general acute care hospital. Its other partner is the listed Bumrungrad Hospital Corporation. The present hospital will be replaced by a new US$ 110 million (S$ 178 million) 530-bed hospital to be

completed in 1996.

In Malaysia, NME has tied up with conglomerate Sime Darby Bhd to build and manage a chain of hospitals and medical centres. It has started scouting for a site in Johor to build a hospital and is adding a 150-bed block to its Subang Jaya Medical Centre in Kuala Lumpur.

More projects are being planned in Australia, where it already owns and runs nine hospitals through the Australia Medical Enterprises, a recent joint venture with publicly-listed Makalinga. The latest project is a tertiary general acute care hospital in Sydney costing AS$ 90 million (S$ 98 million), to be ready next year.

"We welcome the competition. I think there's plenty out there for everybody ... there is a sizable pool who can afford private health care in Asia," said Mr Ford.

Smaller hospitals such as Singapore's two-year-old Balestier Medical Centre (BMC) and Thomson Medical Centre (TMC) are also keen to regionalise, particularly in China and Malaysia. For example, BMC is interested in one or two medium-size tertiary acute care hospitals.

Medical Supply and Services, owner of TMC, Singapore's only private acute care hospital for women, made headlines last month when it bought London's Hallam Medical Centre via its subsidiary, London Women's Clinic.

Even the providers of primary health care want a slice of the action. Shenton Medical Group wants to export its comprehensive health screening facility, under local subsidiary Executive Health Screeners, to Beijing and Shanghai. And the Raffles Medical Group plans to move into countries such as Indonesia and China.

Sources say the Raffles group is joining the newly-established NTUC Healthcare Cooperative to own and manage primary health care cum day-surgery centres in China, starting with a medical and health centre in Beijing. To be completed early next year, the centre is a joint venture with the All China Federation of Trade Unions.

The cooperative's executive secretary, Seah Kian Peng, said more of such projects would be planned for China and the region if the first succeeds.

-

BUSINESS TIMES, 20 July 1993

LOAD-DATE: July 20, 1993

EXHIBIT 8

US005582367A

United States Patent [19]

Castiel et al.

[11] Patent Number: 5,582,367

[45] Date of Patent: Dec. 10, 1996

[54] ELLIPTICAL ORBIT SATELLITE, SYSTEM, AND DEPLOYMENT WITH CONTROLLABLE COVERAGE CHARACTERISTICS

[75] Inventors: **David Castiel**; **John E. Draim**; **Jay Brosius**, all of Washington, D.C.

[73] Assignee: **Mobile Communications Holdings, Inc.**, Washington, D.C.

[21] Appl. No.: **197,260**

[22] Filed: **Feb. 16, 1994**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 892,239, Jun. 2, 1992.

[51] **Int. Cl.**[6] **B64G 1/00**; H04B 7/185

[52] **U.S. Cl.** ..... **244/158 R**; 342/355; 342/357; 455/12.1; 455/13.1

[58] **Field of Search** ..... 244/158 R, 164; 342/355, 356, 357, 358; 455/12.1, 13.1

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Primary Examiner—Andres Kashnikow
Assistant Examiner—Virna Lissi Mojica
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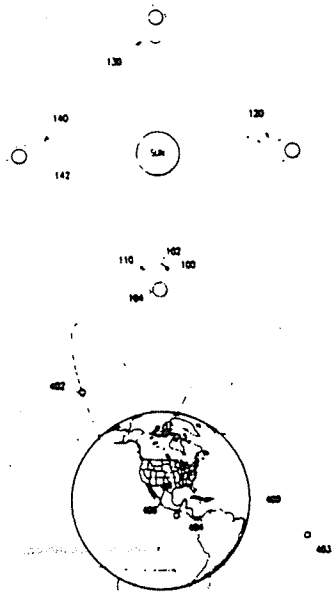
[57] **ABSTRACT**

A special set of elliptical satellite orbits are described which allow preferential coverage of one parameter over another. According to a first modification, the orbits are retrograde, and preferentially cover one geographical location or time of day as compared with another. A second modification uses prograde orbits and allows the apogee of the orbit to be offset a constant amount with respect to the sun, to thereby cover a different time of day relative to the others. According to a special preferred mode of the invention, the apogee is always pointing towards the sun.

30 Claims, 15 Drawing Sheets



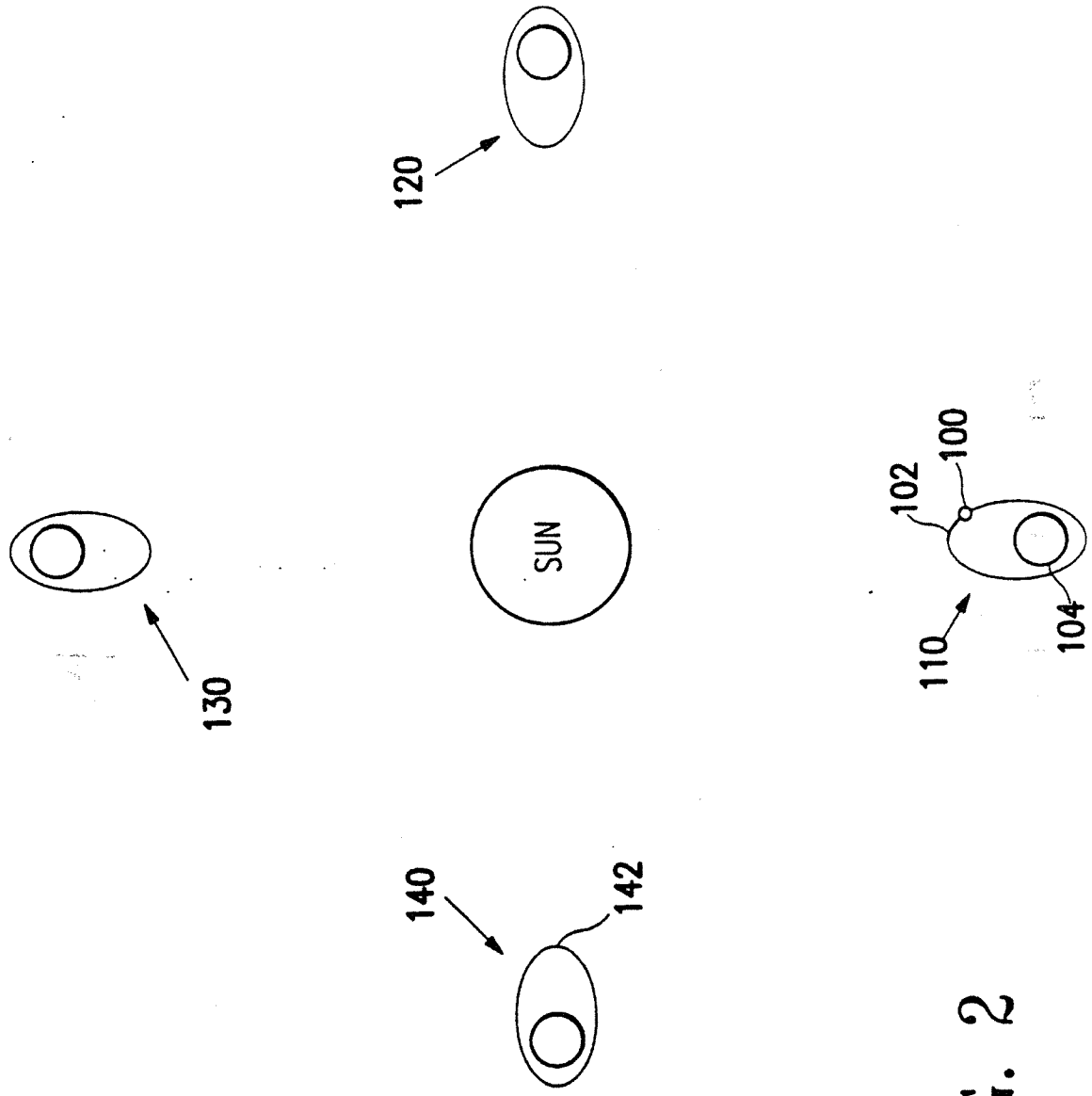


FIG. 2

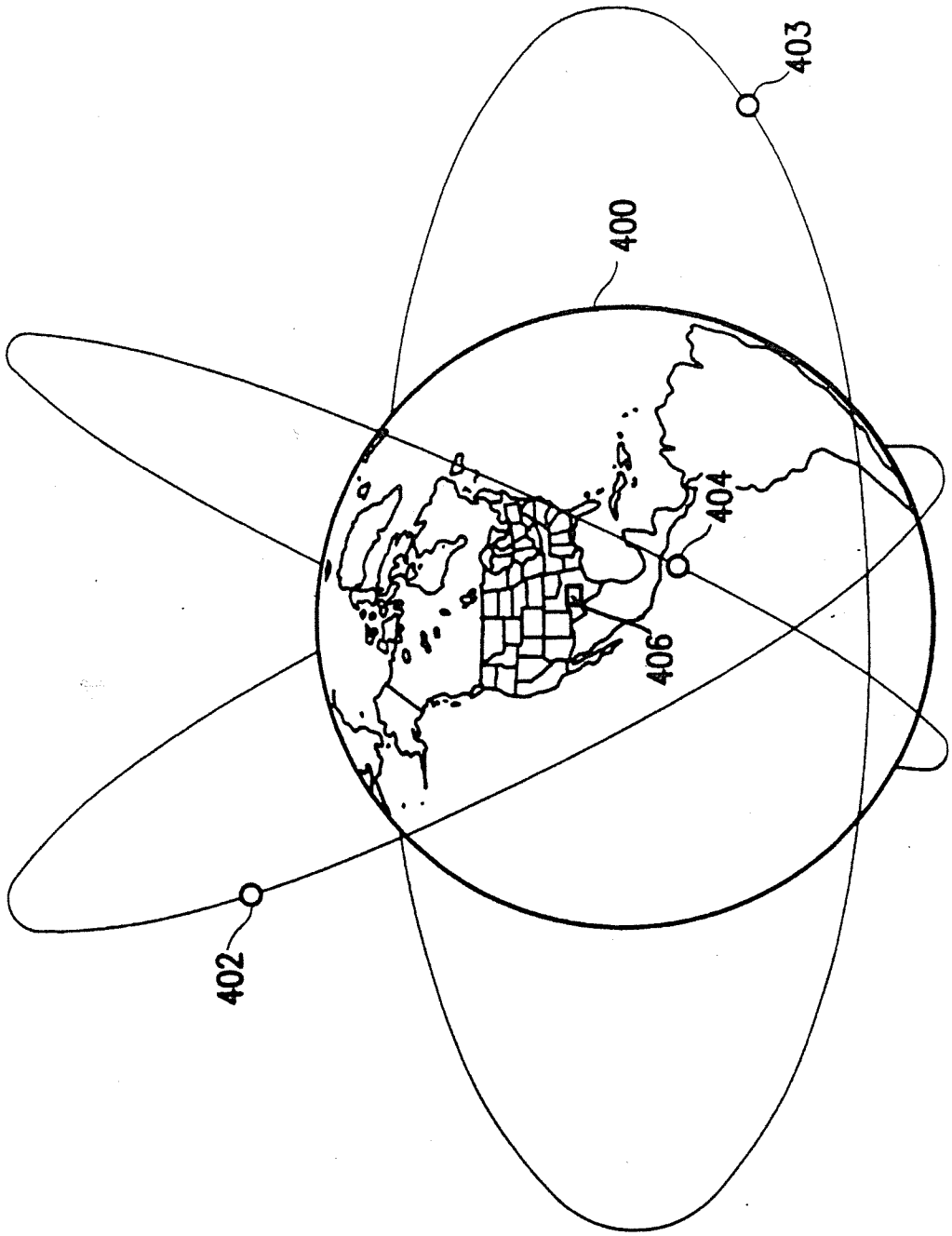


FIG. 4

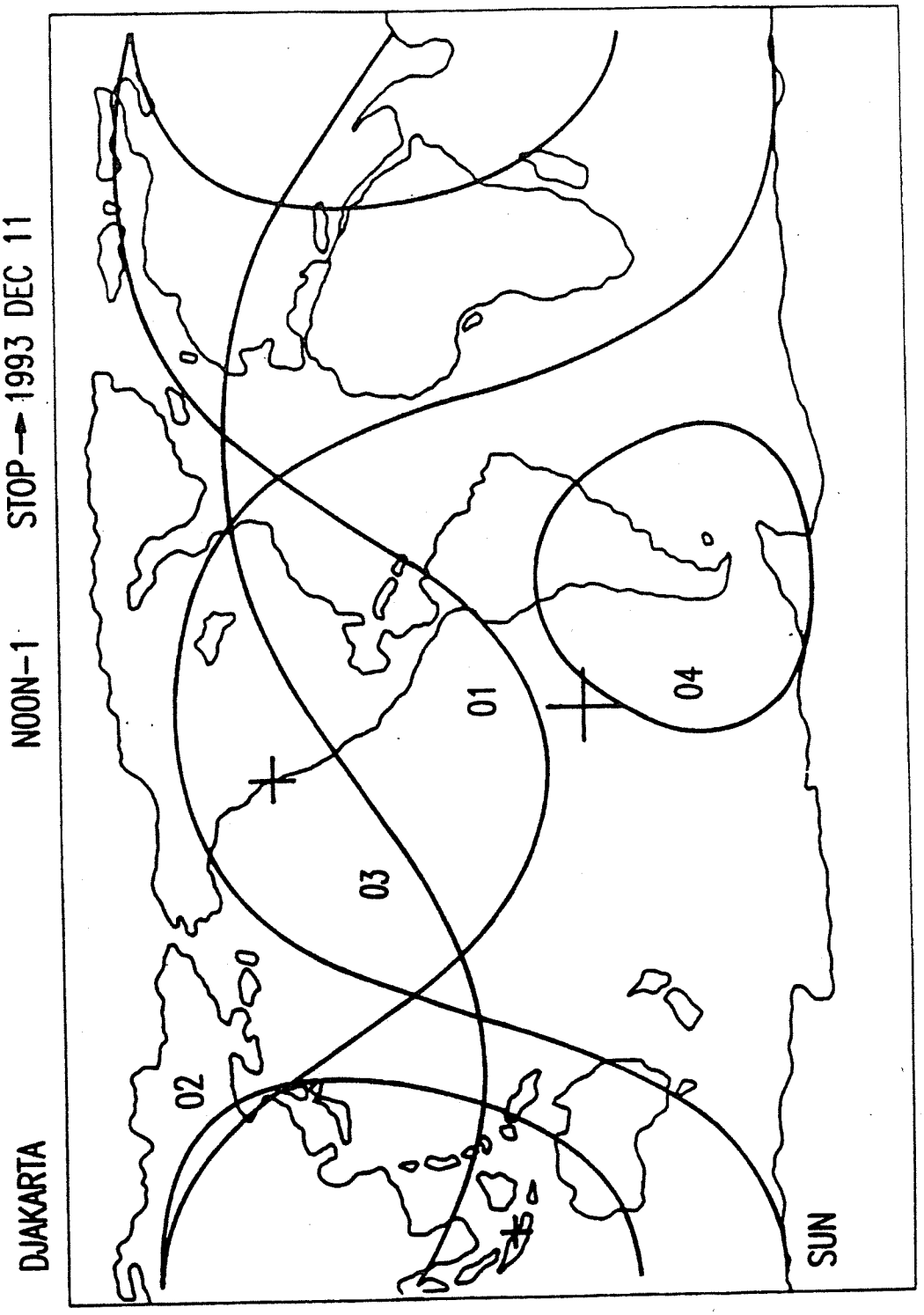


FIG. 6

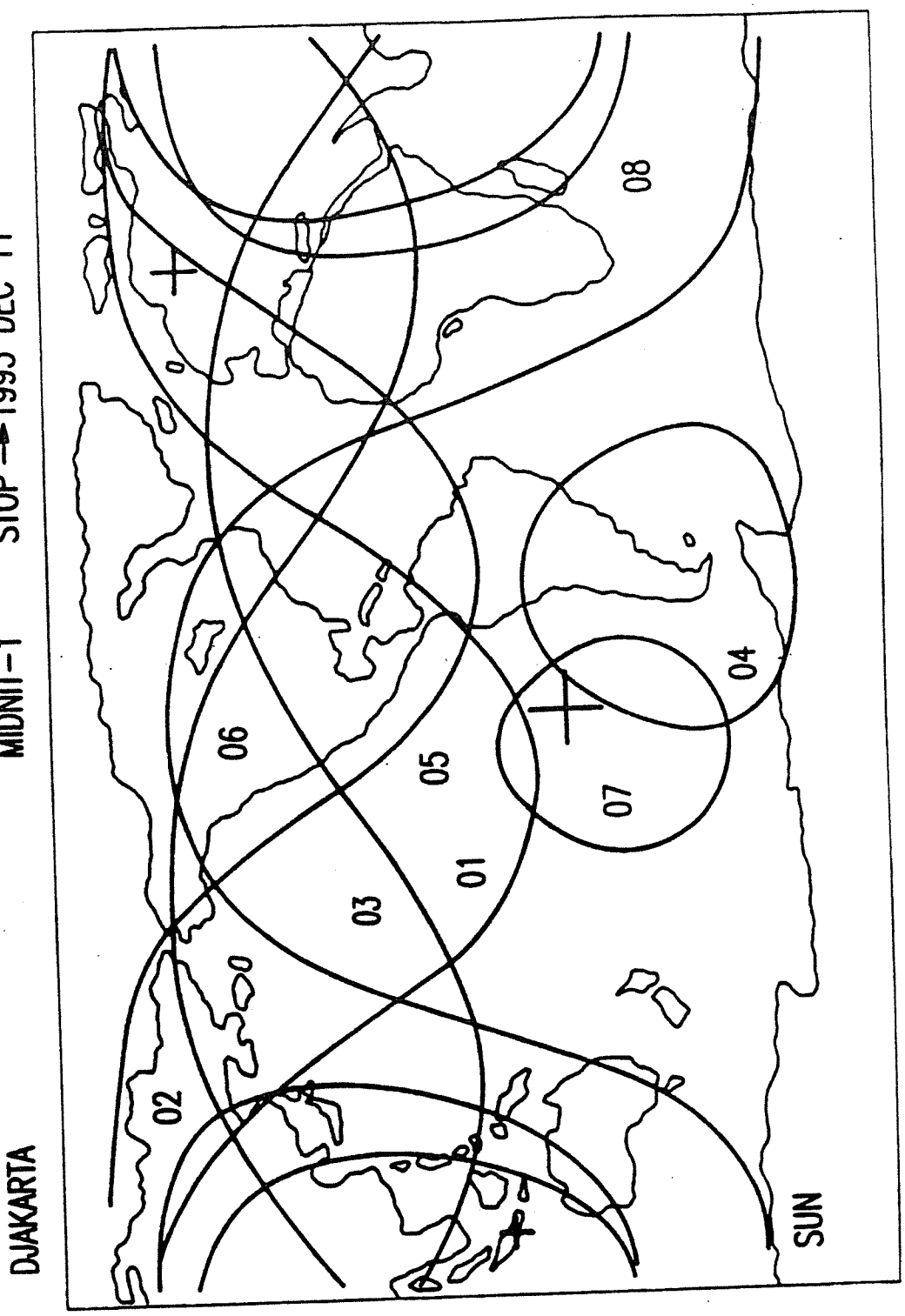


FIG. 7B

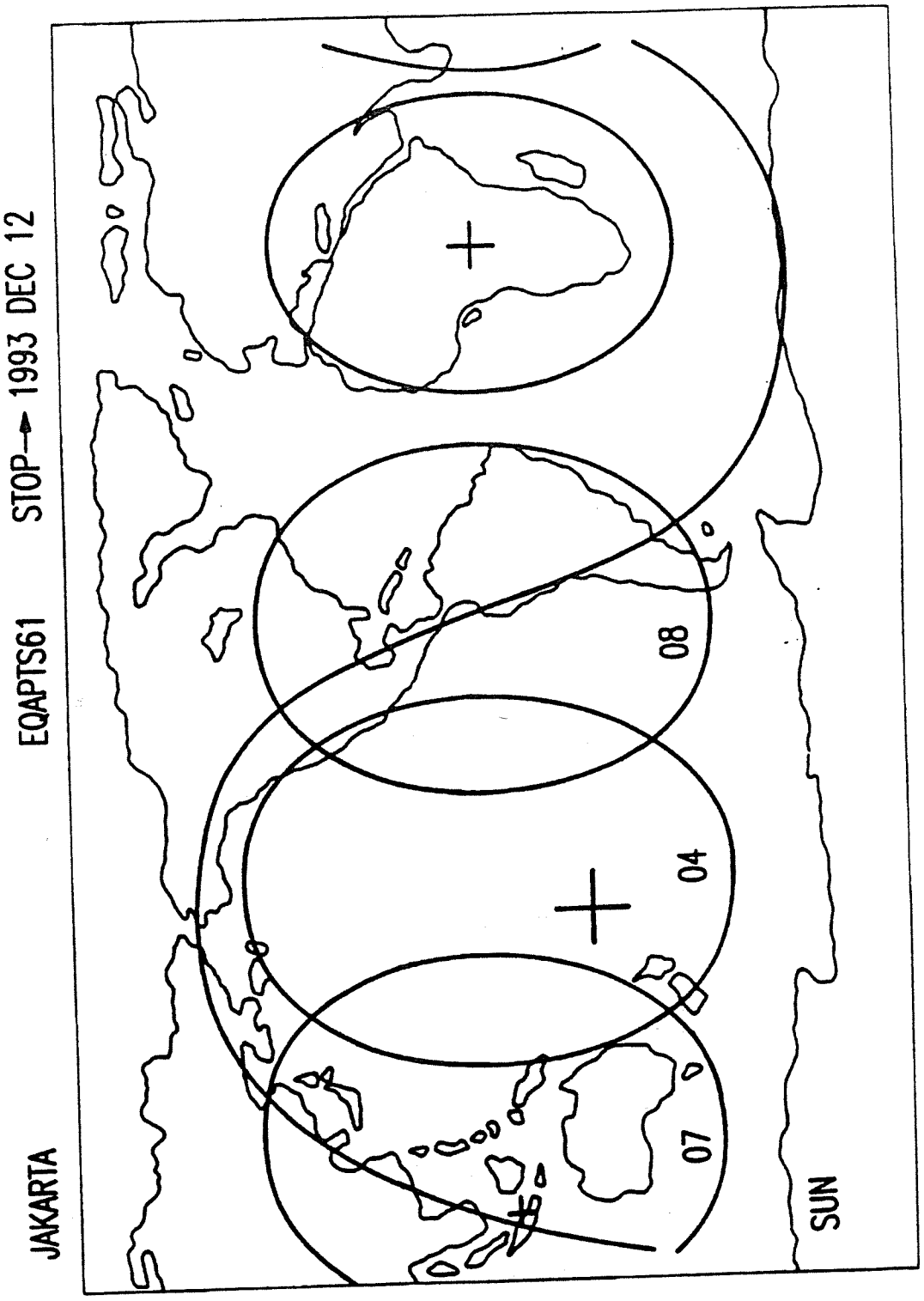


FIG. 8B

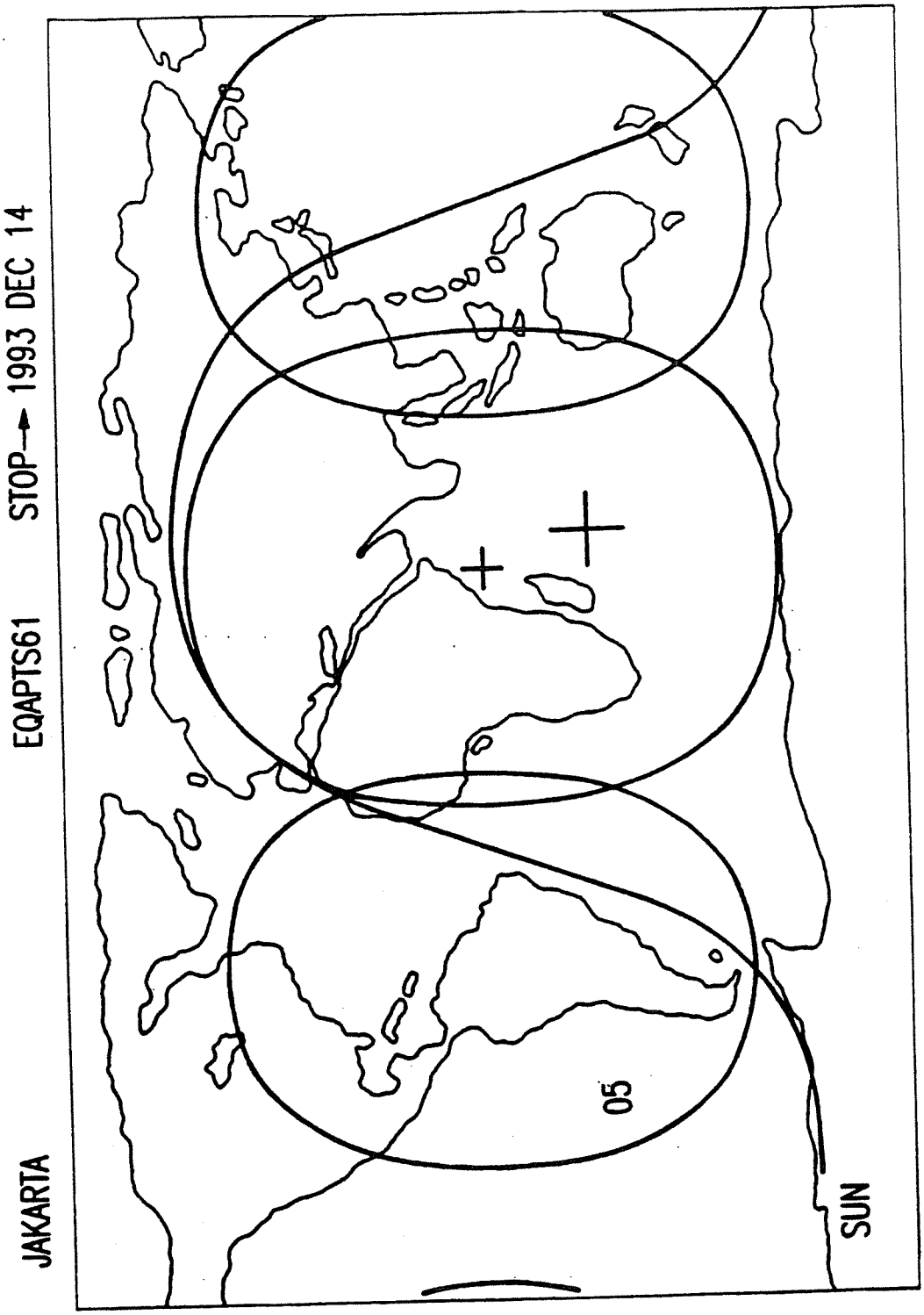


FIG. 9B

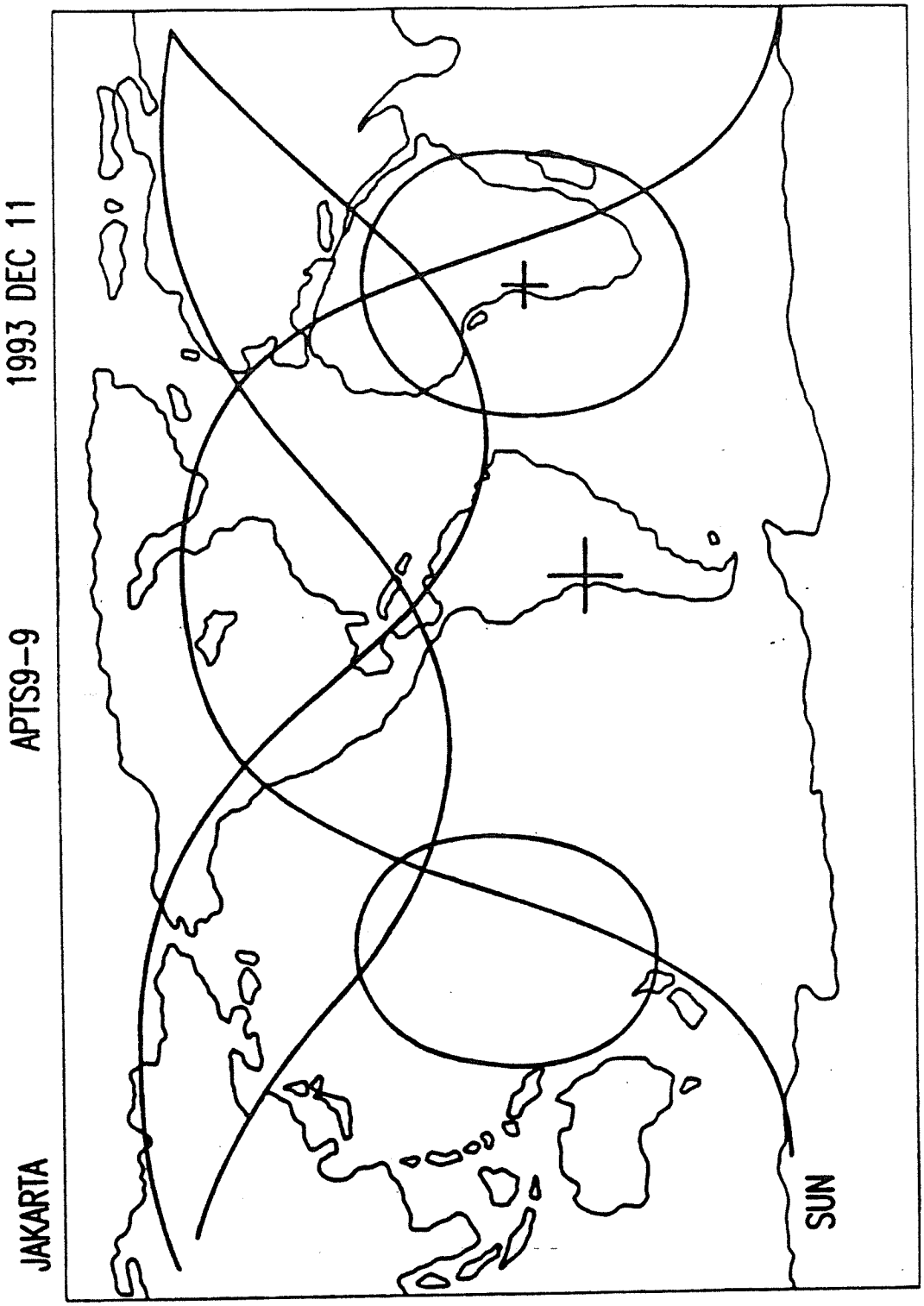


FIG. 10A

ELLIPTICAL ORBIT SATELLITE, SYSTEM, AND DEPLOYMENT WITH CONTROLLABLE COVERAGE CHARACTERISTICS

This is a continuation-in-part of application Ser. No. 07/892,239 filed Jun. 2, 1992, pending.

FIELD OF THE INVENTION

The present invention relates to elliptical satellite orbits, constellations, methods, and communication systems.

BACKGROUND OF THE INVENTION

The concept of artificial satellites circling the earth was introduced to scientific literature by Sir Isaac Newton in 1686. Things have gotten considerably more complicated since that time, however. The basic concepts of an orbit are described in any orbital mechanics or astrodynamics textbook, such as "Fundamentals of Astrodynamics" by Bate et al. or "Orbital Mechanics" by Chobotov, AIAA Education Series, Publisher. The following definitions of these terms will be first provided here, since they are necessary for proper understanding of the present invention.

The earliest satellites placed into space by man were deployed into very low circular orbits. The resulting visibility footprint of one of these satellites was quite small and a single satellite had the added disadvantage of providing only a few minutes of coverage per day. In fact, it was quite common for an observer on the equator to miss being in contact with such a satellite for several days. Raising the satellite to a higher orbital altitude (e.g., ≈600 nautical miles) helped extend both the coverage footprint, average viewing elevation, and the time in view, but for some missions frequent or even continuous coverage became a requirement. This led to the deployment of early multiple satellite systems, a typical example being the Navy's Transit navigation satellite system. Satellite systems designers were increasingly asked to provide continuous coverage; first, for latitudinal zones and then, for the entire globe.

One of the first constellation designers to study zonal coverage was David Lüders. The Englishman, John Walker, was the first to systematize the design of multiple-ring, multiple satellites per ring, constellations and his work contributed greatly to the optimization of a number of multi-satellite systems (e.g., NAVSTAR GPS). A Russian designer, G. Mozhaev, independently came up with similar arrays using a more theoretical approach based on mathematical set and group theory. Polar constellations often employed the concept of "street-of-coverage", and further coverage improvements were made by Beste, Ballard and Rider. More recently, Hanson and Linden have investigated large arrays of low earth orbit "LEO" satellites (40–200 satellites). All of these designers employed circular orbits; and even with this simplification, constellation design was considered at best a difficult and time consuming trial and error exercise.

The motion of any artificial satellite may be described using a number of parameters. The eccentricity, e, is a measure of the amount of ellipticity. An orbit which has a greater eccentricity number is more elliptical. Eccentricity e=0 would describe a circle, any number between 0 and 1 is an ellipse, and the eccentricity number of 1 or greater would be a parabola or a hyperbola, respectively (curves which never close).

For an elliptical orbit, the earth, or the object being orbited, is at one of the focal points of the ellipse. Therefore, the satellite is sometimes closer to the earth than at other times. The apogee is defined as the point of highest altitude of a satellite, while perigee is the point of lowest altitude.

A retrograde orbit is one in which the direction of revolution is opposite to that of the earth. A posigrade or prograde orbit is an orbit in which the satellite revolves around the earth in the same direction as the earth.

The inclination angle i is an angle measured between the plane of the orbit, and a plane of the reference, usually the Equator. An inclination angle i less than 90° is a prograde orbit, while an inclination angle greater than 90° is a retrograde orbit. A 90° orbit is a polar orbit.

The period, T, is a measure of how long the satellite takes to make one entire orbit. Mean anomaly M is another way to describe the position in the orbit. Mean anomaly is a fictitious angle indicating the fraction of 360 degrees corresponding to the fraction of the period through which the satellite has passed at any point of its orbit.

The Right Ascension of the Ascending Node ("RAAN") is an angle between the first point of Aries (γ), a non-rotating celestial reference, and the line of nodes, which is the line forming the intersection of a plane of the orbit and the plane of the equator. The line of nodes gives a measure of the position or orientation of the orbit. The longitude of the ascending node Ω is the angle between the i unit vector (pointing towards the Greenwich meridian) and the ascending node in the rotating reference.

The argument of perigee ω is an angle measured in the plane of the orbit between the point of the ascending node and the nearest point of perigee.

Most practical satellites prior to the invention by the present inventors used relatively simple systems based on circular orbits. The earth was covered symmetrically by multiple satellites, which each operate to cover a section of the earth.

Elliptical orbits have been typically avoided in the art, because of their asymmetries, and the consequent problems that they might cause. However, some individual elliptical orbits and elliptical orbit constellations have been proposed. The Russian Molniya orbit is a posigrade orbit designed for polar and high latitude coverage. Other posigrade orbits have been described by John Draim in his U.S. Pat. Nos. 4,809,935 and 4,854,527.

U.S. Pat. No. 4,809,935 describes a three-satellite constellation giving continuous coverage of the entire Northern hemisphere, and an extension of this constellation to include an equatorial orbit resulting in a four-satellite array giving continuous global coverage of both hemispheres. This latter four satellite array provided somewhat higher elevation coverage in the Northern hemisphere than in the Southern Hemisphere.

U.S. Pat. No. 4,854,527 describes a common period four-satellite array giving continuous global coverage with satellites at a lower altitude range than in the first patent. A discussion of obtaining extra Northern Hemisphere coverage through use of elliptic satellite constellations may be found in ANSER Space Systems Division Note SpSDN 84-1, "Satellite Constellation Design Techniques for Future Space Systems" dated September 1984, by John Draim, and James Cooper. Another application of posigrade elliptic orbits is the ACE and ACE-Prime orbits developed by Mr. A. Turner of Loral Corporation.

The present invention also simplifies the design of the solar panels by requiring no more than 1 or 2 degrees of

Construction of a satellite with argument of perigee value other than 90 or 270 degrees, such that the apogee locations may be preferentially oriented in any desired direction, preferably towards the earth-sun line, giving more extensive (in both time and earth central angle) coverage, and such that improved coverage during daylight hours is achieved, than during nighttime hours, for locations at all longitudes from −180 to +180 degrees (or 180 W to 180 E).

Provision of the required satellite elevation angles within specified latitude ranges, with appropriate day-night biases, for the retrograde elliptic orbit defined.

Provision of a satellite orbit that maintains its integrity year-in year-out through precise orbital injection control so that coverage characteristics are maintained throughout the satellite constellation lifetime. Note: minor orbital adjustments may be required to account for smaller perturbations , e.g. third order or higher and/or solar perturbations, which are experienced by the satellite.

The novel features of this aspect include:

greater satellite Earth coverage can be provided during the daylight hours (or business day, when there is heavy utilization of telecommunications or other useful services),

116.565 degree orbit plane inclinations, as described according to the first preferred embodiment will provide continuous coverage of the high latitude and polar regions with elliptic orbits, not obtainable from equatorial plane orbits.

Relatively low orbits, which can be obtained using corresponding smaller rocket boosters.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other aspects of the invention will now be described in detail with reference to the accompanying drawings, wherein:

FIG. **1** shows a first design space for elliptical sun synchronous retrograde orbits according to a first embodiment of the present invention;

FIG. **2** shows the characteristics of a special orbit according to a second embodiment of the present invention in which the apogee is always pointing towards the sun;

FIG. **3** shows a design space for this second embodiment of the present invention using prograde orbits;

FIG. **4** shows a constellation of satellites, each orbiting and communicating with earth stations on the earth;

FIG. **5** shows a rocket and inertial guidance unit used according to the present invention to propel the rocket into orbit; and

FIGS. **6**, **7A**, **7B**, **8A**, **8B**, **9A**, **9B**, **9C**, **10A** and **10B** show characteristics of preferred orbits of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention exploits the gravitational effects from the earth's oblateness, in combination with a preferably elliptical orbit, to allow preferential coverage of different parts of the earth as a function of parameters which are related to satellite demand. This has significant advantages since it allows preferential coverage based on a chosen characteristic, here either one hemisphere over the other, or time of day.

For instance, a satellite system primarily intended for use over the United States would prefer to preferentially cover the Northern hemisphere as opposed to the Southern hemisphere. More specifically, by choosing elliptical orbits such that anything above 40° south latitude was covered, a great majority of the world's land mass could be covered without wasted capacity.

This embodiment of the invention optimizes the characteristics of the elliptical satellite to have desired coverage characteristics. According to this first preferred mode, structure is described for putting a satellite in a special orbit which preferentially covers part of the earth over the other part.

The first type of orbits, discussed according to the present invention herein, are elliptical retrograde orbits which provide preferential coverage of one part of the earth over the other part through adjustment of orbital parameters.

As mentioned above, all orbits are effected by the earth's J_2 gravitational term. This term effects the Ω and ω terms of every orbit. In order to compensate the orbit, the general equation

$$\frac{d\omega}{dt} + \frac{d\Omega}{dt} = 0.98 \tag{1}$$

must be satisfied. This first embodiment takes a special case of the equation (1).

The significance of the constant on the right hand of the equality sign in Equation (1) lies in its synchronism with the Earth's yearly motion about the Sun. In order to preserve the orientation of the orbital plane with respect to the earth-sun line, it is necessary to advance the plane of the orbit by 360 degrees/365.25 days or 0.9856 deg/day.

Specifically, the effect of J_2 term on Ω and ω can be expressed as follows:

$$\begin{aligned} \frac{d}{dt}\Omega_{J_2} &= 1.5nJ_2(R_E/a)^2(\cos i)(1-e^2)^{-2} \\ &\equiv -2.06474\times10^{14}a^{-7/2}(\cos i)(i-e^2)^{-2} \\ \frac{d}{dt}\omega_{J_2} &= 0.75nJ_2(R_E/a)^2(4-5\sin^2 i)(1-e^2)^{-2} \\ &\equiv 1.03237\times10^{14}a^{-7/2}(4-5\sin^2 i)(1-e^2)^{-2} \end{aligned} \tag{3}$$

, where n is the mean motion in degrees per day, R_e is the earth's equatorial radius, a is the semi major axis in kilometers, e is the eccentricity, i is the inclination and the change in Ω and ω are both in degrees per day.

According to this first embodiment, we want to make the $d\omega/dt$ term approach zero. Luckily, this can be easily done by adjustment of the sine term in equation 3 to zero. Therefore, we set $5\sin^2 i=4$, requiring that $\sin^2 i=4/5$ or i=arc sin {square root (4/5)}; so i=63.435° or its complement 116.565°.

This embodiment preferably uses an elliptical orbit of 116.565 degrees. The prior art has used circular sun synchronous orbits. All so-called circular orbits may have some slight degree of ellipticity. For purposes of this specification, an elliptical orbit is defined as an orbit whose ellipticity is greater than 0.002. This effectively excludes circular orbits which are slightly elliptical due to imperfections in the orbits. These elliptical orbits, with e=0.001 are sometimes called frozen orbits.

Therefore, we set

$$\frac{d}{dt}$$

include multiple satellite configurations. This modification comprises a constellation of satellites which preferentially cover the Northern hemisphere, as compared with the Southern hemisphere or vice versa.

The constellation of satellites orbiting the earth **400** is shown in FIG. **4**. Of course, it should be understood that while FIG. **4** shows only three satellites, **402**, **403**, and **404**, in reality there would be many more. These two satellites are located and operate to preferentially cover one portion of the earth over another (first embodiment) and/or one time of day (second embodiment) over another.

Each of the satellites communicates with a earth-based earth station, shown schematically as station **406**, in a conventional way to exchange information therewith. Accordingly, the present invention also contemplates use of an earth station with such satellites, this earth station having characteristics to track satellites having the characteristics discussed above, and to communicate therewith. There are a plurality of earth stations, each positioned on the earth, and each including tracking equipment to track a motion of at least one of said satellites. Each earth station, and each satellite also includes communication equipment to communicate between the earth station and the at least one satellite.

The satellites according to the present invention are initially boosted into their orbits by special rockets of the type intended to deliver satellites. One such rocket, **500**, with the satellite **502** therein is shown in FIG. **5**. The rocket includes a first stage engine **504**, of any known solid or liquid fuel type, and a second stage engine **506**. Rocket engines are well known in the art, and it will be assumed that the second stage engine is a liquid type rocket fuel engine. This engine combines a liquid fuel with an oxygenator at point **508**, which ignites the fuel. The ignition accelerates the speed of the fuel through a constriction **510**, causing a sonic shock wave shown as **512** which travels out the output nozzle **514**. (It must be understood that the fixture in FIG. **5** shows this stage rocket with the first stage still attached.)

The rocket is controllable both in direction and in thrust. More generally, the vector control of the rocket is controllable.

The rocket is controlled by an onboard navigation computer **516**. The basic characteristics of a booster rocket and guidance unit are shown, for example, in U.S. Pat. No. 4,964,340, the disclosure of which is herewith incorporated by reference.

According to a fourth embodiment of the rocket of the present invention, the inertial guidance unit is controlled to boost the rocket into an elliptical retrograde orbit selected from the design space box around line **100** shown in FIG. **1**. The satellite is then delivered into that orbit, to maintain that orbit.

According to a fifth embodiment of the present invention, the rocket of FIG. **5** has an internal guidance unit which is programmed to boost the rocket into a posigrade orbit of an elliptical type, selected from the design space shown in FIG. **3**. At that time, the satellite is released into the orbit, to thereby maintain thereafter the appropriate orbit.

The third, fourth and fifth embodiments are usable in combination with either of the first or second embodiments described above.

Some examples of the preferred orbits used according to the present invention will now be described.

First preferred orbit configuration

The first preferred orbit is a four satellite minimum array [illegible] which covers any northern hemisphere region north of 20° north latitude during daylight hours, with a minimum 15 degree elevation angle σ. The satellites have an optimized afternoon ascending node, a three hour period and an argument of perigee ω other than 270. The ellipse actually therefore tilts towards the sun and provides a ring of orbits which are both sun synchronous and always have their apogee pointing towards the sun.

The characteristics of these orbits are such that the satellites appear to be moving backwards from west to east since they are in retrograde orbit.

Using the basic satellites discussed above, selection of the main orbital parameters were adjusted through trial iterations beginning around the beginning values of ω=270 and RAAN=F(YY, MM, YY, HH, MM, and SS). The resulting graph track view show visibility circles and lines which reach down to a certain latitude.

This system is very unique, since with only four LEO-MEO satellites, all regions north of 20° latitude can be covered with visibility angles of 15°. It would take three to four times as many circular satellites to do the same thing.

Second preferred orbit configuration

The second preferred orbit covers everything in the northern hemisphere above 20° north latitude both day and night. One ring of satellites has noon ascending nodes and the other has midnight ascending nodes. This has the significant advantage of simplifying the design of the solar array of the satellite.

Most satellites have solar arrays, which need to face the sun in order to power the satellite. If we use an orbit like the present example, then this solar array needs only one degree of freedom to follow the sun. This simplifies the satellite design. This requirement is satisfied by placing one ring with noon ascending nodes and another ring with RAANs displaced 180° from the first ring and having midnight ascending nodes.

FIGS. **6**, **7A** and **7B** show this basic orbit. FIG. **6** shows the noon orbit, and the four satellites therein, labelled **01**, **02**, **03**, and **04**. FIG. **7A** shows the midnight ring, with the satellites labelled **05**, **06**, **07**, and **08**. FIG. **7B** shows the noon plus midnight rings. The combined view of FIG. **7B** shows that most of the coverage is in the northern hemisphere. There is only spotty coverage in the southern hemisphere, but the clustering is in the north.

Third preferred orbit configuration

A third example is a six satellite equatorial, prograde, apogee pointing towards the sun orbit. This third example uses terms of the formula for advance of the line of nodes at 0.9856° per day and provides an extra degree of redundancy and higher elevation angles in the tropical and equatorial zones.

Fourth preferred orbit configuration

The fourth example is another equatorial prograde orbit with apogee pointing towards the sun with only four satellites. This array emphasizes continuous equatorial region daytime coverage with visibility angle of 10°. FIG. **8A** shows 1100 GMT which is daylight over Europe, and shows that most of Europe is well covered. However, Europe is less well covered at 2300 GMT shown in FIG. **8B**.

CERTIFICATE OF SERVICE

I, Felecia G. DeLoatch, do hereby certify that a true and correct copy of the foregoing document was sent by first-class mail, postage prepaid, or hand-delivered, on this 23rd day of January 1997, to the following persons:

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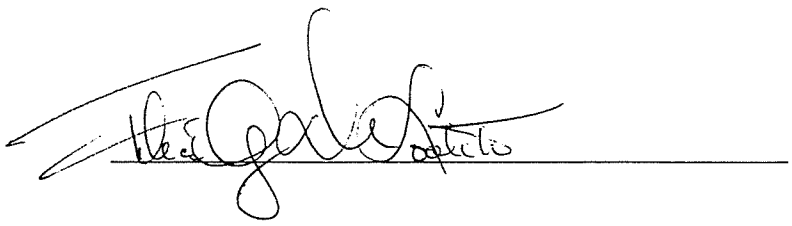

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Exhibit 1-C

Our Ref : P J Mason/PJM1190/5622/as

8 January 1997

Your Ref

Dr David Castiel
Chairman & Chief Executive Officer
Mobile Communication Holdings Inc
1120 19th Street, N.W.
Suit 480
Washington DC 20036

Dear Sir

RE: VULA COMMUNICATION HOLDINGS (PROPRIETARY) LIMITED

We have been requested to confirm that we are the corporate lawyers acting on behalf of the abovementioned company and that the shareholding of the company is held as follows

1	Vula Investments (Proprietary) Limited	-	26%;
2	The Communication Workers Union Investment Holdings (Proprietary) Limited	-	18%,
3	The Umanyano Trust	-	14%;

Jowell Glyn & Marais Inc. Attorneys
Jowell Glyn & Marais [illegible]
72 [illegible] Drive, [illegible]
(Entrance - [illegible] Valley)
PO Box [illegible], [illegible] 2010
Telephone (011) [illegible]4900
Facsimile (011) [illegible]
Docex 458
Co. Reg. No. [illegible]

4 Nafcoc Investment Holdings (Proprietary) Limited - 14%;

5 National Union of Metal Workers of South Africa Investment Holdings (Proprietary) Limited - 14%;

6 Sanco Investment Holdings (Proprietary) Limited - 14%.

Yours faithfully

JOWELL GLYN & MARAIS INCORPORATED

Per :

PETER MASON

Exhibit 1-D

BOLAND FINANCIAL SERVICES (PTY) LTD

REG NR. 65/10857/07

MEMBER OF THE BOLAND BANK GROUP

P.O. BOX 3991, TYGERVALLEY, BELLVILLE 7536, CAPE TOWN, SOUTH AFRICA

PARC DU CAP 3, DURBAN ROAD, BELLVILLE 7530, CAPE TOWN, SOUTH AFRICA

TEL: (27) (21) 915 3300 FAX: (27) (21) 945 2823 E-MAIL: BFS_BELL@CIS.CO.ZA

January 9, 1997

Vula Communications (Pty) Ltd
27219 George Street
Glen Austin
Midrand
1685

Dear Sirs

Boland Financial Services (Pty) Ltd ("BFS") is a subsidiary of Boland Bank Holdings Limited and conducts the equity investment and financial structuring activities within the Boland Bank Group.

We are familiar with the agreement between Vula Communications (Pty) Ltd ("Vula") and Mobile Communications Holdings, Inc ("MCHI"), in which Vula commits to provide a portion of the funding of the ELLIPSO satellite project through the purchase of distribution rights for Sub-Saharan Africa and an equity investment in MCHI. We have further reviewed the technical and business plan of the ELLIPSO system, and Vula's participation in the ELLIPSO project.

The purpose of this letter is to confirm that BFS is prepared and has been appointed, as set out in our engagement letter, to manage Vula's financial participation in the ELLIPSO project.

Yours sincerely

Henk Rossouw

g:\data\ellipso\let080197

EXHIBIT 2

DECLARATION OF ABDEL HAMID HELMY

I, Abdel Hamid Helmy, declare that the following is true and correct to the best of my knowledge and belief.

1. I am the Chairman of ARTOC Suez for Technical services, a subsidiary of the ARTOC Group of companies based in Cairo, Egypt ;a member of the Board of ARTOC Group for Investment and Development ; and General Manager of ARTOC Auto .

2. The ARTOC Group for Investment and Development is a large and most successful international trading, investment and development cooperation with twenty subsidiaries and affiliates operating under six divisions. The Chairman of ARTOC is co-chairman with Vice President Gore of the US-Egyptian Trade Council.

3. On September 15th, 1996, ARTOC entered into a fully negotiated and executed agreement with Mobile Communications Holdings, Inc. (MCHI) in which ARTOC committed to pay $300 million for the purchase of exclusive territorial service rights for the ELIPSO satellite system in twenty-two countries.

4. ARTOC's commitment is subject only to issuance of an FCC license for the ELIPSO system and does not rest on contingencies that require action by either party. In entering into the agreement we understood that FCC requires a fully binding commitment (Subject only to FCC licensing) and we intended our commitment to entirely meet FCC requirements.

5. The agreement provides that the $300 million will be payable in four installments over a two year period commencing upon issuance of the FCC license. The payments are due 30 days, 120 days, 360 days and 720 days after issuance

of the FCC license. The agreement does not involve a chattel mortgage or security interest in any proposed facility.

6. ARTOC with its consortional partners has the capability to perform its financial obligations under the agreement. ARTOC is a privately held company and as such its financial statements are not publicly disclosed.

7. This declaration is being submitted in support of MCHI's application for licensing of the ELIPSO satellite system.

Abdel Hamid Helmy

Dated: 9.1.97

LEVEL 1 - 1 OF 2 STORIES

Source: Reuter Textline
Business Times (Singapore)

August 3, 1993

LENGTH: 387 words

HEADLINE: THAILAND: HEALTH-CARE FIRMS EXPAND INTO BANGKOK, MEDAN

BYLINE: By Jenny Lam

BODY:

TWO leading health-care companies, National Medical Enterprises (NME) Inc and Gleneagles International, are expanding aggressively into the region.

According to the latest issue of Singapore Business, NME, which owns Mount Elizabeth and East Shore hospitals, has taken a 40 per cent stake in the Bumrungrad Medical Centre in Bangkok. The joint-venture partner in this centre is the publicly-listed Bumrungrad Hospital Corporation.

The 530-bed acute-care hospital will be located in the prime residential and business district of Sukhumvit. Costing US$ 110 million (S$ 176 million), the 90,000 sq m building will be the largest private hospital in Thailand when completed in 1996.

Gleneagles, which owns hospitals and medical centres of that name in Singapore and Malaysia, is moving into Indonesia with a 250-bed hospital in Medan.

The S$ 45 million hospital - a joint venture involving Gleneagles, Indonesian food processing and property company P T **Mertju Buana** and Hongkong investment firm Alpeg International - is scheduled to open by late 1995.

Located in Jalan Listrik, in the heart of Medan, it is expected to attract affluent clients from other parts of Sumatra.

-

BUSINESS TIMES, 3 August 1993

LOAD-DATE: August 3, 1993

EDOLPHUS "ED" TOWNS
MEMBER OF CONGRESS
10TH DISTRICT, NEW YORK

ENERGY AND COMMERCE
HEALTH AND THE ENVIRONMENT
COMMERCE, CONSUMER PROTECTION
AND COMPETITIVENESS

GOVERNMENT OPERATIONS
ENVIRONMENT, ENERGY AND
NATURAL RESOURCES
CHAIRMAN
HUMAN RESOURCES AND
INTERGOVERNMENTAL RELATIONS

Congress of the United States
House of Representatives
Washington, DC 20515-3210

WASHINGTON OFFICE
SUITE 2232
RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515-3210
(202) 225-5936

BROOKLYN OFFICES
445 BROADWAY, 2d FLOOR
BROOKLYN, NY 11206-2466
(718) 387-6335
16 COURT ST., SUITE 1601
BROOKLYN, NY 11241
(718) 855-3810

January 13, 1997

Mr. William F. Caton
Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Dear Mr. Caton:

It was the intent of Congress in enacting the Telecommunications Act 1996 to encourage the Federal Communications Commission (FCC) to ease the regulatory framework and encourage competition in the telecommunications industry. In that regard, it is our understanding than an entrepreneurial company, Mobile Communications Holdings, Inc. (MCHI), has an application pending before the FCC for a license to construct and operate a low earth orbiting satellite communications system, known as a "Big Leo" system. I urge the FCC to act favorably and expeditiously approve this application.

MCHI has obtained substantial financial support from both United States and international investors. We understand that one of the investors is a consortium of South African entities that represent major black labor unions, and black civic and business associations. It represents a major step in the black economic empowerment policies of the South African government and of the ANC.

There appears to be no question that MCHI has both the financial backing and the technical ability to construct and launch a Big Leo system. Further, since it will provide the lowest cost satellite voice services available to consumers in the United States and in developing countries around the world, including those on the continent of Africa, MCHI's satellite system satisfies the FCC's "public interest" requirement by providing public benefits and helping to spur competition in the provision of Big LEO satellite services throughout the world.

I hope that the FCC will act as soon as possible to approve MCHI's application.

Sincerely,

Edolphus Towns
Member of Congress
Chairman, CBC Telecommunications Task Force

02862

located, having a volume and flow sufficient to supply the need of a big size mining.

We remind that such mining areas are located on the boundary with some areas belonging to Cia. Vale do Rio Doce - CVRD - which has fully been operating in gold extraction as per OVERLAY attached hereto.

After the technical and scientific discussions we and our team have done, we hereby sign this APPRAISAL.

Belo Horizonte, December 16, 1996

[signed]
Antônio Alberto Miranda
Geologist - CREA No. 46048/D - Minas Gerais - Brazil

[signed]
Ruslan Michailovitch G. Chquiloff
Surveyor - CREA No. 1035/TD

C.G.C. 17,220,096/0001-04 Rua dos Cactés, 530 - S/ 801
Belo Horizonte - MG State Registration: Exempt
Telephone: 201-2343

In witness whereof, I set hereunto my hand and seal.

div755-b 1455

São Paulo, 17 DEZ 1996 19

SUZANNE EVELYNE APSAN
Tradutora Pública Juramentada
Sworn Translater

SUZANNE EVELYNE APSAN
Tradutora Pública Juramentada
Intérprete Comercial
Idioma: Inglês
Matriculada na JUCESP sob nº 509
CPF 130.447.458
APAS 11190021647
ICM 9200220-4

Exhibit 4-A-3

V E I C U L O S / M A Q U I N A S

BEM	MARCA	ANO	VALOR	ALIENADO	DT.VENCTO
AUTOMOVEL	FIAT MILLE	92	6.000	NAO	
AUTOMOVEL	FIAT MILLE	95	8.000	NAO	

TOTAIS - S/ ALIENACAO: 32.000 C/ ALIENACAO:

C O M E N T A R I O S

VALORES 430.000.000,00 1.470.000.000,00 10.400.000.000,00
VALORES MENCIONADOS ESTAO CORRETOS CONFORME DOCUMENTOS DE ESCRITURAS
EM PODER DA AGENCIA.
CLIENTE NAO POSSUI RESTRICOES ROTINA "IRES" NEM NEG "SCPC".

ABN

12311-IRENE CARDOSO DOS REIS

B R A D E S C O
Ag. 1479-0 - Artur Alvim - Urb. SP

10/10/96 SISTEMA DE FICHA CADASTRAL 11:54:32

FICAP540 RELATORIO DE CONSULTA FICHA CADASTRAL FICA0540
PAG. 001

PESSOA FISICA EFETIVA DATA DA FICHA: 16/04/1996

TIPO: 1 - FICHA CADASTRAL CPF: 631.614.608-63 DOC.IDENT: 3682322 UF: SP

AGENCIA: 01479-6 C/C: 0017578-1 DT. ABERTURA: 15/07/1992 N. GRUPO:

NOME: ISRAEL MARQUES CAJAI N.DEPEND: 2

NACION: BRASILEIRA EST.CIVIL: CASADO C/ COM. DE BENS DT.NASC: 05/08/1949

PAI: RAFAEL M.CAJAI MAE: ALBERTINA DE ASSIS CAJAI

NOME DO CONJUGE: ARLETE DOS SANTOS CAJAI

[redacted]

CIDADE PROCEDENCIA: S.PAULO SP UF: SP RESIDE PRACA DESDE: 05/08/1949

END.RESID.: [redacted] N: COMPL:

CEP: [redacted] TEL: [redacted]

END.COML. [redacted] N: 820 COMPL:

CEP: [redacted] TEL: [redacted]

EMPRESA TRABALHO: FAZENDA CAJAI DE DESENVOLV BIOTECNOLOGIC ADMISSAO: / /

PROFISSAO: ARQUITETO E AMBIETALISTA AUTONOMO

CARGO : O MESMO

EMPREGO ANTERIOR:

ALUGUEL/PRST.SFH: SALARIO [redacted]

OUTRAS RENDAS :

ORIGEM :

TRABALHA C/OUTROS BANCOS: SIM BANCO BRASIL S/A AG BRASILIA

DUTACAO CADASTRAL: 1 NADA EM DESABONO POSSUI RESTRICOES: NAO

12311-IRENE CARDOSO DOS REIS

BRADESCO
As. 1479-6-Artur Alvim-Urb. SP

ABN

MOD. 1.498-2/PARA USO EXCLUSIVO DO BRADESCO

E S C R I T U R A S E O N U S

TIPO IMOVEL: FAZENDA DENOM.IMOVEL RURAL:
ENDERECO: CORONEL VIVIDA PR NUM: COMPL: 0000
VALOR ATUAL : 1.470.000.000 IMOVEL RURAL E EXPLORADO : NAO
MATRICULA/REGISTRO: 5563 DATA REGISTRO: 24/08/1988
NUMERO DO C.R.I. : 1 DEF.D /COMP.C: D
LIVRO : 02 FOLHA : N
IMOVEL IMPENHORAVEL (LEI 8009): NAO

O N U S S O B R E I M O V E I S

PENHOR/HIPOTECA : VALOR PENHOR/HIPOTECA :
CREDOR: VENCTO FINAL:

TIPO IMOVEL: FAZENDA DENOM.IMOVEL RURAL: FAZENDA
ENDERECO: CHOPINZINHO NUM: COMPL:
VALOR ATUAL : 630.000.000 IMOVEL RURAL E EXPLORADO : NAO
MATRICULA/REGISTRO: 7241 DATA REGISTRO: 24/08/1988
NUMERO DO C.R.I. : 1 DEF.D /COMP.C: D
LIVRO : 0002 FOLHA : 0001
IMOVEL IMPENHORAVEL (LEI 8009): NAO

O N U S S O B R E I M O V E I S

PENHOR/HIPOTECA : VALOR PENHOR/HIPOTECA :
CREDOR: VENCTO FINAL:

TIPO IMOVEL: FAZENDA DENOM.IMOVEL RURAL:
ENDERECO: MARGEM ESQUERDA DO RIO AMAPA NUM: COMPL:
VALOR ATUAL : 10.400.000.000 IMOVEL RURAL E EXPLORADO : NAO
MATRICULA/REGISTRO: 1196 DATA REGISTRO: 16/07/1991
NUMERO DO C.R.I. : 1 DEF.D /COMP.C: D
LIVRO : 2 FOLHA : N
IMOVEL IMPENHORAVEL (LEI 8009): NAO

O N U S S O B R E I M O V E I S

PENHOR/HIPOTECA : VALOR PENHOR/HIPOTECA :
CREDOR: VENCTO FINAL:

ABN

V A L O R E S T O T A I S D O S I M O V E I S

VALOR IMOVEL - LEI 8009 : COMPROVADOS: 12.500.000.000
NAO COMPROVADOS/QUITADOS: ONERADOS :

V E I C U L O S / M A Q U I N A S

BEM	MARCA	ANO	VALOR	ALIENADO	DT.VENCTO
AUTOMOVEL	FIAT TEMPRA	94	18.000	NAO	

12311-IRENE CARDOSO DOS REIS

Exhibit 4-B

AEC-ABLE
ENGINEERING COMPANY, INC.

93 Castilian Drive
Goleta, California 93117-3091
805-685-2262 FAX: 805-685-1369

8 January 1997

Dr. David Castiel
President and CEO
Mobile Communications Holdings, Inc.
1120 19th Street, N.W., Suite 480
Washington, D.C. 20036

Dear Dr. Castiel:

By this letter, AEC-Able Engineering Company, Inc. (ABLE) confirms its commitment to design, develop, and manufacture the solar arrays for 16 ELLIPSO satellites pursuant to an agreement between ABLE and Mobile Communications Holdings, Inc. (MCHI) dated November 2, 1995. Pursuant to the agreement, ABLE has agreed to accept an amount not to exceed $50.5 million in cash and an equity position in MCHI for the solar arrays. This agreement reduces the cash requirement for purchase of the solar arrays by a substantial amount.

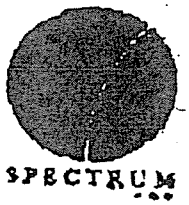
This letter is being submitted for association with MCHI's pending application for licensing of the ELLIPSO system. For proprietary reasons, including the commercially sensitive nature of ABLE's pricing information, ABLE prefers not to provide the actual dollar amounts. However, it would be happy to provide this information on a confidential basis to the Commission if such disclosure is required.

Sincerely yours,

Allister F. Fraser
Vice President

AFF/jsb

EXHIBIT 5



[redacted]

January 22, 1997

Dr. David Castiel
President and CEO
Mobile Communications Holdings, Inc.
1120 19th Street, N.W.
Suite 480
Washington, D.C. 20036

Dear Dr. Castiel:

On December 20, 1994, Spectrum Network Systems Limited (Spectrum) provided a letter, which was submitted to the Federal Communications Commission (FCC), in support of MCHI's application for licensing of the ELLIPSO system. In the letter, Spectrum stated as follows: "We support the development of the Ellipso satellite system and are willing to expend the necessary funds to construct, launch and operate the satellite system for one year after launch of the first satellite in the constellation." That letter was provided as evidence of "internal" funding available to MCHI from its shareholders. It was separate and apart from Spectrum's agreement to acquire distribution rights to the ELLIPSO system in certain countries.

In this letter, Spectrum reconfirms the intention stated in its December 20, 1994 letter; it is prepared to expend the necessary funds to construct, launch and operate the ELLIPSO satellite system for one year after launch of the first satellite in the constellation, subject to a grant of an FCC license to MCHI and absent any material change in business conditions.

Spectrum currently holds approximately 1% of the common stock of MCHI and 11.49% of the common stock of Ellipsat International, a subsidiary of MCHI which coordinates international distribution of ELLIPSO services. Although Spectrum is a minority stockholder of these entities, it has an additional interest in the success of the ELLIPSO project based upon Spectrum's right to form regional companies that will be the exclusive distributors of ELLIPSO services in Australia, Indonesia, New Zealand and New Guinea pursuant to a written agreement between the parties dated September 4, 1992.

Spectrum's financial capability is evidenced by the audited balance sheet of Spectrum for the financial year ended 30 June 1996, a copy of which is annexed hereto.

Sincerely,

David S. Archer
Director and Executive Chairman

SPECTRUM NETWORK SYSTEMS LIMITED

A.C.N. 001 760 103

Spectrum Network Systems Limited

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Balance Sheets as at 30 June, 1996

	Note	1996 $'000	1995 $'000	1996 $'000	1995 $'000
CURRENT ASSETS					
Cash		6,835	480	6,696	337
Receivables	10	16,035	576	54	708
Investments	11	150	2,910	143	2,351
Inventories	12	1,061	619	-	-
Other	15	569	-	-	-
Total Current Assets		24,650	4,585	6,893	3,396
NON-CURRENT ASSETS					
Receivables	10	90	-	19,997	7,738
Investments	11	2,170	3,695	11,144	15,103
Property, plant and equipment	13	3,864	982	1,204	565
Intangibles	14	22,250	16,936	-	-
Other	15	1,331	266	-	-
Total Non-Current Assets		29,705	21,877	32,345	23,406
Total Assets		54,355	26,462	39,238	26,802
CURRENT LIABILITIES					
Creditors and borrowings	16	23,494	1,105	2,807	205
Provisions	18	145	86	71	44
Total Current Liabilities		23,639	1,191	2,878	249
NON-CURRENT LIABILITIES					
Creditors and borrowings	16	2,288	350	851	818
Provisions	18	37	15	25	8
Other	19	1,518	-	1,518	-
Total Non-Current Liabilities		3,843	365	2,394	826
Total Liabilities		27,482	1,556	5,272	1,075
Net Assets		26,873	24,906	33,966	25,727
SHAREHOLDERS' EQUITY					
Share capital	20	14,050	9,616	14,050	9,616
Reserves	21	26,826	17,283	26,826	17,283
Retained profits/(accumulated losses)		(14,003)	(1,993)	(6,910)	(1,172)
Total Shareholders' Equity		26,873	24,906	33,966	25,727

The accompanying notes form an integral part of these accounts.

NOTES TO AND FORMING PART OF THE ACCOUNTS

NOTE	
1	Statement of Accounting Policies
2	Operating Revenue
3	Operating Profit/(Loss)
4	Abnormal Items
5	Income Tax
6	Extraordinary Items
7	Directors' Remuneration
8	Executives' Remuneration
9	Auditors' Remuneration
10	Receivables
11	Investments
12	Inventories
13	Property, Plant and Equipment
14	Intangibles
15	Other Assets
16	Creditors and Borrowings
17	Commitments
18	Provisions
19	Other Liabilities
20	Share Capital
21	Reserves
22	Investment in Controlled Entities
23	Notes to the Statements of Cash Flows
24	Earnings Per Share
25	Contingent Liabilities
26	Superannuation Commitments
27	Segment Information
28	Related Party Transactions
29	Events Subsequent to Balance Date
30	Variations from Information Reported to Stock Exchange

EXHIBIT 6

Aon Risk Services

which, when combined with Aon Corporation's current operations, will make Aon Group, Inc. the world's largest retail and reinsurance broker . Aon Corporation is a leading diversified insurance holding company listed on the New York, London and Chicago stock exchanges. Aon Corporation continues to expand its presence outside the United States with over 14,000 Aon Group professionals serving clients from more than 350 owned offices around the world.

Prior to making an equity investment in MCHI, ARS undertook substantial analysis including review of MCHI's business plan and its contractual agreements with investors, distributors and vendors. Based on our due diligence, we have concluded that MCHI's financial package is commercially solid and should enable MCHI to move ahead promptly with construction, launch and operation of ELLIPSO once an FCC license is issued. On the basis of our conclusions, we have made a substantial monetary investment in MCHI and will assist the company with implementation of the ELLIPSO system worldwide.

We urge the FCC to act favorably and expeditiously to allow MCHI's entry into the marketplace and allow ELLIPSO to move forward.

Sincerely yours,

Alan R. Diamond
Chairman and CEO

ARD:pb

AON

Aon Risk Services

January 7, 1996

Mr. William Caton
Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Re: Mobile Communiucations Holdings, Inc.
(FCC File No. 158-SAT-AMEND-96)

Dear Mr. Caton:

This letter is being submitted by Aon Risk Services, Inc. of New York ("ARS") with respect to the above-referenced application of Mobile Communications Holdings, Inc. ("MCHI") for licensing of the ELLIPSO system. ARS is an equity investor in MCHI and serves as ELLIPSO's insurance risk management advisor and insurance broker. Given its direct involvement in the ELLIPSO project, and its extensive expertise in risk management and insurance, ARS is well qualified to respond to the petition filed on December 27, 1996 by MCHI's competitors.

Aon Corporation through its Aon Group, Inc. companies of which ARS is a part, is preeminent in assessing business and financial risks. The Aon Group, Inc. companies are global leaders in commercial insurance brokerage, reinsurance, wholesale brokerage, risk management consulting and human resources consulting. Aon's Space Risks International is a world leader in space and aerospace risk management and insurance.

In 1995, Aon Corporation's revenues were $3.5 billion. Aon Corporation recently announced its $1.2 billion acquisition of Alexander & Alexander

Two World Trade Center • New York, New York 10048-1096 • tel: (212) 441-2605 • fax: (212) 441-1908

EXHIBIT 7

U.S. SMALL BUSINESS ADMINISTRATION
WASHINGTON, D.C. 20416

OFFICE OF CHIEF COUNSEL FOR ADVOCACY

April 24, 1996

The Honorable Reed E. Hundt
Chairman
Federal Communications Commission
1919 M Street, NW Suite 814
Washington, D.C. 20554

Dear Chairman Hundt:

I am contacting you regarding a matter currently pending before the Commission pursuant to my responsibilities under the Regulatory Flexibility Act[1] and the Small Business Act.[2] I am concerned that, due to unequal and unduly burdensome financial qualification standards for smaller satellite operators, the Commission is on the verge of eliminating a potentially viable smaller competitor, Mobile Communications Holdings, Inc.("MCHI"), from the low-earth orbit mobile satellite services ("Big LEO") market.[3]

The Office of Advocacy has had a long history of concern with unequal and burdensome financial qualification standards for small businesses set by the Commission in the satellite industry. The Office filed comments addressing this same issue with the Commission as early as the domestic fixed-satellite proceeding in 1985.[4] The Commission responded to these concerns by establishing a two-stage financial qualification standard for

---

[1]The Regulatory Flexibility Act of 1980, as amended, Pub. L. No. 96-354, 94 Stat. 1164 (1980), codified at 5 U.S.C. sec. 601 et seq.

[2]The Small Business Act, as amended, Pub. L. No. 85-536, 72 Stat. 384 (1958), codified at 15 U.S.C. sec. 631 et seq.

[3]The Office of Advocacy submits this correspondence pursuant to Part 1 section 1204(b)(5) of the Commission's rules. 47 C.F.R. 1.1204(b)(5)

[4]Letter from Frank S. Swain, Chief Counsel for Advocacy, Small Business Administration, to the Federal Communications Commission, dated June 27, 1985.

smaller companies for separate international satellite systems.[5]

The Commission currently has before it an appeal of an order by the International Bureau deferring MCHI's application for a license to construct and operate a Big LEO satellite system on the basis of inadequate financial qualifications.[6] It is not generally the practice of the Office of Advocacy to comment on individual applications for licenses at the Commission. Moreover, the Office of Advocacy expresses no opinion as to the adequacy of MCHI's financial showing in the instant application. The Office of Advocacy is deeply concerned, however, that this order represents a case in point of the Commission's *de facto* unequal financial qualification standards for smaller companies. The Bureau Order could effectively eliminate a potential competitor and one of the few small businesses that has had measurable success in entering this new market. To uphold the Bureau Order would establish further precedent for the Commission's overly stringent financial qualification standards and erect an artificial market entry barrier to virtually all small competitors.

It is worth giving the Bureau Order closer scrutiny, not so much to judge the adequacy of MCHI's financial showing but to highlight the burden it places on smaller applicants like MCHI. The order sets an extraordinarily high evidentiary threshold in judging each financial source cited by MCHI. It is certainly necessary and appropriate for the Bureau to proceed with caution in this area. It is, however, significant that the Bureau rejects or dramatically diminishes the value of every single financing source cited by MCHI. Their judgment may be correct in all instances but it is difficult to believe that none of these sources is deserving of the credibility vested in it by MCHI. Given the nature of financing such a large project, could any company meet such a burden? Could MCHI's larger competitors meet such a burden even at this point in time? There is surely something inequitable in such an unevenly applied standard, particularly given that it is a smaller business that is in

---

[5] Establishment of Satellite Systems Providing International Communications, 101 F.C.C. 2nd 1046, 1164 (1985).

[6] In re Application of Mobile Communications Holdings, Inc. for Authority to Construct, Launch, and Operate a Low Earth Orbit Satellite System in the 1610-1626.5 MHz/2483.5-2500 MHz Band, File Nos. 11-DSS-P-91(6), 18-DSS-P-91(18), 11-SAT-LA-95, 12-SAT-AMEND-95, DA 95-132 (rel. January 31, 1995) ("Bureau Order").

question here.[7]

The contrast with the Commission's treatment of larger applicants could not be more striking. The Commission's 1994 order concerning the Big LEO industry states "[a]pplicants relying on internal financing need not set aside specific funds for their systems."[8] The Big LEO Order continues, "we require only a demonstration of current assets or operating income sufficient to cover system costs."[9] There is no requirement that funds be "fully negotiated" or irrevocably "committed" as with smaller companies.

Moreover, the Big LEO order openly presumes that in order to build and operate their systems, larger companies will not rely solely on the assets that form the basis of their financial showing to the Commission. The Big LEO Order acknowledges even the largest corporations' need to raise external financing: "Highly capitalized companies possess more collateral and, thus, are in a better position to borrow money than thinly capitalized companies"[10] This is, of course, a realistic presumption that is born out in practice.[11] Thus, the order implicitly sanctions applications from larger corporations who have not finalized their borrowing at the time of application, let alone successfully secured irrevocable commitments of the kind required of MCHI by the Bureau Order.

In sum, there is a de facto two-tier financial qualification system, favoring larger companies and handicapping smaller ones. Whatever the merits are of MCHI's financing efforts to date, they

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[7]The high burden of proof the Bureau applies to MCHI would be appropriate if the Commission demanded there be no risk associated with awarding a license to any applicant -- a standard foreign to the Commission's mission and the overall nature of telecommunications enterprises, in general.

[8]In re Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Mobile Satellite Service in the 1610-1626.5/2483.5-2500 MHz Frequency Bands, 9 F.C.C. Rcd. 4936 (1994)("Big LEO Order") at para. 31.

[9]Id.

[10]Id.

[11]MCHI's larger competitors have already been awarded licenses and are pursuing a wide range of external financing options -- few, if any, of which were "fully negotiated" or "committed" prior to their securing licenses from the Commission.

deserve to be judged in the same light as their competitors'. Both the Regulatory Flexibility Act and competitive telecommunications policy would support leveling this unequal burden that falls so disproportionately on smaller competitors.

For these reasons, the Office of Advocacy urges the Commission to grant MCHI's appeal of the Bureau Order and require the Bureau to reexamine its overly stringent financial qualification standards for smaller companies, in general.

Very truly yours,

Jere W. Glover
Chief Counsel

United States Senate

WASHINGTON, DC 20510

October 3, 1996

The Honorable Reed E. Hundt
Chairman
Federal Communications Commission
1919 M Street, N.W. Suite 814
Washington, D.C. 20554

Dear Chairman Hundt:

On July 19, 1995, many of the signatories of this letter wrote regarding the use by the FCC of a "stringent financial showing" as a major criterion for granting mobile satellite system (MSS above 1 Ghz) licenses. We expressed our concern that such a test appeared to unduly constrain future marketplace competition and effectively precluded the public from enjoying the subsequent benefits of such systems. We noted further that existing law does not appear to support the use of the financial standard in the MSS case, that the FCC's definition appears unfairly biased towards large asset companies, and that it places an unfair burden on small firms.

The July 19 letter, which we urge you to review once more, noted our national policy, that America has led the world in new and innovative technology and that our laws and implementing regulations continue to change in order to provide an environment for proactive entrepreneurs. The letter further said that "We should not interfere with that process unless there is irrefutable proof that forbearing such criteria as outlined above will negatively impact upon the public marketplace. By implementing the financial standard for MSS licenses, we believe that the FCC has unintentionally created an artificial barrier which effectively denies future public access to lower cost services and stifles small company entrepreneurship from which much of past innovative technology has emerged."

The only reply received in response to the letter was dated August 22, 1995, from Mr. Caton, the FCC's Acting Secretary. The reply was non-substantive.

On April 24, 1996, the Small Business Administration sent a letter to the Commissioners elaborating on many of the same concerns we earlier had expressed to you, emphasizing in particular the unfairness of the "two-tier financial qualification system," and urging the Commission to "reexamine its overly stringent financial qualification standards for smaller companies, in general."

Since our July 19, 1995 letter was sent, The Telecommunications Act of 1996 has been signed into law. Section 257 of that Act directs the FCC to identify and eliminate market entry barriers for entrepreneurs and other small businesses in the provision and

ownership of telecommunications services. In light of this provision of law, the FCC should not create additional market entry barriers in the implementation of its own rules and orders. Furthermore, the FCC should, in the spirit and letter of that law, affirmatively act to suspend the application of such barriers.

Our expressed concerns have been exacerbated as a result of DISCO I, adopted on January 19, 1996, which extends the strict financial qualifications standards to separate satellite systems. These policies represent a dramatic departure from prior satellite policies and rules which have successfully encouraged innovation, competition, and entrepreneurship in the satellite industry. A more flexible financial standard would encourage new, diverse satellite services and operators, thereby promoting competition, innovation and lower consumer prices.

In addition, in the Order of June 27, 1996, the FCC denied appeals in the Big LEO proceeding, refused on narrow, technical grounds to apply Section 257 of the Telecommunications Act, and failed to acknowledge the fact that the SBA had put forward cogent arguments which were entitled to a reply. Contrary to the assertion made in that Order, the provision of additional time for small business applicants to meet the stringent financial standards is not a meaningful remedy to this burden.

We urge the FCC to uphold congressional intent to eliminate market entry barriers for small and entrepreneurial businesses and to do so whenever the inequities appear which led Congress to act. Congress, in such matters, has determined the public interest which should guide the FCC. The Commission possesses the authority—including waivers, modifications and other procedural variations—to assure, even in current proceedings, a level playing field for small businesses, entrepreneurs and similar entities. We request that the FCC review and reconsider the decision to apply the "stringent financial showing" test in the Big LEO proceedings.

We ask that you commit your early and urgent attention to this matter.

Sincerely,

Richard C. Shelby

Howell T. Heflin

Larry E. Craig

Conrad Burns

Christopher (Kit) Bond

Daniel K. Inouye

Connie Mack

Connie Mack

Act to pay for the costs of administering plans, amendments and regulations that include IFQ programs results in the repeal of section 208. Because the VBA program that Senator MURRAY has described fits within the definition of an IFQ, upon enactment of the Sustainable Fisheries Act, the moratorium in section 208 will no longer be applicable to the VBA program.

As I mentioned in my discussion with Senator MURRAY about section 208, the Sustainable Fisheries Act's express authorization of fees to pay for the costs of administering plans, amendments and regulations that create IFQ programs results in a repeal of section 208. Once the President signs the Sustainable Fisheries Act, section 208 will be completely repealed.

Mr. SHELBY. Mr. President, I want to congratulate the chairman for reporting out a bill that provides funding for many important programs, while at the same time moving toward our goal of balancing the budget. Of particular interest to me, this bill funds the activities of the Federal Communications Commission which is currently undertaking the important task of implementing the historic Telecommunications Act of 1996.

Mr. President, I would like to raise a concern that many of us have relating to the FCC's implementation of the act, and I would therefore ask the indulgence of the chairman of the Appropriations Subcommittee to allow me to enter into a colloquy with the chairman of the authorizing committee, the Committee on Commerce, Science and Transportation.

Mr. SHELBY. I thank the chairman. In addition to advocating a regulatory framework that encourages and promotes competition in the telecommunications industry, I have been particularly concerned that small and entrepreneurial firms are allowed to compete on a level playing field in all industry sectors in the United States and global economies. Indeed, with passage of the Telecommunications Act, Congress sought to provide opportunities for small businesses to participate in the telecommunications industry while also moving the entire industry toward a more competitive framework overall. Section 257 of the Act directs the FCC to "identify and eliminate * * * market entry barriers for entrepreneurs and other small businesses in the provision and ownership of telecommunications services. * * *"

Mr. President, this is very clear and precise language and should leave no question as to the intent of Congress on matters relating to small businesses. Nevertheless, it has come to my attention that the FCC, in two recent rulemaking decisions relating to new satellite services, has adopted stringent financial standards, the practical effect of which is to erect market entry barriers to telecommunications ownership by entrepreneurs, small businesses and similar entities.

Under the Commission's strict financial standard, applicants are required to demonstrate financial qualifications either on the basis of a corporate balance sheet or alternatively, on the basis of fully negotiated, irrevocable funding commitments from outside sources. This standard unfairly favors large corporations who may submit a balance sheet as part of their licensing application, regardless of whether the funds reflected on paper are actually committed to the project and even though the corporate giant, like its smaller competitors, will likely turn to external financiers and investors to ultimately fund its system. In fact, the award of all satellite licenses in one of the proceedings I refer to have gone to large corporations. In contrast, applications from small entrepreneurial companies have been deferred because they have been held to the stricter test requiring proof that funds have been irrevocably committed by others on behalf of their entire project. This is a very high hurdle to clear.

Although numerous small businesses, as well as the Small Business Administration and a number of U.S. Senators and Congressmen, have raised concerns about these strict financial standards with the FCC, we have received no adequate response from the FCC, nor has the Commission modified its policy in this area.

To the distinguished chairman of the Commerce Committee I ask: Was it the intent of Congress with passage of the Telecommunications Act of 1996 to encourage the FCC to ease the regulatory framework and encourage competition in the telecommunications industry? And, further, was it the intent of Congress that regulations that act as market entry barriers to small and entrepreneurial businesses be identified and eliminated as soon as possible?

Mr. PRESSLER. The Senator is correct. The primary thrust of the historic act was to ensure increased competition in the telecommunications industry by scaling back regulations and allowing free market forces to operate in this area. The Senator is also correct in noting that section 257 of the act specifically directs the Commission to identify and dismantle impediments to small business ownership and provision of telecommunications services.

Mr. SHELBY. Thank you very much, Mr. Chairman. Any may I then ask: Is it true that section 257 of the Telecommunications Act, which ensures that small businesses are not unfairly disadvantaged by Federal regulations, was supported by both parties?

Mr. PRESSLER. The Senator is correct. This provision, which originated in the other body, was agreed to on a bipartisan basis. Section 257 directs the Commission to develop meaningful opportunities for small businesses to participate in the ownership and provision of telecommunications services. This language applies to all Commission activities in the area of telecommunications. It does not make exception for activities such as the application of financial qualification standards.

Mr. SHELBY. Mr. President, I have one final question for the chairman of the Commerce Committee for purposes of clarifying that the intent of Congress with the Telecommunications Act is to ensure that the marketplace, not the U.S. Government or a regulatory body, decides who the winners and losers in this industry will be. In the case of the strict financial standard imposed by the FCC for satellite system applicants, it seems to me that rather than making a judgment on what the FCC may feel is a company's financial ability to compete, perhaps the FCC should focus more on technical considerations for licenses, leaving the ultimate success or failure of an applicant to the marketplace where it appropriately belongs. Will the chairman continue to work with me and others to ensure that the FCC implements the law according to our intent, particularly as this relates to small and entrepreneurial ventures and financial standards applicable to these important participants?

Mr. PRESSLER. I can assure my colleagues that the Commerce Committee will closely follow actions taken by the Commission in areas such as satellite licensing to ensure that the intent of Congress is carried out. Congress must ensure that the FCC's actions are complementary, not contrary, to the forces of the free market and open competition.

Mr. SHELBY: I thank the chairman of the Commerce Committee for all the work he has undertaken to ensure the American people have access to services which are developed in a free and open marketplace, and I thank the chairman of the Appropriations Committee for permitting our discussion of this most important and timely issue.

WHITEFISH POINT LIGHTHOUSE LAND CONVEYANCE

Mr. ABRAHAM. Mr. President, I rise to address the inadvertent omission of important report language relating to the transfer of the lighthouse at Whitefish Point, MI, from the Coast Guard Authorization Act of 1996.

Built in 1849, the lighthouse at Whitefish Point was Lake Superior's first lighthouse. As I am sure my colleague from Michigan, and anyone else familiar with the perils of maritime transport on Lake Superior will tell you, in its 15 decades of operation the lighthouse has undoubtedly saved hundreds of lives.

In response to the present need to justify budgets, the U.S. Coast Guard, working to meet its numerous national priorities, decided to permit the transfer of ownership to responsible parties. Several organizations stepped forward, and this legislation makes possible the transfer of this historical site to three interested parties: the Great Lakes Shipwreck Historical Society, the U.S. Fish and Wildlife Service, and the Michigan Audubon Society.

Disagreements arose between the interested parties over the ability to construct or expand facilities at the site.

JOHN CONYERS, JR.
14TH DISTRICT, MICHIGAN

COMMITTEE
RANKING MEMBER
JUDICIARY

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May 16, 1996

The Honorable Reed Hundt
Chairman
Federal Communications Commission
1919 M Street, NW
Room 814
Washington, DC 20554

Dear Chairman Hundt:

As you know, I have long been a strong believer in and advocate of opportunities for small and minority-owned businesses. I recently learned of the April 24, 1996 letter to you from Jere Glover, Chief Counsel, U.S. Small Business Administration (SBA), Office of the Chief Counsel for Advocacy, which concerns the application of Mobile Communications Holdings, Inc. (MCHI) for licensing of the Ellipso low-Earth orbit mobile satellite system (also known as "Big LEO"). The letter identifies MCHI as "one of the few small businesses that has had measurable success in entering this new market" but raises concerns that the "unequal financial qualification standards" imposed on smaller satellite operators like MCHI are creating unnecessary and unfair barriers to market entry and fair competition.

While I do not seek to comment on any specific matter before the FCC with regard to MCHI, I want to echo the sentiment expressed by SBA that the FCC should be attempting to maximize small business participation in major projects such as this to the extent authorized by law. Congress has repeatedly expressed a bipartisan consensus that federal regulatory agencies should attempt to maximize opportunities for small businesses wherever possible. The Regulatory Flexibility Act, the Small Business Act, and the new Telecommunications reform law all favor such an approach.

In addition, it is important that federal regulatory agencies not set unreasonable or discriminatory financing requirements on small businesses that seek market entry as is alleged by the SBA in the case of MCHI. Finally, I would also echo the concern expressed in the SBA letter that the administrative appeals process within the FCC be as expeditious as possible so as not to unfairly disadvantage the competitive interests of small businesses awaiting FCC.

Sincerely,

John Conyers, Jr.
Member of Congress