SP65-18 - COMMUNICATIONS SATELLITE CORPORATION

3732

MARSHALL M. GOODSILL
MARTIN ANDERSON
WILLIAM F. QUINN
WALTER E. BLISS
RICHARD E. STIFEL
PAGE M. ANDERSON
HUGH SHEARER
GEORGE L. DYER, JR.
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ROBERT P. RICHARDS
LANI L. EWART
K. MICHAEL MAYES
JACQUELINE L. S. EARLE

GOODSILL ANDERSON & QUINN

ATTORNEYS AT LAW

CASTLE & COOKE BUILDING
FINANCIAL PLAZA OF THE PACIFIC
MAIL ADDRESS P. O. BOX 3196
HONOLULU, HAWAII 96801

HEATON L. WRENN
JAMES M. RICHMOND
JOHN P. RUSSELL
LIVINGSTON JENKS
OF COUNSEL

LAND USE COMMISSION
STATE OF HAWAII
MAR 28 4 59 PM '78

TELEPHONE
(808) 531-5066

CABLE ADDRESS
DELTA

TELEX: 7430246
JEKID

March 27, 1978

Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Attn: Mr. Henry Eng

Re: Proposed Construction of 53' Diameter Dish-Type Antenna on Pedestal, Related 22' by 28', 1-Story, Building and Other Related Facilities
Tax Map Key: 5-9-06 Por. 5 (approximate area: 249 acres)

Gentlemen:

Further to our several conversations with Mr. Henry Eng of your office and Mr. Gordon Furutani, Executive Director of the Land Use Commission of the State of Hawaii, and on behalf our client, Communications Satellite Corporation, a District of Columbia corporation ("COMSAT"), we hereby request your confirmation of our understanding that the approvals obtained by COMSAT in 1965 cover the proposed construction by COMSAT on the above-described land of an additional 53' diameter dish-type antenna on a pedestal, a related 22' by 28', 1-story, building to contain associated electronic equipment, and other related facilities, including underground power cables and duct systems and a service road to and from the existing control building and security fencing.

We refer to COMSAT's 1965 application to the Zoning Board of Appeals of the City and County of Honolulu and the Land Use Commission of the State of Hawaii for a special permit and the approvals obtained at that time covering the construction of a "communications satellite earth station and related facilities", initially consisting of a control building and other structures surrounded by security fencing, two (2) 85' diameter dish-type antennas on pedestals and three (3) additional dish-type antennas on pedestals surrounded by security fencing, and other related improvements. We understand that the records of these proceedings are in the possession of the Land Use Commission of the State of Hawaii and are in its file identified as SP 65-18 and that more detailed descriptions of these initial facilities and improvements are set forth in the Application for Special Permit, the Zoning Board of Appeals' minutes of July 22, 1965, August 19, 1965 and September 7, 1965, the Staff Report and COMSAT's Application to the Federal Communications Commission dated July 12, 1965, each of which are in said file SP 65-18.

Please be advised that pursuant to the foregoing approvals an operations or control building, a utility building, a service building, two (2) permanent dish-type antennas, one (1) casshorn antenna, security fencing, an improved service or access road, related power and electronic cables, duct systems and other similar facilities and improvements have been constructed and are presently in existence on the above-described land.

Based upon our conversations with Mr. Eng and Mr. Furutani, it is our understanding that the approvals obtained by COMSAT in 1965 cover the proposed construction hereinabove mentioned and that no additional or separate special permit from the Land Use Commission of the State of Hawaii, conditional use permit from the Department of Land Utilization of the City and County of Honolulu and/or any other state or local governmental approval other than a building permit from the Building Department of the City and County of Honolulu, will be required in order to proceed with such construction.

We would appreciate your confirming our understanding by executing the enclosed copy of this letter

in the space provided below and returning the same to our office.

Thank you for your consideration in this matter.

Very truly yours,

GOODSILL ANDERSON & QUINN

Carl K. Mirikitani

CKM/yg

CONFIRMED this ____ day of
_____, 1978.

DEPARTMENT OF LAND UTILIZATION

By_____

cc: Mr. Gordon Furutani
Leo Millstein, Esq.
Mr. Glenn Vinquist

THE COMMUNICATIONS SATELLITE CORPORATION

REQUESTS THE PLEASURE OF YOUR COMPANY

AT

GROUND BREAKING CEREMONIES

FOR A NEW EARTH STATION

Dora:
Pls call in my regrets.

PAUMALU, OAHU, HAWAII

MONDAY, DECEMBER 27 AT 11 A. M.

called 12-21-65. DyH.

RSVP

638-535 SUNSET BEACH

RECEPTION AND LUNCHEON

THE CROUCHING LION

December 1 is target date

Comsat st

By GEORGE WEST

The prospects look good that Hawaii will be on time when they push the button to start the world's first commercial satellite communications system in the Pacific.

The target date is December 1.

One of two earth stations that will link the United States with Japan and Australia for all types of communications via a satellite in the sky is being built in the Sunset Beach area in North Oahu.

The earth stations main building is nearly 30 percent finished.

The other U.S. earth station is under construction in Brewster, Washington, on the West Coast.

When these two earth sta-

Pictured is the main control center building of the Hawaii earth station un[der] construction in Paumalu in north Oahu.

Problem as old as battles wi

Safety of Vie

By KEYES BEECH
Chicago Daily News
Foreign Service

Pacification may sound te a fairly tame topic, but was of vital importance in onolulu at the talks be- ween President Johnson d South Vietnamese lead- s.

What is pacification anyway?

To the much-abused South Vietnamese peasant, it means not being shot at from both sides. It means freedom from double taxation—by the Vietcong and the Saigon government.

It is a farmer's ability to move his rice from field to market without it being hijacked by the Vietcong. It is a reasonably decent, reasonably honest government. It is somebody in an official capacity who will listen to the peasants' grievances and

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ter, a 55-foot high, 85-foot wide dish antenna, and utility buildings to house power equipment, vehicles and other materials.

The manager of the Comsat project in Hawaii is Matthew C. Mautz, an electrical engineer.

He said the main control center, which will cover 21,000 square feet, is expected to be finished by May 1.

October 7, 1965

Mr. Frank Skrivanek, Director
Planning Department
City & County of Honolulu
Honolulu Hale Annex
Honolulu, Hawaii

Dear Mr. Skrivanek:

At its meeting on October 1, 1965, the Land Use Commission voted to approve the grant of a special permit to Communications Satellite Corporation for the construction and operation of a communication satellite earth station and related facilities, on approximately 249 acres of land described by TMK 5-9-06: 5.

We are enclosing our staff report for your information.

Very truly yours,

GEORGE S. MORIGUCHI
Executive Officer

Encl. - 1
cc: Chairman Thompson
Mr. Thomas P. Goodbody
Department of Taxation
Dept. of Land & Natural Resources

STATE OF HAWAII

LAND USE COMMISSION

VOTE RECORD

ITEM COMSAT SP65-18

DATE 10-1-65

PLACE Lihue

TIME 7:15

NAMES	YES	NO	ABSTAIN	ABSENT
M WUNG, L.	✓			
INABA, G.	✓			
OTA, C.		✓		
~~WENKAM, R.~~				✓
BURNS, C.E.S.	✓			
S NISHIMURA, S.	✓			
~~MARK, S.~~				✓
FERRY, J.	✓			
THOMPSON, M.	✓			

COMMENTS: 6 ayes

Motion to accept staff report ~~to~~ and to grant permit.

STATE OF HAWAII
LAND USE COMMISSION

Minutes of Meeting

County Board Room - Lihue, Kauai

October 1, 1965 - 2:20 P.M.

Commissioners Present:	Myron B. Thompson, Chairman C.E.S. Burns Jim Ferry Charles Ota Goro Inaba Leslie Wung Shiro Nishimura
Absent:	Shelley Mark Robert G. Wenkam
Staff Present:	George Moriguchi, Executive Officer Roy Takeyama, Legal Counsel Ah Sung Leong, Draftsman Dora Horikawa, Stenographer

Chairman Thompson called the meeting to order, followed by a short prayer.

SPECIAL PERMIT APPLICATION BY COMMUNICATIONS SATELLITE (SP65-18) TO CONSTRUCT AND OPERATE A COMMUNICATION SATELLITE EARTH STATION AND RELATED FACILITIES WITHIN AN AGRICULTURAL DISTRICT, TMK 5-9-06: 5

Mr. George Moriguchi presented the staff report and the Findings of Fact transmitted by the City and County Zoning Board of Appeals, in which it was recommended that a special permit be issued to the Communications Satellite Corporation to operate and construct a communication satellite earth station, because the request was for an unusual and reasonable use within the area, it would promote the effectiveness and objectives of the State Land Use Law, and the proposed use will not alter the essential character of the surrounding area.

Commissioner Ota expressed concern over the possible construction of additional facilities and accessories in the future, and the danger of developing a small community within a so-called prime agricultural area.

Mr. Moriguchi stated that according to the data submitted by the petitioner, the request was specifically for construction of antenna and related facilities and did not include houses and accessories.

Mr. Thomas P. Goodbody, attorney for the petitioner, reassured the Commissioners that the Communications Satellite Corporation was directed by an Act of Congress to proceed forth with this project specifically, and that there was no request for apartments or housing construction. For this reason, the land use will be restricted for this purpose only.

Commissioner Wung moved to approve the petition as recommended by staff, which was seconded by Commissioner Nishimura. The motion was carried with Commissioner Ota casting the only dissenting vote.

PETITION OF AMITY DEVELOPERS (A65-88) TO AMEND THE URBAN DISTRICT BOUNDARY AT KALANI-IKI, OAHU, SO AS TO INCORPORATE ABOUT 20.221 ACRES IDENTIFIABLE BY TAX MAP KEY 3-5-24: 9

Mr. George Moriguchi presented the memorandum prepared by staff on the above petition, in which it was recommended that the Land Use Commission rule that the project be permitted to proceed as a non-conforming use, based upon the following facts:

1. On December 19, 1963, the project was granted tentative approval by the City Planning Director. Temporary district boundaries were in effect at that time and lands of the subject parcel were within the Urban District.

2. On September 28, 1964, the Building Department issued a building permit for the construction of 6 units at the subject project.

3. On November 12, 1964, the City Planning Department granted tentative approval on a revised plan.

4. On February 8, 1965, a grading permit was issued.

5. On July 13, 1965, the Department of Land and Natural Resources approved construction of 21 of the 95 units of the project.

6. On July 19, 1965, the developers were issued a building permit for the construction of 14 units on the project.

Mr. Moriguchi read a letter submitted by Mr. H. William Burgess, attorney for the petitioner, in which he requested that the Land Use Commission make a determination that the subject petition qualifies under the "non-conforming" clause as defined in Part II, State Land Use District Regulations, Sub-part A, Section 2.19. (See copy of letter on file). Each Commissioner was handed a copy of the letter.

The steep lands recommended for non-use in the staff report were pointed out on the map by Mr. Moriguchi. He verified the fact that these lands were requested for development in the plans submitted to the Planning Department of the City and County.

It was also established that the interim urban boundaries which were in effect at that time included the subject lands; however, when the final boundaries were established, the urban line was changed to its present location. The City and County Planning Department recommended approval of the petition except for two steep portions.

Chairman Thompson stated that the petitioners were requesting a ruling on the total area based upon the preliminary approval.

Commissioner Ota commented that if the Commission ruled that the petition qualified under the "grandfather clause", we would be running away from the issue of non-use of the steep lands as recommended by the City Planning Department, unless we modified the boundary.

Commissioner Ferry felt that due to the sequence of events, the staff's recommendation to rule on the "grandfather clause" was entirely proper, and that the Commission did not have the jurisdiction to consider a boundary change at this time.

Upon Chairman Thompson's invitation, Mr. William Burgess, attorney for the petitioner, requested that Mr. Lee, who was the Planning Director of the City Planning Department at the time the project was first submitted to the Planning Department, be allowed to testify on behalf of the petitioners.

In reply to Mr. Takeyama's question as to whether approval was granted for the subdivision or for the use, Mr. Lee replied as follows: "In this case, on April 23, 1965, the State Land Use Commission had adopted an interim boundary within which this subdivision fits. We felt that in granting a tentative approval of the subdivision, we were complying with the State Land Use Commission's tentative boundary. That takes care of the State Land Use Commission. Specifically, for my part as Planning Director on the City and County level, we were granting a subdivision as such and the subdivision was a division of lands of one larger parcel, 3 smaller parcels--one parcel to remain with the Bishop Estate, one parcel to go to Amity and, within that one parcel, another parcel which was supposed to be for roads. Later, the sequence of events was such that they decided the road parcel should be eliminated and that they wished to retain ownership to increase the privacy of the area. At that time, they came back to me and asked that the road be deleted. The only method of deleting that was to resubmit new maps which would indicate subdivision of the two lots rather than subdivision of three lots."

Mr. Lee continued that in December of 1961, the City Planning Commission, by Resolution #406, zoned this area class A-1 residential area. Upon that the State Land Use Commission had super-imposed another requirement.

Commissioner Ferry wondered whether Mr. Lee had also given approval to the physical development of the subdivided 20-acre parcel. Mr. Lee replied that approval was given to the subdivision of three separate parcels for which a plan was submitted, provided they complied with certain requirements of the city agencies. Insofar as the condominium subdivision was concerned, Mr. Lee stated that there was no clear-cut ruling. The developers were required to check with the fire and police departments for adequate protection, and with the City Engineer for garbage service.

Commissioner Ferry commented that the Planning Commission now had some reservations about the development of the higher slopy areas, and wondered about the developers' plans in this connection. Mr. Lee advised that approval had been given by his department for the subdivision, but that this matter had never gone before the Planning Commission because it was out of their jurisdiction. The only way this could take place was to petition the Land Use Commission for boundary change, who in turn would seek the Planning Commission's recommendation.

Commissioner Ferry raised the question of whether Mr. Lee's approval, at the time he was the City Planning Director, would super-impose the decision of the present director. Mr. Lee advised that when he gave tentative approval to the developers' plans, he was acting as an agent of the City and County of Honolulu, and that his decision would have legal status and would hold.

In response to Commissioner Ferry's query as to whether the developers would carry out the recommendations of the Planning Commission, Mr. Tharp of Amity Developers stated that they had originally requested approval for 126 units but following their topographical survey, they had cut this request down to 95, and that additional units will be removed from the area. Mr. Tharp said that they were interested in developing a plan that would be a credit to the community.

Chairman Thompson asked for additional testimony and clarification from Mr. Roy Takeyama, legal counsel. Mr. Takeyama made the following statement: "Staff's recommendation is based upon the fact that approval was granted by the Planning Director. I am in agreement with the staff-however, I am not in agreement as to the basis upon which petitioner has submitted it. In other words, petitioner is arguing that it falls within Rule 2.19B. I cannot read 2.19B as a provision upon which the petitioner can fall within a non-conforming use. This is a parcel which involves subdivision plans. However, I think Rule 2.18A regarding lawful use of land--lawful use being based mainly upon the fact that the petitioner has gotten the approval of the planning director, satisfying their mandates, and the substantial amounts of time and money spent, give him the vested right to continue. On those bases and facts presented, I am of the opinion that staff recommendation is in order."

Chairman Thompson directed that Mr. Takeyama's testimony be included in the records.

Commissioner Wung moved to accept the staff recommendation, which was seconded by Commissioner Burns. The motion was passed unanimously.

APPLICATION BY AMADOR DEL CASTILLO FOR A SPECIAL PERMIT (SP65-7) TO CONSTRUCT AN "ADULT CARE HOME" ON 1.53 ACRES OF LAND DESCRIBED BY SECOND DIVISION TMK 2-7-25: 4

Staff memorandum was read by Mr. Moriguchi (see copy on file) in which denial of special permit was recommended, based on the guidelines as set up and mandated for evaluation of special permits. Action on this request had been deferred at the August 20, 1965 meeting, pending receipt of recommendations from the Department of Health and Department of Social Services. Subsequently, these letters had been received and Mr. Moriguchi presented them to the Commissioners. Their recommendations were for approval of the special permit due to the need for such a facility in the community.

Replying to Commissioner Ferry's remark that the staff sought recommendation from the Department of Social Services and the Department of Health, yet maintained its original recommendation for denial, Mr. Moriguchi advised that these recommendations were sought at the request of the Commissioners and not by the staff.

Commissioner Ferry observed, with dismay, that many of the mainland cities have located their convalescent and nursing homes in noisy urban areas which did nothing to contribute to the patient's comfort or well-being. Fortunately, here

in Hawaii, the Land Use Commission could allow for this type of facility to be located away from an intensely developed urban area.

Mr. Moriguchi advised that there were minimum care requirement standards set up by the Department of Social Services for nursing homes.

Chairman Thompson brought out the fact that the Department of Health had jurisdiction over granting of licenses for these homes and therefore will be supervising all such facilities. It was also pointed out that no objections had been raised by property owners in the vicinity.

Commissioner Ota added that there was a definite need on Maui for a facility such as the one Mr. del Castillo was proposing. The present trend was to get away from pensioner's home and camp facilities, especially since many of the plantations were closing down. Mr. del Castillo's nursing home would serve retired plantation workers of Filipino extraction, primarily.

Chairman Thompson commented on the great need for special homes for mentally ill and retarded persons. He was of the opinion that these homes would be better served near urban facilities. In 1965 a housing act was passed and one of the provisions was that landowners charge reasonable fees, and that the federal government would supplement the difference.

Due to changing times and the severing of old ties, there will be a greater need for special care homes for the aged.

Commissioner Inaba moved, seconded by Commissioner Ota, to grant the special permit because the request was reasonable and unusual. The motion was carried unanimously.

PETITIONS OF ARTHUR AND DORIS ACHOR (A65-85) AND STANLEY & SACHIKO TABA (A65-86) TO RECLASSIFY 5.6 ACRES AND 12.8 ACRES IN AN AGRICULTURAL AREA INTO A RURAL DISTRICT

Chairman Thompson wondered if the two petitions could be discussed together since they were adjoining properties. Mr. Takeyama, legal counsel, advised that this was permissible but that action on the petitions would have to be voted upon separately.

Staff reports were presented by Mr. Moriguchi in which denial of both petitions was recommended on the following bases:

Achor - A65-85 - Mr. Achor and his former wife are merely asking to have the land subdivided for convenience in selling the lots. The area is agricultural in nature as evidenced by dedication of approximately 1,300 acres for agricultural purposes.

Taba - A65-86 - Petitioner contemplated use of portions of the land for commercial purposes. The area is agricultural in nature as evidenced by dedication of approximately 1,300 acres for agricultural purposes.

Mr. Moriguchi also read affidavits filed by Mrs. Bonnie Dunford and John D. Texeira supporting approval of the above two petitions on the basis of the need and great demand for rural lands.

Mr. Moriguchi explained that Mr. Taba's plans for the 12.7 acres included subdividing the land into half-acre lots, plus a garden-type tourist attraction for which a fee would be charged. Commissioner Ota felt that this was a permitted use in an agricultural area--that it was no difference, for example, from a golf course. Commissioner Ferry wondered whether a special permit would be required by the petitioner for a fee garden-type operation, even if the Commission zoned the area as a Rural District. Chairman Thompson directed Mr. Takeyama to look into this matter and advise the Commission.

Commissioner Nishimura expressed his feeling that since the petitions involved small parcels of land contiguous to urban areas, the Commission should grant the petitioners' requests.

Commissioner Burns wondered if any objections to the petitioners' requests had been voiced by landowners in the vicinity, to which Commissioner Nishimura replied in the negative.

Mr. Takeyama reported on the matter of the special permit in connection with Mr. Taba's petition. According to the petitioner's plans, a fee garden was contemplated only after subdivision of the property, and Mr. Takeyama's opinion was that this was no different from the growing of crops for sale, which was a permitted used.

Commissioner Nishimura added that the Kauai Chamber of Commerce had on file 250 letter requests regarding availability of lands for retirement or second homes.

Commissioner Ota commented that if the petitioners were granted the rural classification, this might serve as a logical buffer from urban to rural to agriculture since lands along the main road across the subject parcels were in urban and the mauka area was in rural.

Commissioner Ota moved that A65-85, Arthur and Doris Achor, be reclassified from an Agricultural to a: Rural District, since the subject parcel was not an economic unit for agricultural pursuit and abutted a Rural District. Commissioner Inaba seconded the motion. The Commissioners were polled as follows:

Aye: Commissioners Inaba, ota, Burns, Ferry, Chairman Thompson.

No: Commissioner Wung

The motion was carried.

Commissioner Nishimura moved to approve A65-86, Stanley and Sachiko Taba, for change of boundary to a Rural District since it abutted the urban area and was rural in nature, seconded by Commissioner Ferry. The motion was carried unanimously.

REQUEST BY JOSEPH PARK

Mr. George Moriguchi read a letter written by Mr. Joseph Park, requesting reevaluation of District Boundary from urban to agricultural. Staff memorandum (see copy on file) recommended that Mr. Park's request be considered favorably since staff felt that classification of the subject parcel from agricultural to urban was the result of an oversight and should have properly been classified as agricultural.

Mr. Park agreed with the staff's recommendation and presented several documents and letters supporting his claim that his parcel was inadvertently zoned urban (see letters on file).

In response to Mr. Moriguchi's question, Mr. Park stated that the classified lease use for his property was strictly agricultural. Mr. Park only became aware of the discrepancy when he went to dedicate his land at the tax office, at which time he was informed that only his parcel in the area had been designated urban.

Commissioner Wung moved to accept the staff recommendation, seconded by Commissioner Nishimura. The motion was passed unanimously.

ADOPTION OF MINUTES

The following minutes of the previous meetings were approved as circulated:

July 23, 1965
July 27, 1965
August 2, 1965

A short recess was called by Chairman Thompson. Meeting was resumed at 4:30 p.m.

DETERMINATION OF LANAI CITY BOUNDARY LINE

Mr. Moriguchi advised the Commission that a request had been received from Mr. Robert Ohata, Planning Director of Maui Planning & Traffic Commission, for a delineation or interpretation of the Urban Boundary around Lanai City since they were ready to begin on a general plan for Lanai. Mr. Moriguchi indicated that the red boundary line was somewhat non-conforming and recommended that the green boundary line be established as the urban area.

Commissioner Ferry wondered if the green line could be construed as the finer delineation and the accurate urban boundary line. Mr. Takeyama advised that if the ambiguity was the result of a drafting error, the Commission could make a ruling on it. After some discussion, it was the consensus of the Commissioners present that an obvious error had been made by the staff.

Commissioner Ferry moved that the green line, as recommended by staff, be adopted as the urban boundary for Lanai City, seconded by Commissioner Inaba. Motion was carried unanimously. Commissioner Ota commented that any future similar discrepancies should be brought to the attention of the Commission.

Meeting was adjourned at 4:45 p.m.

STATE OF HAWAII
LAND USE COMMISSION

County Board Room
Lihue, Kauai

2:00 P.M.
October 1, 1965

STAFF REPORT

SP65-18 - COMMUNICATIONS SATELLITE CORPORATION

A petition for a special permit from the Communications Satellite Corporation has been received and processed by the Zoning Board of Appeals of the City and County of Honolulu. Accordingly, the Zoning Board of Appeals has ordered issuance of a special permit to the petitioners, subject to final approval by the State Land Use Commission. (See Findings of Fact, Conclusions of Law, and Decision and Order of the Zoning Board of Appeals in the files.)

The Land Use Commission staff has evaluated all data submitted to date, inspected the proposed site and the surrounding lands, and applied the mandatory test as spelled out by the State Land Use District Regulations. Accordingly, the staff finds that it is particularly impressed by the fact that the potential of the agricultural lands involved will not be diminished by the proposed use since the lands will be used primarily for antenna fields.

It is the staff's recommendation that the petitioner's request for a special permit be approved.

September 22, 1965

Mr. Thomas P. Goodbody
Pratt, Moore, Bortz & Vitousek
Attorneys for Communications Satellite Corp.
P. O. Box 494
Honolulu, Hawaii 96809

Dear Mr. Goodbody:

The Land Use Commission next meets at 2:00 p.m. in the County Board Room at Lihue, Kauai on October 1, 1965.

At that time your application for a special permit will be reviewed.

Although there is no requirement for you to be present, should you wish to attend, please feel free to do so.

Very truly yours,

GEORGE S. MORIGUCHI
Executive Officer

cc: Chairman Thompson
Planning Dept., C&C of Hon.

1736

NEAL S. BLAISDELL
MAYOR

PLANNING COMMISSION
GEORGE F. CENTEIO, CHAIRMAN
CYRIL W. LEMMON, VICE-CHAIRMAN
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MANAGING DIRECTOR, EX-OFFICIO
ZONING BOARD OF APPEALS
GEORGE I. BROWN, CHAIRMAN
HENRY C. H. CHUN-HOON
HAROLD K. KOMETANI
PLANNING DIRECTOR
FRANK SKRIVANEK

CITY AND COUNTY OF HONOLULU

PLANNING DEPARTMENT
HONOLULU HALE ANNEX
HONOLULU, HAWAII 96813

September 16, 1965

RECEIVED
SEP 16 1965
State of Hawaii
LAND USE COMMISSION

Mr. George S. Moriguchi, Executive Secretary
State Land Use Commission
426 Queen Street
Honolulu, Hawaii

Dear Sir:

SUBJECT: Special Permit Application
Location: Paumalu - mauka of Kamehameha Highway
Tax Map Key: 5-9-06: Parcel 5
Applicants: Castle & Cooke, Inc. and Communications Satellite Corporation

The Zoning Board of Appeals, at its meeting on September 7, 1965, considered the application of Castle & Cooke, Inc. and Communications Satellite Corporation for a Special Permit in order to permit the construction and operation of a communication satellite earth station and related facilities within an area classified as Agricultural District by the State Land Use Commission and it was the decision of the Board that a Special Permit be issued.

Transmitted herewith are the following:

1. Findings of Fact, Conclusions of Law, and Decision and Order.

2. Application for Special Permit.

3. Zoning Board of Appeals' Minutes of July 22, 1965, August 19, 1965, and September 7, 1965.

Should additional information be desired, we will gladly assist in any way possible.

Very truly yours,

ZONING BOARD OF APPEALS

By Frank Skrivanek
Frank Skrivanek
Planning Director

RT:ef
Enc.

ZONING BOARD OF APPEALS OF THE CITY AND COUNTY OF HONOLULU

STATE OF HAWAII

IN THE MATTER OF THE APPLICATION)
)
OF)
)
CASTLE & COOKE, INC., AND COMMUNICATIONS)
SATELLITE CORPORATION FOR A SPECIAL)
PERMIT IN AN AGRICULTURAL DISTRICT)
)

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER

I. APPLICATION

The Zoning Board of Appeals, at its meetings on July 22, 1965, August 19, 1965, and September 7, 1965, considered the application of Castle & Cooke, Inc. and Communications Satellite Corporation for a Special Permit in order to permit the construction and operation of a communication satellite earth station and related facilities within an area classified as Agricultural District by the State Land Use Commission.

II. FINDINGS OF FACT

On the basis of the evidence presented the Board made the following Findings of Fact:

1. The land in question is identified by Tax Map Key 5-9-06: Parcel 5 and has an area of approximately 249 acres.

2. The land is located on the Paumalu side of the Kaunala-Paumalu boundary, on a plateau approximately 1,500 feet mauka of Kamehameha Highway.

3. The Land Use Commission classification of the land is "Agricultural District."

4. The property interests of the land are as follows: fee owner: Castle & Cooke, Inc.; lessee: Meadow Gold Dairies; sublessee of part of the area (107 acres): RCA; and optionee to purchase land: Communications Satellite Corporation.

5. Comsat has entered into a contract with Castle & Cooke, Inc. to purchase the land, subject to obtaining the necessary permit to construct satellite earth station facilities on said land.

6. The existing use of the area is as follows: one acre, identified as Lot 1-C, contains RCA buildings; 106 acres, identified as Lot 1-B, contains antennae of RCA; and the remainder of the area is used for grazing of cows by Meadow Gold Dairies.

7. Comsat proposes to construct a control building and other structures which would blend harmoniously with the surrounding uses. Initially, they will build two 85-foot diameter dish-type antennae on pedestals. As the system expands, three more will be added. The control building and the antennae will be surrounded by security fencing, but the interconnecting areas will be left open for free passage. A large area is required for physical separation of the antennae and the control buildings for safety purposes and to avoid interference.

8. The earth satellite station will be one of three such stations authorized in the United States. One other station is authorized for Maine, and another is authorized for northwestern U. S.

9. Comsat, together with the cooperation of the Hawaiian Telephone Company, has determined that the area in question is

the ideal site for the station from the standpoint of electrical interference and other problems.

10. Comsat hopes to have the station operational sometime in 1966, since by that time they hope to launch a satellite over the Pacific Ocean for the start of satellite communications service between the mainland U. S. and Hawaii and between Hawaii and Japan and other nations in the Pacific area.

11. No protests were filed.

III. CONCLUSIONS OF LAW

The Board made the following Conclusions of Law:

1. The proposed communication satellite earth station constitutes an unusual and reasonable use within the area classified as Agricultural District by the State Land Use Commission.

2. The proposed communication satellite earth station would promote the effectiveness and objectives of the State Land Use Law (Chapter 98H, R.L.H. 1955, as amended).

3. The proposed use will not alter the essential character of the surrounding area and will not adversely affect the adjoining property owners.

IV. DECISION AND ORDER

Pursuant to the foregoing Findings of Fact and Conclusions of Law, it is the decision of the Board that a Special Permit be issued to the applicants, and it is hereby so ordered, subject to final approval by the State Land Use Commission.

Dated at Honolulu, Hawaii, this 7th day of September, 1965.

ZONING BOARD OF APPEALS OF THE
CITY AND COUNTY OF HONOLULU,
STATE OF HAWAII.

George I. Brown
Chairman

APPROVED AS TO FORM:

Deputy Corporation Counsel

I hereby certify that the attached matter was duly considered by the Zoning Board of Appeals, City and County of Honolulu, on July 22, 1965, August 19, 1965, and September 7, 1965, and that the attached is a true and correct copy.

Dated at Honolulu, Hawaii, this 7th day of September, 1965.

George I. Brown
Chairman
ZONING BOARD OF APPEALS OF THE
CITY AND COUNTY OF HONOLULU,
STATE OF HAWAII.

Special Meeting of the Zoning Board of Appeals
Minutes
September 7, 1965

The Zoning Board of Appeals met in special session on Tuesday, September 7, 1965, at 1:15 p.m., in the Conference Room of the City Hall Annex with Chairman George I. Brown presiding:

PRESENT:

George I. Brown, Chairman
Henry C. H. Chun-Hoon
Harold K. Kometani

Frank Skrivanek, Planning Director
Wendell Kimura, Deputy Corporation Counsel

LAND USE COMMISSION SPECIAL PERMIT PUPUKEA-PAUMALU 1,500 FT. MAUKA OF KAMEHAMEHA HWY. CASTLE & COOKE, INC., & COMMUNICATIONS SATELLITE CORPORATION (COMSAT)

Pursuant to the provisions of Chapter 98H of the Revised Laws of Hawaii, 1955, as amended, the Zoning Board of Appeals held a public hearing on Thursday, August 19, 1965, to consider an application filed by Castle & Cooke, Inc., and Communications Satellite Corporation (Comsat), for a Special Permit to construct, own, and operate a communications satellite earth station and related facilities on a parcel of land comprising approximately 249 acres, situated on a plateau approximately 1,500 feet mauka of Kamehameha Highway and located on the Paumalu side of the Kaunala-Paumalu boundary, more particularly identified as Tax Map Key 5-9-06: Parcel 5, within an Agricultural District of the State Land Use Commission District Boundary Map.

Under the State Land Use Commission Act, the Board cannot act on the application earlier than 15 days after the public hearing date. The 15th day was Friday, September 3, 1965, and the Board may now act on the application.

The Director explained briefly the jurisdiction of the Zoning Board of Appeals to review this application and the time limitations for considering the application, making a decision, and submitting its decision to the Land Use Commission. The Board's decision must be submitted to the Land Use Commission within 10 days after such a decision is rendered. The Commission will make the final decision on the application. A disapproval action by either agency is appealable to the circuit court of appeals.

The Director noted that a field inspection of the land requested for a special permit was made by the Board members. The Board felt that the proposed use of the land for a communications satellite earth station and related facilities was a unique and reasonable use of land within an agricultural district and will not interfere with the present agricultural use

of the land nor interfere with normal television reception and services of that nature. The Planning Department has no objection to this type of use in the area, but felt that a provision be made for cancellation of the special permit if there is no approval by the Federal Communications Commission to construct the earth station.

Chairman Brown recalled that this provision was agreeable by the applicants.

Mr. Thomas Goodbody, representing the applicants, confirmed that they have no objection to placing such a provision in the special permit. He stated that the present agricultural use of the land which is for grazing of cows will continue jointly with the operation of the earth station.

Mr. Chun-Hoon noted that the access road to the site is in very poor condition, permitting only one moving lane of traffic, and asked who is responsible for improving the roadway. He was concerned about providing proper access to lands in the interior section which are capable of being developed some day.

Mr. Goodbody assured the Board that the road will be improved to a two-way road as part of the Comsat development. The road improvement will be very substantial because they anticipate a number of people visiting the area. This has been true of other areas where Comsat has the same type of operation.

Mr. Kometani did not believe it necessary to require the construction of the roadway as a condition to approval. With the vast amount of investment involved in the operation and to meet emergency conditions, such as fire, he felt that the developer would improve the road. However, one method of assurance could probably be at the time the Director approves the final building plans which should include the construction of the roadway.

Mr. Chun-Hoon agreed that this requirement need not be made as a condition of approval.

The Board discussed the matter further, taking into consideration the presentation made by the applicant at the public hearing, the conditions found on the site, and the fact that this site is the only site on the island of Oahu and the entire State of Hawaii to meet the qualifications of the engineers for the earth station.

The Board determined that the proposed use of the land for a communications satellite earth station is an unusual and reasonable use of land situated within

the agricultural district and would promote the effectiveness and objectives of the Land Use Commission Act. The proposed use will not alter the essential characteristics of the neighborhood which is in grazing use nor interfere with normal television reception.

Based upon its findings, the Board approved the granting of a special permit to the applicants for the use desired on the subject land with the condition that the permit is to be revoked if there is no approval from the Federal Communications Commission to construct a satellite earth station complex in Hawaii. The motion was made by Mr. Chun-Hoon, seconded by Mr. Kometani, and carried unanimously.

The Board's decision and findings will be transmitted to the Land Use Commission within 10 days.

ADJOURNMENT: The meeting was adjourned at 1:22 p.m.

Respectfully submitted,

Carole A. Kamishima
Carole A. Kamishima
Secretary-Reporter II

Meeting of the Zoning Board of Appeals
Minutes
August 19, 1965

The Zoning Board of Appeals met in regular session on Thursday, August 19, 1965, at 2:00 p.m., in the Conference Room of the City Hall Annex with Chairman George I. Brown presiding:

PRESENT: George I. Brown, Chairman
Harold K. Kometani

Frank Skrivanek, Planning Director
Henry Kitamura, Deputy Corporation Counsel

ABSENT: Henry C. H. Chun-Hoon (on trip)

MINUTES: The minutes of August 5, 1965, as circulated, were approved on motion of Mr. Kometani and second of Mr. Brown.

PUBLIC HEARING
SPECIAL PERMIT
(LAND USE COMM.)
PUPUKEA-PAUMALU
1,500 FT. MAUKA
OF KAMEHAMEHA HWY
CASTLE & COOKE, INC.,
& COMMUNICATIONS
SATELLITE CORPOR-
ATION (COMSAT)

At 3:00 p.m., a public hearing was held, pursuant to the provisions of Chapter 98H of the Revised Laws of Hawaii, 1955, as amended, to consider an application for a Special Permit filed by Castle & Cooke, Inc., and Communications Satellite Corporation (Comsat), to construct, own, and operate a communications satellite earth station and related facilities on a parcel of land comprising approximately 249 acres, situated on a plateau approximately 1,500 feet mauka of Kamehameha Highway and located on the Paumalu side of the Kaunala-Paumalu boundary, more particularly identified as Tax Map Key 5-9-06: Parcel 5, within an Agricultural District of the State Land Use Commission District Boundary Map.

The public hearing notice published in the Sunday Star Bulletin and Advertiser of August 8, 1965, was read by the Director. Copies of the hearing notice were sent to the applicants, the State Land Use Commission, other State and City departments, Radio Corporation of America, Castle & Cooke, Meadow Gold Dairies, Comsat, and to 14 adjoining property owners. No written protests have been received.

The Director pointed out on the map the land in question situated in Paumalu-Pupukea and containing approximately 249 acres. Portions of the land are sub-leased to RCA and to Meadow Gold Dairies. In addition to meeting the requirements of the Land Use law, the Director suggested that the special permit be made subject to obtaining approval from the Federal Communications Commission to construct a satellite earth station in Hawaii; otherwise, a special permit would be granted for a use that cannot be executed.

Present were Attorney Thomas Goodbody, representing the applicants Castle & Cooke, Inc., and Comsat; Mr. Frederick Huszagh from Washington, D. C., and associated with Comsat; Mr. Mathew Mautz, operational manager of the earth station in Hawaii; and Mr. John Palk, representing the land owner, Castle and Cooke.

Mr. Goodbody stated that a binding contract for purchase of the land has been entered into by Comsat with Castle and Cooke, owner of the land, subject to obtaining the necessary permit to construct the satellite earth station facilities on the land. He stated that the entire area of approximately 249 acres is leased to Meadow Gold, and Meadow Gold in turn has subleased the area identified as Lot 1-b and Lot 1-c containing a total area of 107 acres to RCA. Lot 1-c, containing as area of one acre, is the area on which the RCA buildings are located. Lot 1-b is the area where the antennas are located. This sublease is fully protected and Comsat will honor that lease. Meadow Gold will continue to use the land, except for that portion used by the antennas and buildings, for grazing of cows.

An agreement also has been entered into between Comsat and Meadow Gold indicating that Comsat can exercise its option to take any portions of the remaining land for its use. He introduced Mr. Huszagh to report how Comsat was formed.

Mr. Huszagh stated that the Corporation was allowed to be formed through Act of Congress in 1962. At that time, Congress reviewed whether the communications satellite system should be a government or private enterprise and decided that it should be a private ccrporation suitably supervised by the government because this involved international communication with foreign countries. Subsequent to the Act, the Corporation was incorporated with two types of stocks issued. One type was for sale to the general public and the other was to be held by the communication carriers. Each of these corporation stocks appointed six directors and the President of the United States appointed three additional directors.

As the Corporation developed, it was decided that in setting up a world-wide system, it was necessary to join into partnership with foreign countries and under the auspices of the State Department, an executed agreement was entered into with 46 countries. Under the Act, the actual ownership of each earth station is reserved for the countries involved. Comsat will own and operate outright the stations in the United States. Three earth stations were authorized and the Corporation hopes to be established by 1968. One station is authorized in Maine, one in the

northwest United States, and the other in Hawaii.

Their engineers, in cooperation with the Hawaiian Telephone Company, examined this area in Paumalu in regard to electrical interference and other problems and determined that the site was ideal for the station. In the meantime, negotiations are being made to establish its main facilities in Washington. Comsat hopes to have this station operational sometime in 1966 because by that time they hope to launch a satellite over the Pacific Ocean for the start of satellite communications service between the mainland United States and Hawaii and between Hawaii and Japan and other nations in the Pacific area.

Mr. Brown asked Mr. Goodbody whether the proposed operation has been determined to be a public utility under the State laws.

Mr. Goodbody indicated that under the City ordnances, public utilities are permitted in a Rural Protective zone. The problem here, he felt, was little broader. The question is whether the proposed operation will be used as a public utility. As stated in the application, the operation is a satellite earth station to be integrated with the terrestrial communications system in the State of Hawaii so that the Hawaiian Telephone Company, which is clearly a public utility subject to the regulations of the Public Utilities Commission, will send messages over its own lines through this unit, up to the satellite, then to a place in Washington where the messages will be picked up by other public utilities; thus, becoming an integral part of the entire global communications satellite system. They believe that it is a public utility in itself although it is not subject to the regulations of the Public Utilities Commission under State law.

Asked by Mr. Brown whether this site in Paumalu is the best one that can be located in the State of Hawaii, Mr. Huszagh replied that it is.

Mr. Brown then called upon Mr. Mautz to explain the facilities that are to be placed on the land and whether or not the operation would interfere with the present grazing use of the land.

Mr. Mautz stated that there will be no interference with grazing. The fixtures to be installed will consist of 85-foot diameter dish type antennas on pedestals, portion of which will be underground. The control building and other structures on the land, as specifically stated in their request, will conform in architecture and style with the customs of the State and should blend harmoniously with the surrounding uses. Initially there will be two 85-foot

antenna structures which will be increased to five as the system expands throughout the Pacific and World. The large area is required for physical separation of the antennas and the control buildings for safety purposes and for no interference. The antennas and the control buildings will be surrounded by security fencing but the inter-connecting areas will be left open for free passage.

Asked by Mr. Brown, Mr. Mautz verified that property owners in the interior area will have permanent easement rights to their land over this property.

Mr. Wade McVay, trustee of the James Campbell Estate, owner of land in the adjacent area, asked whether the transmitters will interfere with developments in the adjacent properties, say, for residential uses in the future. Interference, for instance, with television.

Mr. Kometani noted that the Board took that into consideration and was assured by Mr. Goodbody that the Federal Communications Commission in granting a license takes that into consideration before approving the license.

Mr. Mautz stated that there will be no radiation or harm to anyone, nor interference with television reception. The operation is safe enough that a man can work right at the bottom of the towers.

The Board closed the public hearing and took the matter under advisement on motion of Mr. Kometani and second of Mr. Brown.

Since under the State Land Use Commission Act, the Board cannot take action earlier than 15 days after the public hearing, this matter was deferred for four weeks.

PUBLIC HEARING
ZONING VARIANCE
(CLASS A RES.)
MAKIKI
1815 POKI ST.
KOON HOY HO
BY: NORMAN K.
CHUNG, ATTY.

A public hearing was held, under the provisions of Section 5-515(3) of the Charter of the City and County of Honolulu, to consider an application for variance from the existing Class A Residential regulations to permit the use of a portion of a lot for off-street parking purposes in conjunction with an apartment development to be constructed on a parcel of land at 1815 Poki Street, situated on the Koko Head side of Poki Street approximately 100 feet mauka of Dominis Street, in Makiki, and covered by Tax Map Key 2-4-23: Parcel 6.

The public hearing notice published in the Sunday Star Bulletin and Advertiser of August 8, 1965, was read by the Director. Copies of the hearing notice were sent to the various City and State departments, and to eight adjoining property owners. He acknowledged

Meeting of the Zoning Board of Appeals
Minutes
July 22, 1965

The Zoning Board of Appeals met in regular session on Thursday, July 22, 1965, at 3:00 p.m., in the Conference Room of the City Hall Annex with Chairman George I. Brown presiding:

PRESENT: George I. Brown, Chairman
Henry C. H. Chun-Hoon
Harold K. Kometani

Frank Skrivanek, Planning Director
Wendell Kimura, Deputy Corporation Counsel

MINUTES: The minutes of July 8, 1965, as circulated, were approved on motion of Mr. Kometani and second of Mr. Brown.

PUBLIC HEARING
ZONING VARIANCE
(HOTEL & APT.)
C.B.D.
MAKAI SIDE OF
VINEYARD THOROUGH-
FARE BET. EMMA &
PUNCHBOWL STS.
DR. YEN PUI CHANG,
ET AL

A public hearing was held, under the provisions of Section 5-515(3) of the Charter of the City and County of Honolulu, to consider an application for a zoning variance from the existing Hotel and Apartment regulations to permit the encroachment of a business use (service station) within the Hotel and Apartment zoned portion of a lot containing a total area of 15,222# situated on the makai side of Vineyard Thoroughfare between Emma and Punchbowl Streets and covered by Tax Map Key 2-1-19: Parcel 8. Presently, 8,800# of this property is zoned for business use and the remaining 6,422# is zoned for hotel and apartment use.

The public hearing notice published in the Sunday Star Bulletin and Advertiser of July 11, 1965, was read by the Director. Copies of the hearing notice were sent to the applicant, the various City and State agencies, Shell Oil Company, and to eight adjoining property owners. No written protests have been received.

The property in question was pointed out on the map by the Director. He reported that the zoning line runs through the lot. The makai portion is zoned Business while the mauka portion fronting the Thoroughfare is zoned Hotel and Apartment. This property and two adjoining properties on the Ewa side, at one time, were included in the Civic Center area, but under the revised plan prepared by consultants for the Civic Center Policy Committee, the three properties were excluded and designated as an area permissible for commercial uses. Recently, an application was submitted for location of a Child Welfare Center on the adjoining property. Since this is an institutional use, no rezoning or variance approval by the Zoning Board of Appeals is required. A service station is proposed to be constructed on the property under consideration for variance. The applicant is presently located at the corner of Punchbowl and

In considering this matter later, the Board determined that there is sufficient evidence to meet the three conditions of hardship specified in the City Charter.

ACTION: The Board granted a variance from the Class A-1 Residential zoning regulations to permit the construction of a single family dwelling on the subject lot containing an area of 3,975sf with the attachment of the plot plan submitted on motion of Mr. Kometani and second of Mr. Chun-Hoon.

ZONING VARIANCE
(CLASS A-1 RES.)
MANOA
2377 EAST
MANOA ROAD
MR. & MRS. LEONARD
J. O. BONAR

The Board, on motion of Mr. Kometani and second of Mr. Chun-Hoon, deferred action on an application for variance from the existing Class A-1 Residential regulations to permit two dwelling units on a parcel of land containing an area of 14,554sf situated at 2377 East Manoa Road in Manoa. A plot plan of the property showing the location of the existing dwellings and the distance between buildings and property line requested by the Board has not been received.

ZONING VARIANCE
(CLASS A RES.)
KAHALA HEIGHTS
1557-B PAULA DR.
MR. & MRS. ALBERT
HIRONAKA

The Board also deferred action on an application for variance from the existing Class A Residential regulations to permit the construction of an additional dwelling for a total of two units on a parcel of land containing an area of 9,890sf situated at 1557-B Paula Drive in Kahala Heights.

The Director had reported that the applicant could not be present today and stated that a letter would be submitted in reply to the Board's request for some assurance or a performance bond posted that the off street parking area for two cars will be provided simultaneously with the construction of the new dwelling.

The motion for deferral was made by Mr. Kometani, seconded by Mr. Chun-Hoon, and carried.

SPECIAL PERMIT
(LAND USE COMM.)
PAUMALU
THOUSAND FEET
MAUKA OF KAM HWY.
CASTLE & COOKE,
INC., & COMMUNI-
CATION SATELLITE
CORPORATION
BY: THOMAS P.
GOODBODY, ATTY.

The Board considered a petition filed by Castle and Cooke, Inc., and Communications Satellite Corporation (Comsat) for a special permit to construct, own and operate a communications satellite earth station and related facilities on land containing approximately 249 acres situated approximately 1,000 feet mauka of Kamehameha Highway in Paumalu within the Agricultural District of the State Land Use Commission District Boundary Map.

The Director cited the provisions of the Land Use Commission law wherein special permits may be granted for a use which is an unusual and reasonable use of land situated within an agricultural district. The Zoning Board of Appeals must hold a public hearing within a period of not less than 30 nor more than 120 days from the receipt of the petition. The present application was received on July 19, 1965. The Board shall act upon such petition no earlier than 15 days after the hearing and shall transmit its decision

together with its findings to the Land Use Commission within 10 days after the decision is rendered. The Land Use Commission will make the final decision to approve or disapprove the petition. A disapproval action is appealable to the circuit court of appeals.

The Director pointed out on the map the land in question requested for a special use permit. He indicated that a small portion of the land will be affected by the alignment of a new highway proposed in the area; however, construction of this highway will be sometime in the future. One question asked by the staff is whether the proposed use by the petitioners falls within the definition of a public utility. He was inclined to believe that it would because of the Federal act governing communication satellites.

Another question is in reference to a sublease of a portion of the property to RCA. Hawaiian Telephone Company is also involved in the operation. He noted that a more complete description of the proposed earth station, location of the antennas, information on the sublease to RCA and other information pertaining to the proposed use are contained in the written application by Comsat to the Federal Communications Commission.

Mr. Thomas P. Goodbody, attorney, representing the petitioners, gave the following information:

(1) With reference to the question mentioned as to whether or not Comsat is a public utility, a thorough investigation was made for purposes of deciding whether or not Comsat had power of eminent domain to obtain the property in question. It was determined clearly that Comsat is a public utility but the State statutes on eminent domain did not give the power of eminent domain to foreign corporations engaged only in inter-state commerce. Comsat, of course, is engaged in inter-state commerce, having to do with receiving messages through microwaves or some such method from 23,000 miles out in space through a local station then transmitting to the downtown television and radio stations and other stations. The operation will be linked with the Hawaiian Telephone Company in a similar manner the American Telephone and Telegraph Company is linked with Comsat on the mainland.

(2) Comsat, after several months of negotiation, has been able to obtain an option to purchase the land in question.

(3) The proposed sublease to RCA is an existing sublease with the present owner. RCA is presently located in the area and its antenna towers are up.

(4) RCA, several years ago, requested and obtained a declaratory ruling from the Land Use Commission, during

the time of the interim regulations, that it was a public utility, and therefore, its electrical lines and facilities could be located within an agricultural district. RCA, therefore, has a building on the site manned by about five persons during the day and night.

(5) Although Comsat's operation is similar to RCA's, it does not have lines that other utility companies have, such as gas, electric and telephone. Comsat's operation will be much larger than RCA's.

(6) Upon consultation with the personnel of the Planning Department and the Land Use Commission, Comsat was advised to request a declaratory ruling whether it was a public utility, and therefore, permitted within an agricultural district. Such a request was filed but they are not very optimistic that the ruling would be in their favor. A request, therefore, is made at this time to the Zoning Board of Appeals for a special permit. If the ruling is in their favor, the request for special permit will be withdrawn.

(7) With reference to RCA's operation, he believed that it was protected under a "grandfather clause" and can continue its operation in an agricultural district as a non-conforming use.

(8) There is also an existing sublease by Castle and Cooke, owner of the land, with Dairymen's Association, Ltd., (Meadow Gold Dairies-Hawaii, Ltd.) which has cows grazing in the entire area.

(9) The option for purchase is subject to continuing the two leases and some special agreements are being worked out to continue the subleases. Comsat recognizes that Dairymen's would continue to run cows over most of the area.

(10) The special use permit is requested for the entire area containing approximately 249 acres because someday, eventually, Comsat might want to use the entire area.

In the discussion that followed, Mr. Brown asked whether the present lessees should be a party to this application.

Mr. Kimura advised that the application should be clear that the applicants are Castle and Cooke, the fee simple title owner of the land, and Comsat which has an option to purchase the land. There should also be an acknowledgement of this application by the sublessees.

Mr. Goodbody stated that an acknowledgement from the two sublessees will be obtained. He stated that there is an executed agreement with Dairymen's Association which is looking forward to the location of the earth

satellite station in the area. There is no agreement presently with RCA but because its operation is confined in a small area, Comsat presently has no plan to use the area. He did not believe that RCA would protest this application.

Mr. Brown asked the legal counsel whether or not there is any problem in the use of the land by RCA as a non-conforming use.

Mr. Kimura could not properly advise the Board since he was not familiar with the exact nature of the operation. However, he felt that there is a possibility that RCA is protected by a "grandfather clause". He felt it wise for the Board to take note of the RCA operation and indicate the continuance of the use as part of the special permit to avoid any problems later. He foresaw no difficulty since the present non-conforming use was not being changed to a different type of non-conforming use.

Mr. Brown inquired whether Comsat had knowledge of the proposed new alignment of the highway.

Mr. Goodbody replied that they had no knowledge of the new road alignment but noticed that it is below a bluff.

Mr. Chun-Hoon recalled that sometime ago there was a stock promotion asking people to invest in a venture involving land somewhere in this vicinity. He asked Mr. Goodbody whether he had knowledge of such a promotion and whether there were some other lessees of the subject land that he was not aware of.

Mr. Goodbody did not believe that there were other lessees because the subleases with RCA and Dairymen's have restricted the use of the land for many years. These leases prohibit any development for residential or commercial uses. It happens that Comsat's operation is similar to RCA's so that it fits into the area. Cows can still roam around without interfering with the antennas.

Mr. Brown indicated that if this application is considered, the Board would like to tie it in with the FCC's approval. He assumed that the installations would be permanent because they will be made a part of the special permit. If thepermitted use is abandoned, the area will revert to its original status of agriculture and the permit will be canceled.

Mr. Goodbody understood the situation. However, he felt that the proposed use was such a specialized use that there probably wouldn't be a need to put conditions on it.

This matter was taken under advisement on motion of Mr. Chun-Hoon and second of Mr. Kometani.

ACTION: Later, the Board decided to hold a public hearing on August 19th to consider the petition and to visit the site on the next meeting date which is August 5th. The motion was made by Mr. Kometani, seconded by Mr. Chun-Hoon, and carried.

ZONING VARIANCE (CLASS A RES.) PACIFIC HEIGHTS 2502 PACIFIC HEIGHTS ROAD MR. & MRS. RALPH COREY BY: MORIO OMORI & HIROSHI SAKAI, ATTORNEYS

Mr. Hiroshi Sakai, the attorney for Mr. and Mrs. Ralph E. Corey, applicants, had submitted a request for the reconsideration of the denial action taken previously by the Board to permit the use of an existing four story building situated at 2502 Pacific Heights Road as a three unit apartment house. Also submitted was a Memorandum to support their request for reconsideration.

The Chairman noted that the Board had taken action to deny the request for variance on September 3, 1964. A request for reconsideration of the denial action was submitted and the Board on October 1st took action not to reconsider the denial action taken on the basis that there was no new evidence presented to support or justify a reconsideration. A motion was made at that time to notify the Prosecuting Attorney's office of a possible zoning violation and requesting an investigation and disposition. Another request for reconsideration was denied on January 21, 1965, on the basis that no new evidence was presented. The staff was asked to report on the status of the investigation being conducted by the Prosecuting Attorney's office.

The Director read the letter from Mr. Samuel N. Harris, Special Investigator from the Office of the Prosecuting Attorney, reporting on the status of the alleged zoning violation at 2502 Pacific Heights Road. He reported that the Coreys were given notice to clear the zoning violation within 30 days from date of notice (July 20, 1965) and advised that failure to comply would result in legal action being taken by his office.

The Chairman corrected a statement made in the letter from Mr. Harris. He stated that the function of the Board is not to request enforcement and/or prosecution of an alleged zoning violation. The Board merely requests the Director to take necessary action to notify the proper authority for correction of an alleged zoning violation. He also noted a statement made by the Director at a previous occasion that the City Council had denied a request for a zoning change to apartment use for the subject property. Regarding this new request for reconsideration dated July 2, 1965, he recalled that the members felt that the full board should be in session when considering it. Since Mr. Chun-Hoon who was on the mainland on vacation has returned, the Board is now in a position to make some decision.

ZONING BOARD OF AP LS
CITY AND COUNTY OF HONOLULU

~~STATE OF HAWAII~~
~~LAND USE COMMISSION~~

426 Queen Street
Honolulu, Hawaii

This space for official use

Date Application and Fee received ~~by LUC~~ _____

APPLICATION FOR SPECIAL PERMIT

~~XXX~~ (We) hereby request approval of a special permit to use certain property located in the City and County of Honolulu, Island of Oahu, Land Use Commission Temporary District Boundary map number and/or name 0-3 _____, for the following-described purpose:

As set forth in Exhibit "A", attached hereto

Description of property:

Approximately 249 acres of land situate at Paumalu, said City and County of Honolulu, the same being identified as Tax Map 5-9-06-05, a copy of which is attached hereto as Exhibit "B".

Petitioner's interest in subject property:

As set forth in Exhibit "C" attached hereto

Petitioner's reason(s) for requesting special permit:

As set forth in Exhibit "D" attached hereto

CASTLE & COOKE, INC.

Signature(s) By J K Falk
Its Asst Treasurer
COMMUNICATIONS SATELLITE CORPORATION
By Thomas P Goodbody
Its Attorney

Address: 1100 First Nat'l Bank Bldg.

Telephone: 567-261

This space for official use

The property is situated in a(n) _____ district, whose regulations adopted by the Land Use Commission prohibit the desired use.

Signature(s) _____

_____

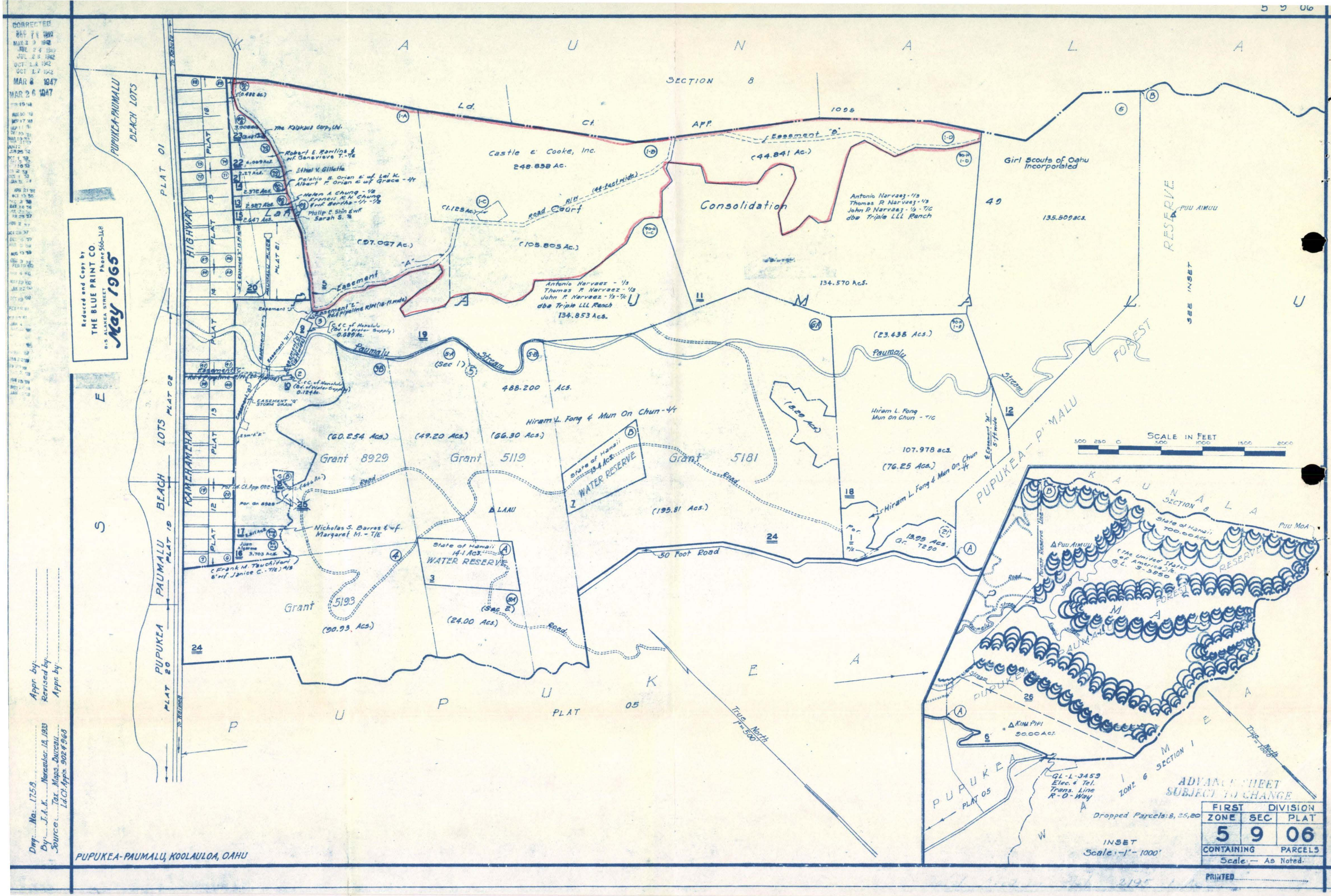
For (agency) _____

EXHIBIT "A"

PURPOSES:

To construct, own and operate a communications satellite earth station and related facilities, integrated with the terrestrial communications system in the State of Hawaii, for communication with similar earth stations in the continental U.S. and in various countries in the Pacific area via a communications satellite system established pursuant to the Communications Satellite Act of 1962. The station will be composed of several steerable antennas, a control center, interconnect facilities, power and utility facilities, and such other structures and facilities as are appropriate to maintain and operate the station. The earth station will be capable of establishing, via satellites, telecommunication links, including multi-channel telephony, telegraph, facsimile, high speed data and both color and monochrome television, with similar earth stations in the continental U.S. and in various countries in the Pacific, for interconnection with terrestrial telecommunication systems. A more complete description of the proposed earth station and its capabilities is set forth in the Communications Satellite Corporation's application to the Federal Communications Commission dated July 12, 1965, a true and correct copy of which is filed with this petition.

Exhibit "A"



5 9 06
CORRECTED
MAR 8 1947
MAR 26 1947
Reduced and Copy by THE BLUE PRINT CO. 815 ALAKEA STREET Phone 566-118
May 1965
PUPUKEA-PAUMALU BEACH LOTS
KAMEHAMEHA HIGHWAY
SECTION 8
Castle & Cooke, Inc.
248.838 Ac.
Girl Scouts of Oahu Incorporated
Consolidation
(44.841 Ac.)
Antonio Narvaez - 1/3
Thomas P. Narvaez - 1/3
John P. Narvaez - 1/3 - T/C
dba Triple LLL Ranch
134.853 Acs.
134.570 Acs.
135.809 acs.
(97.067 Ac.)
(105.805 Ac.)
Easement "A"
Easement "B"
Paumalu Stream
488.200 Acs.
Hiram L. Fong & Mun On Chun - 1/4
Grant 8929
Grant 5119
Grant 5181
Grant 5193
(60.254 Acs.)
(49.20 Acs.)
(66.30 Acs.)
(195.81 Acs.)
(90.93 Acs.)
(24.00 Acs.)
State of Hawaii 14.1 Acs. WATER RESERVE
State of Hawaii 13.4 Acs. WATER RESERVE
Hiram L. Fong Mun On Chun - T/C
107.978 acs.
(76.25 Acs.)
(23.438 Acs.)
13.95 Acs. Gr. 7290
50 Foot Road
PUPUKEA-PAUMALU FOREST RESERVE
SEE INSET
SCALE IN FEET
500 250 0 500 1000 1500 2000
Nicholas S. Barros & wf. Margaret M. - T/E
Frank M. Tsuchitori & wf. Janice C. - T/E
The Kalakaua Corp. Ltd.
Robert E. Rawlins & wf. Genevieve T. - T/E
Ethel V. Gillette
Helen A. Chung - 1/2
Philip E. Shin & wf. Sarah S.
True North 1" = 500'
PLAT 05
INSET Scale: 1" - 1000'
State of Hawaii 700.60 Acs.
(The United States of America) G.L. S-3950
GL-L-3459 Elec. & Tel. Trans. Line R-O-Way
50.00 Acs.
Dropped Parcels: 8, 25, 20
ADVANCE SHEET SUBJECT TO CHANGE
FIRST DIVISION
ZONE 5 SEC 9 PLAT 06
CONTAINING PARCELS
Scale - As Noted.
PRINTED
Dwg. No. 1758
By J.A.K. November 18, 1933
Source: Tax Maps Bureau Ld. Ct. Apps. 902 & 968
Appr. by
Revised by
Appr. by
PUPUKEA-PAUMALU, KOOLAULOA, OAHU

Exhibit "B"

EXHIBIT "C"

PETITIONERS' INTERESTS IN SUBJECT PROPERTY:

The Petitioners, Castle & Cooke, Inc. and Communications Satellite Corporation, hold, respectively, fee simple title to the property and an option to purchase the property. In light of the urgent need to construct the satellite earth station by the Fall of 1966, Comsat on July 10, 1965 obtained from Castle & Cooke, Inc. an option entitling it to purchase the property, so that, prior to actual purchase it could seek and obtain at the earliest possible date the requisite federal, state and local governmental permits and authorizations, including a special permit, for the construction, ownership and operations of the earth station and related facilities upon the site.

Exhibit "

EXHIBIT "D"

PETITIONERS' REASONS FOR REQUESTING A SPECIAL PERMIT:

The proposed earth station will be established in furtherance of the Communications Satellite Act of 1962, two international agreements to which the U.S. government and Comsat are parties along with 45 other countries and their designated communications entities, and a Report and Order of the Federal Communications Commission (issued on May 13, 1965, FCC File No. RM-644) implementing the Satellite Act. That Act directs Comsat to establish a global communications satellite system, in cooperation with other nations, as expeditiously as possible and to construct satellite earth stations when licensed by the Commission. In August, 1964 the U.S. government and Comsat entered into two multilateral agreements with other nations and their designated communications entities which provide for the establishment and operation of the satellites to be used in the global communications satellite system. Lastly, the Federal Communications Commission, pursuant to its responsibilities under the Satellite Act, declared that it was in the national interest that the satellites for the global system and the U.S. earth stations which would operate with them should be established as expeditiously as possible, and directed Comsat to construct, own and operate the three stations, including one in Hawaii, required for the initial period of operations of the global system.

Pursuant to the FCC Order, Comsat, in cooperation with the Hawaiian Telephone Company, investigated various locations in the State of Hawaii and determined that the

Exhibit "D"

above-mentioned site represents the best location, due to its relative freedom from microwave interference problems, the relatively dry climate, the nature of the topography (which will not restrict the station's operating parameters), and the relative isolation of the site from populated areas. The nature of the present uses of the site are such that Comsat has been able to make arrangements for their continuation during the construction and operation of the proposed satellite earth station. Furthermore, it is apparent from an analysis of the site and the proposed earth station, that the essential character of the area will remain unaltered and that the burden the operation of the earth station on the site will impose upon public agencies will be immeasurably offset by the benefits to Hawaii and the Nation which will result from the operation of the earth station.

As stated on pp. 9-10 of Comsat's application to the FCC, the present schedule for the inauguration of satellite communications service between Hawaii and the continental U. S., and between Hawaii and Japan and other nations in the Pacific area, calls for launch over the Pacific Ocean of a communications satellite or satellites in the Fall of 1966. It is therefore necessary that the Hawaiian earth station be operational at that time. The leadtime for the construction and activation of Comsat's proposed earth station is such that it is imperative that the construction of the station commence as soon as possible.

Such construction can begin as soon as the special permit herein requested has been obtained from the FCC and local agencies. For this reason the petitioners request as prompt consideration of this request as is possible under existing regulations.

Appeals Board OKs Sunset Comsat Site

adv. 9-9-65

The Zoning Board of Appeals Tuesday approved a special permit for construction of a $10 million communications facility on a 249-acre tract near Sunset Beach.

Communications Satellite Corp. (Comsat) and Castle and Cooke requested the special permit to build the facility on land zoned for agricultural use.

Comsat and Castle and Cooke now must get the approval of the State Land Use Commission.

The Zoning Board of Appeals met in special session to rule on the case. The board heard the case two weeks ago, but had to wait the statutory 15 days before ruling.

Star Bulletin 9-16-65

ComSat eyes wider-range TV satellite

WASHINGTON (UPI) — The Communications Satellite Corporation (ComSat) is studying the possibility of launching a satellite to provide full, 12-channel television throughout the U.S.

The idea is still in the germination stage. But in the long run it could be more important to Hawaii than the heralded launching next year of the first Pacific Early Bird satellite.

Hawaii's hope of leaving the kinescope era and linking up to live Mainland television has always been closely connected with the Pacific satellite.

A multi-million dollar ground station on Oahu to receive and transmit television signals from the Pacific Bird is already in the works.

But the plan is not without its problems.

In the first place, the satellite—one year before the tentative launch date — still has not been approved.

A 13-member international consortium which controls all activity involving the proposed global satellite system, met here last week for four days. For the second straight month, it failed to approve the Pacific launching.

ComSat is not particularly alarmed about the lack of action. A spokesman said no formal vote was taken on the Pacific satellite project. He said there is still plenty of time for the international group to act.

But there is some fear the hesitancy of foreign partners could hinder establishment of a permanent global system once the satellite is launched.

Moreover, the economics of the satellite business diminishes the possibility that Hawaii, in the foreseeable future, will get a steady diet of live television simply by hooking up to the global system.

It would be prohibitively expensive for a TV network to rent satellite time from ComSat—to the tune of several thousand dollars an hour—just for Hawaii's benefit. The advertising revenue from such service would be minimal, if not negligible.

At best, communications experts feel, Hawaii at the outset will receive a few, widely scattered TV programs beamed to Far Eastern nations, such as Japan, which build their own ground stations.

With a domestic satellite, however, the economics of satellite television could be a vastly different proposition.

Networks could afford the rent, assuming they chose to use the domestic satellite as a conveyance, since their offerings would be distributed not only to Hawaii, but to their affiliate stations on the continent.

The American Broadcasting Company notified the Federal Communications Commission last May 13 it was looking into the possibility of launching its own satellite.

ComSat, in reply, said A.B.C. could not do it, since Congress gave ComSat exclusive authority to handle commercial satellite communication.

Later, ComSat president Joseph V. Charyk said his organization was seriously considering the domestic satellite idea and there was little doubt that such a service could be provided "on a sound economical basis."

A ComSat spokesman said today the idea is still being actively discussed by the corporation.

Like all proposals which the infant communications satellite industry has discussed, this one is fraught with problems.

To receive a satellite signals, television stations would have to erect special dish antennae. Whether the cost of this would be outweighed by the economic benefits of full-satellite television has not been calculated.

Adv. 9-16-68

New Satellite Would Boost TV Here

A second space communications system may be developed for Hawaii to speed and increase live television programming from the Mainland.

A spokesman for Communications Satellite Corp. (Comsat) said yesterday in Washington, D.C., that a relay sysetm involving only the United States might be launched for Hawaii.

This would be in addition to an international system and would make it cheaper to include the Islands in Mainland television programming, the spokesman said.

So far, Hawaii's hopes for its first live television from the Mainland have been pinned on the Early Bird experimental satellite which Comsat plans to launch over the Pacific in synchronous orbit next spring or summer.

Ground is scheduled to be broken near Sunset Beach soon for a ground station to receive voice, teletype and television transmissions via Early Bird starting late next year.

Although transPacific television then will become technically feasible, comparatively few commercial broadcasts via Early Bird are expected to be received here—at least at the outset. The cost would be prohibitive to the networks.

The networks could not be expected to foot bills of several thousand dollars an hour just for Hawaii viewers. The advertising revenue for such a service would be nominal.

At best, communications experts feel, Hawaii will receive an occasional television program—probably also beamed to Far East nations which build their own ground stations as Japan is doing.

A domestic satellite system, however, would change the economics with respect to inclusion of Hawaii in the network, they point out.

The cost of transmission via satellite would be supported by stations all over the country, in addition to those in Hawaii.

The American Broadcasting Co. informed the Federal Communications Commission on May 13 that it was looking into the idea of putting up its own satellite television system.

Comsat objected on grounds that Congress has given it exclusive authority to handle commercial satellite communications in the U.S.

More recently, Comsat president Joseph V. Charyk said his company was considering a domestic system to supplement its projected global system. He said he had little doubt that such a system would prove profitable.

The experts admit there are hurdles to be cleared before a domestic system can be undertaken.

One might be to persuade foreign partners in the global system that the U.S. should have its own domestic system when it has insisted on their pledge that they would not launch systems competitive to Comsat's.

Advertiser Photo by Jerry Y. Chong

Rapoza points to "danger spot" of Ala Wai small boat launching ramp.

1714

NEAL S. BLAISDELL
MAYOR

RECEIVED
AUG 23 1965
State of Hawaii
LAND USE COMMISSION

CITY AND COUNTY OF HONOLULU
PLANNING DEPARTMENT
HONOLULU HALE ANNEX
HONOLULU, HAWAII 96813

PLANNING COMMISSION
GEORGE F. CENTEIO, CHAIRMAN
CYRIL W. LEMMON, VICE-CHAIRMAN
STANLEY T. HIMENO
FRANK W. HUSTACE, JR.
KINJI KANAZAWA
THOMAS N. YAMABE, II
ALFRED A. YEE
BUDGET DIRECTOR, EX-OFFICIO
MANAGING DIRECTOR, EX-OFFICIO
ZONING BOARD OF APPEALS
GEORGE I. BROWN, CHAIRMAN
HENRY C. H. CHUN-HOON
HAROLD K. KOMETANI
PLANNING DIRECTOR
FRANK SKRIVANEK

August 23, 1965

Mr. George S. Moriguchi, Executive Officer
State Land Use Commission
426 Queen Street
Honolulu, Hawaii 96813

Dear Mr. Moriguchi:

SUBJECT: Special Permit - Paumalu, mauka of Kam Highway
Tax Map Key: 5-9-06: Parcel 5
Applicants: Castle & Cooke, Inc. and
Communications Satellite Corp.
By: Pratt, Moore, Bortz & Vitousek, attorneys

The Zoning Board of Appeals at its meeting on Thursday, August 19, 1965, held a duly authorized public hearing pursuant to the provisions of Chapter 98H of the R.L.H. 1955, as amended, to consider an application for Special Permit filed by Castle and Cooke, Inc. and Communications Satellite Corporation, to construct, own, and operate a communications satellite earth station and related facilities within an Agricultural District, on a parcel of land comprising approximately 249 acres, situated on a plateau approximately 1,500 feet mauka of Kamehameha Highway and located on the Paumalu side of the Kaunala-Paumalu boundary in Pupukea-Paumalu.

The Board, after considering the testimony presented and the Planning Director's report on this matter, deferred action for 15 days in accordance with the State Land Use law. You will be notified of the decision of theZoning Board of Appeals after the passage of the required waiting period as provided by law.

Very truly yours,

ZONING BOARD OF APPEALS

By Frank Skrivanek
Frank Skrivanek
Planning Director

RT:ef
cc: Managing Director

C. DUDLEY PRATT
HOWARD H. MOORE
VERNON O. BORTZ
ROY A. VITOUSEK, JR.
THOMAS P. GOODBODY
DANIEL H. CASE
ALLEN M. STACK
ALAN C. KAY

PAUL F. CRONIN
TED G. CLAUSE

PRATT, MOORE, BORTZ & VITOUSEK
ATTORNEYS AT LAW
POST OFFICE BOX 494
HONOLULU, HAWAII 96809

11TH FLOOR
FIRST NATIONAL BANK BUILDING
CABLE ADDRESS
"LOIO"
TELEPHONE 567261

August 8, 1965

1701

RECEIVED
AUG 16 1965
State of Hawaii
LAND USE COMMISSION

Office of the Land Use Commission
Honolulu, Hawaii

Re: Request by Communications Satellite Corporation for Declaratory Ruling

Gentlemen:

This will confirm that the undersigned, on August 2, 1965, orally requested on behalf of Communications Satellite Corporation that its July 21, 1965 request for declaratory ruling as to its desired use of land at Paumalu, Island of Oahu, be withdrawn.

My client proposes to continue solely with the avenue of obtaining a Special Permit. In such connection, the application for Special Permit, which is mentioned in the July 21 request, has been set by the Zoning Board of Appeals, City and County of Honolulu, for public hearing on August 19, 1965.

Very truly yours,

Thomas P. Goodbody

Of Pratt, Moore, Bortz & Vitousek
Attorneys for Communications
Satellite Corporation

TPG:mm

Ltr accepted by Comm
Aug 20, 65

1644

NEAL S. BLAISDELL
MAYOR

RECEIVED
JUL 27 19..
State of Hawaii
LAND USE COMMISSION

CITY AND COUNTY OF HONOLULU
PLANNING DEPARTMENT
HONOLULU HALE ANNEX
HONOLULU, HAWAII 96813

PLANNING COMMISSION
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ALFRED A. YEE
BUDGET DIRECTOR, EX-OFFICIO
MANAGING DIRECTOR, EX-OFFICIO
ZONING BOARD OF APPEALS
GEORGE I. BROWN, CHAIRMAN
HENRY C. H. CHUN-HOON
HAROLD K. KOMETANI
PLANNING DIRECTOR
FRANK SKRIVANEK

July 26, 1965

8-2-65
Goodbody said that the request they are withdrawing the for a declaratory ruling by the Land Use Commission and will only go in to the City for a special permit.

Mr. Raymond S. Yamashita
Executive Officer
State Land Use Commission
426 Queen Street
Honolulu, Hawaii

Dear Mr. Yamashita

SUBJECT: Special Permit - Pupukea-Paumalu
Petitioners: Castle & Cooke, Inc. and
Communications Satellite Corporation
Tax Map Key: 5-9-06: 5
By: Pratt,Moore, Bortz and Vitousek

Please be advised that the Zoning Board of Appeals at its meeting on July 22, 1965, acknowledged receipt of the petition for a Special Use Permit filed by Pratt, Moore, Bortz and Vitousek, attorneys for the petitioners, pursuant to Chapter 98H, R.L.H. 1955, as amended, for an application by Castle & Cooke, Inc. and Communications Satellite Corporation, to construct, own and operate a communications satellite earth station and related facilities on a parcel of land containing approximately 249 acres, situated at Pupukea, Paumalu, identified as Tax Map Key 5-9-06: 5, within an Agricultural district boundary of the State Land Use Commission District Boundary Map.

The public hearing to consider this matter has been scheduled for August 19, 1965, at 3:00 p.m., or soon thereafter, at the Planning Department's meeting room of City Hall Annex.

Very truly yours,

ZONING BOARD OF APPEALS

By Frank Skrivanek
Frank Skrivanek
Planning Director

RT:ef

FILE COMSAT

RECEIVED
AUG 6 1965
State of Hawaii
LAND USE COMMISSION

NOTICE OF PUBLIC HEARING

SPECIAL PERMIT - PUPUKEA-PAUMALU

TO CONSIDER AN APPLICATION FOR SPECIAL PERMIT TO CONSTRUCT, OWN AND OPERATE A COMMUNICATIONS SATELLITE EARTH STATION AND RELATED FACILITIES ON A CERTAIN PARCEL OF LAND LOCATED WITHIN AN AGRICULTURAL DISTRICT

Situated on a plateau approximately 1,500 feet mauka of Kamehameha Highway, located on the Paumalu side of the Kaunala-Paumalu boundary

PURSUANT TO THE PROVISIONS OF CHAPTER 98H of the R.L.H. 1955, as amended, NOTICE IS HEREBY GIVEN of a public hearing to be held by the Zoning Board of Appeals of the City and County of Honolulu in the Planning Department's meeting room of Honolulu Hale Annex on Thursday, August 19, 1965, at 3:00 p.m., or soon thereafter as those interested may be heard to consider an application for Special Permit filed by Castle & Cooke, Inc. and Communications Satellite Corporation, to construct, own and operate a communications satellite earth station and related facilities on a parcel of land comprising approximately 249 acres, situated on a plateau approximately 1,500 feet mauka of Kamehameha Highway and located on the Paumalu side of the Kaunala-Paumalu boundary, more particularly identified as Tax Map Key 5-9-06: Parcel 5, and within an Agricultural District of the State Land Use Commission District Boundary Map.

A map showing the general location and boundaries of the area under consideration is on file in the office of the Planning Department and is open to the public for inspection during office hours.

All protests against or suggested changes to the proposed Special Permit should be filed in writing before the date of the public hearing or presented in person at the time of the public hearing.

ZONING BOARD OF APPEALS
George I. Brown, Chairman
By
Frank Skrivanek
Planning Director

(Hon. Adv. & SB)
(Aug. 8, 1965)

1634

RECEIVED
JUL 19
State of Hawaii
LAND USE COMMISSION

July 21, 1965

Land Use Commission
Honolulu, Hawaii

Gentlemen:

Enclosed herewith is copy of an Application for Special Permit which was filed by Castle & Cooke, Inc. and the undersigned Communications Satellite Corporation with the Zoning Board of Appeals, City and County of Honolulu, on July 19, 1965, together with copy of the undersigned's application to the Federal Communication Commission dated July 12, 1965, referred to in the application.

Such Zoning Board of Appeals application should not have been filed if the desired use of certain property at Paumalu, as set forth in the application, was permitted under your regulations. And you will note, at the bottom of the application form (which form is required by said Zoning Board of Appeals) that there is a space for you to certify the type of land use district in which the property is situated and that the desired use is prohibited by your regulations.

Please consider this letter as a petition by the undersigned for a declaratory ruling as to whether the desired use is prohibited by your regulation, and particularly whether the desired use is a permissible use within the meaning of 2.14 of your regulations.

We understand that the Zoning Board of Appeals will set the Application for Special Permit for public hearing on or about August 19, 1965. Because of the urgent public interest in this matter, we therefore respectfully request your prompt consideration of this petition for declaratory ruling.

If there is any further information which you need or desire, please contact us through Mr. Goodbody of Pratt, Moore, Bortz & Vitousek, our attorneys, 1100 First National Bank Building, Honolulu, Hawaii, phone no. 567-261.

Very truly yours,

COMMUNICATIONS SATELLITE CORPORATION

By Thomas P. Goodbody
Its duly authorized Agent and Attorney

TPG:mm
Enclosure

ZONING BOARD OF APPEALS
CITY AND COUNTY OF HONOLULU

~~STATE OF HAWAII~~
~~LAND USE COMMISSION~~

426 Queen Street
Honolulu, Hawaii

This space for official use

Date Application and Fee received by ~~LUC~~ _____

APPLICATION FOR SPECIAL PERMIT

~~I~~(We) hereby request approval of a special permit to use certain property located in the City and County of Honolulu, Island of Oahu, Land Use Commission Temporary District Boundary map number and/or name O-3 _____, for the following-described purpose:

As set forth in Exhibit "A", attached hereto

Description of property:

Approximately 249 acres of land situate at Paumalu, said City and County of Honolulu, the same being identified as Tax Map 5-9-06-05, a copy of which is attached hereto as Exhibit "B".

Petitioner's interest in subject property:

As set forth in Exhibit "C" attached hereto

Petitioner's reason(s) for requesting special permit:

As set forth in Exhibit "D" attached hereto

CASTLE & COOKE, INC.

Signature(s) By J. K. Falk
Its Asst. Treasurer
COMMUNICATIONS SATELLITE CORPORATION
By Thomas P. Goodhody
Its Attorney

Address: 1100 First Nat'l Bank Bldg.

Telephone: 567-261

This space for official use

The property is situated in a(n)_____ district, whose regulations adopted by the Land Use Commission prohibit the desired use.

Signature(s)_____

_____

For (agency)_____

5 9 06

CORRECTED
SEP 7 1962
MAY 2 1962
JUL 2 1962
OCT 1 1962
MAR 8 1967
MAR 26 1967

Reduced and Copy by
THE BLUE PRINT CO
815 ALAKEA STREET Phone 566-148
May 1965

K A U N A L A

SECTION 8

PUPUKEA-PAUMALU BEACH LOTS

PLAT 01

PLAT 02

PLAT 19

PLAT 20

PLAT 21

HIGHWAY

Ld. Ct. App. 1095

Castle & Cooke, Inc.
248.838 Ac.

Easement "B"
(44.841 Ac.)

Girl Scouts of Oahu Incorporated
135.509 Acs.

Consolidation

Antonio Narvaez - 1/3
Thomas R. Narvaez - 1/3
John P. Narvaez - 1/3 - T/C
dba Triple LLL Ranch
134.570 Acs.

Antonio Narvaez - 1/3
Thomas R. Narvaez - 1/3
John P. Narvaez - 1/3 - T/C
dba Triple LLL Ranch
134.853 Acs.

Road Court R/W (44-feet wide)
Cl. 125 Ac. +/-
(105.805 Ac.)

(97.067 Ac.)

"A" Easement

Easement "E" Fuel Pipeline R/W (18-ft. wide)

Easement "D"

Easement "H"

Easement "C" Fuel Pipeline R/W (20-ft. wide)

Easement "G"

Easement "I" Storm Drain

Easement "F"

C.C.C. of Honolulu (Bd. of Water Supply) 0.089 Ac.

C.C.C. of Honolulu (Bd. of Water Supply) 0.184 Ac.

Paumalu Stream

(Sec 1)

488.200 Acs.

(23.438 Acs.)

Hiram L. Fong & Mun On Chun - 4/4

(60.254 Acs.) (49.20 Acs.) (66.30 Acs.)

Grant 8929 Grant 5119 Grant 5181

State of Hawaii 19.4 Acs. WATER RESERVE 7

(8.828 Acs.)

Hiram L. Fong Mun On Chun - T/C

107.978 acs.

(76.25 Acs.)

Hiram L. Fong & Mun On Chun 4/4

(195.81 Acs.)

Road

50 Foot Road

Nicholas S. Barros & wf Margaret M. - T/E

Juan Algarme 3.703 Acs.

(Frank M. Tsuchidari & wf Janice C. - T/E) 4/5

Grant 5193

(90.93 Acs.)

State of Hawaii 14.1 Acs. WATER RESERVE 3

(24.00 Acs.)

Por. 1 T/E

19.95 Acs. Gr. 7290

PUPUKEA - PAUMALU

FOREST RESERVE

PUU AIMUU

SEE INSET

SCALE IN FEET
500 250 0 500 1000 1500 2000

PUPUKEA PLAT 05

True North P=500

True North P=1000

INSET
Scale: 1" = 1000'

K A U N A L A
SECTION 8
State of Hawaii 700.00 Acs.
Puu MoA
Puu Aimuu
(The United States of America G.L. 3-3850)
FOREST RESERVE
PAUMALU
PUPUKEA
Forest Reserve Line
Road
Kiau Pipi 30.00 Acs.
GL-L-3459 Elec. & Tel. Trans. Line R-O-Way
ZONE 6 SECTION 1
PUPUKEA PLAT 05
True North P=1000

ADVANCE SHEET
SUBJECT TO CHANGE

Dropped Parcels: 8, 25, 20

FIRST DIVISION		
ZONE	SEC.	PLAT
5	9	06
CONTAINING		PARCELS

Scale: — As Noted.

PRINTED

Dwg. No.: 1758
By: J.A.H. November 19, 1933
Source: Tax Maps, Duccau, Ld.Ct.Apps. 902 & 963

Appr. by:
Revised by:
Appr. by:

PUPUKEA-PAUMALU, KOOLAULOA, OAHU

Exhibit "B"

EXHIBIT "A"

PURPOSES:

To construct, own and operate a communications satellite earth station and related facilities, integrated with the terrestrial communications system in the State of Hawaii, for communication with similar earth stations in the continental U.S. and in various countries in the Pacific area via a communications satellite system established pursuant to the Communications Satellite Act of 1962. The station will be composed of several steerable antennas, a control center, interconnect facilities, power and utility facilities, and such other structures and facilities as are appropriate to maintain and operate the station. The earth station will be capable of establishing, via satellites, telecommunication links, including multi-channel telephony, telegraph, facsimile, high speed data and both color and monochrome television, with similar earth stations in the continental U.S. and in various countries in the Pacific, for interconnection with terrestrial telecommunication systems. A more complete description of the proposed earth station and its capabilities is set forth in the Communications Satellite Corporation's application to the Federal Communications Commission dated July 12, 1965, a true and correct copy of which is filed with this petition.

Exhibit "A"

EXHIBIT "C"

PETITIONERS' INTERESTS IN SUBJECT PROPERTY:

The Petitioners, Castle & Cooke, Inc. and Communications Satellite Corporation, hold, respectively, fee simple title to the property and an option to purchase the property. In light of the urgent need to construct the satellite earth station by the Fall of 1966, Comsat on July 10, 1965 obtained from Castle & Cooke, Inc. an option entitling it to purchase the property, so that, prior to actual purchase it could seek and obtain at the earliest possible date the requisite federal, state and local governmental permits and authorizations, including a special permit, for the construction, ownership and operations of the earth station and related facilities upon the site.

Exhibit "C"

EXHIBIT "D"

PETITIONERS' REASONS FOR REQUESTING A SPECIAL PERMIT:

The proposed earth station will be established in furtherance of the Communications Satellite Act of 1962, two international agreements to which the U.S. government and Comsat are parties along with 45 other countries and their designated communications entities, and a Report and Order of the Federal Communications Commission (issued on May 13, 1965, FCC File No. RM-644) implementing the Satellite Act. That Act directs Comsat to establish a global communications satellite system, in cooperation with other nations, as expeditiously as possible and to construct satellite earth stations when licensed by the Commission. In August, 1964 the U.S. government and Comsat entered into two multilateral agreements with other nations and their designated communications entities which provide for the establishment and operation of the satellites to be used in the global communications satellite system. Lastly, the Federal Communications Commission, pursuant to its responsibilities under the Satellite Act, declared that it was in the national interest that the satellites for the global system and the U.S. earth stations which would operate with them should be established as expeditiously as possible, and directed Comsat to construct, own and operate the three stations, including one in Hawaii, required for the initial period of operations of the global system.

Pursuant to the FCC Order, Comsat, in cooperation with the Hawaiian Telephone Company, investigated various locations in the State of Hawaii and determined that the

Exhibit "D"

above-mentioned site represents the best location, due to its relative freedom from microwave interference problems, the relatively dry climate, the nature of the topography (which will not restrict the station's operating parameters), and the relative isolation of the site from populated areas. The nature of the present uses of the site are such that Comsat has been able to make arrangements for their continuation during the construction and operation of the proposed satellite earth station. Furthermore, it is apparent from an analysis of the site and the proposed earth station, that the essential character of the area will remain unaltered and that the burden the operation of the earth station on the site will impose upon public agencies will be immeasurably offset by the benefits to Hawaii and the Nation which will result from the operation of the earth station.

As stated on pp. 9-10 of Comsat's application to the FCC, the present schedule for the inauguration of satellite communications service between Hawaii and the continental U. S., and between Hawaii and Japan and other nations in the Pacific area, calls for launch over the Pacific Ocean of a communications satellite or satellites in the Fall of 1966. It is therefore necessary that the Hawaiian earth station be operational at that time. The leadtime for the construction and activation of Comsat's proposed earth station is such that it is imperative that the construction of the station commence as soon as possible.

Such construction can begin as soon as the special permit herein requested has been obtained from the FCC and local agencies. For this reason the petitioners request as prompt consideration of this request as is possible under existing regulations.

✓ Sandy - create docket file
Xe - Max

McCORRISTON MILLER MUKAI MacKINNON LLP

ATTORNEYS AT LAW

FACSIMILE TRANSMITTAL

TO: Mr. Anthony Ching
Executive Officer, State Land Commission
FACSIMILE NO.: 587-3827

FROM: Joel D. Kam
ACCOUNT NO.: 54466

DATE: October 3, 2006

RE: Intelsat Global Service Corporation
Tax Map Key Nos. (1) 5-9-6: 5, 29 and 31

TOTAL NUMBER OF PAGES SENT (including this page): 18

MESSAGE:

Attached please find a letter dated October 3, 2006, from and Joel D. Kam to Mr. Henry Eng (with enclosures).

LAND USE COMMISSION
STATE OF HAWAII
2006 OCT -3 P 2:30

THIS MESSAGE IS INTENDED ONLY FOR THE USE OF THE INDIVIDUAL OR ENTITY TO WHICH IT IS ADDRESSED AND MAY CONTAIN INFORMATION THAT IS PRIVILEGED, CONFIDENTIAL AND EXEMPT FROM DISCLOSURE UNDER APPLICABLE LAW. If the reader of this message is not the intended recipient, or the employee or agent responsible for delivering the message to the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please notify us immediately by telephone, and return the original message to us at the below address via the U.S. Postal Service. THANK YOU.

OPERATOR: Kris M.
If you do not receive all of the pages, please call as soon as possible: (808) 529-7300.

P. O. Box 2800
Honolulu, Hawaii 96803-2800, Telephone: (808) 529-7300
FAX: (808) 524-8293, E-Mail: <jkam@M4law.com>

147326.1

MCCORRISTON MILLER MUKAI MACKINNON LLP
ATTORNEYS AT LAW

October 3, 2006

VIA HAND DELIVERY

Mr. Henry Eng, Director
Department of Planning and Permitting
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Re: Intelsat Global Service Corporation ("Intelsat")
Tax Map Key Nos. (1) 5-9-6: 5, 29 and 31

Dear Mr. Eng:

Thank you for your letter dated August 29, 2006. This letter is to respectfully request that the Department of Planning and Permitting ("DPP") reconsider its position on this matter for the following reasons:

1. **Separate Tax Map Key Parcels – Separate Projects.**

The land covered by the special permit dated September 7, 1965 (the "1965 SUP") is described as Tax Map Key No. 5-9-6:005, having an area of approximately 249 acres. Between 1975 and 1979, this 249 acre parcel was subdivided by Intelsat's predecessor, Comsat Corporation, to create the following four parcels:

5-9-6:005 -	224.262 acres
5-9-6:028 -	11.008 acres
5-9-6:029 -	12.461 acres
5-9-6:031 -	1.107 acres
Total	248.838 acres

Parcel 28 is now owned by an unrelated, third party. Parcels 5, 29 and 31 are owned by Intelsat.

As a result of this subdivision of the 249 acre parcel once designated by TMK No. 5-9-6:005, the following has been true since at least 1979:

- The antennas allowed under the 1965 SUP (the "Large Antennas") are situated on portions of the 12.461 acre parcel now known as Parcel 29 (i.e., TMK No. 5-9-6:029); and

P.O. Box 2800 • Honolulu, Hawaii 96803-2800
Five Waterfront Plaza, 4th Floor • 500 Ala Moana Boulevard • Honolulu, Hawaii 96813
Telephone: (808) 529-7300 • Fax: (808) 524-8293 • E-mail: info@m4law.com

- The antennas allowed under the conditional use permit dated April 28, 1989 (the "1989 CUP") (the "Small Antennas") are situated on a small, discreet, enclosed portion of the 224.262 acre parcel now known as Parcel 5 (i.e., the "new" TMK No. 5-9-6:005) (see Exhibit A attached to the 1989 CUP).

In other words, the existing Large Antennas are situated on an entirely different TMK parcel (i.e., Parcel 29) from the Small Antennas (i.e., Parcel 5). Intelsat intends to construct the additional Large Antennas that were previously approved by the 1965 SUP on Parcel 29. Because the Large and Small Antennas are located on legally separate parcels, they should properly be treated as separate projects. Therefore, it seems inappropriate to require Intelsat to obtain an after-the-fact SUP for the Small Antennas located on Parcel 5 in connection with Intelsat's request to construct the additional Large Antennas on Parcel 29. We see no legal basis for the DPP to so condition approval of one project upon actions relating to an entirely separate project.

2. **No CUP For the Large Antennas Was Ever Previously Required.**

Furthermore, if we were to assume for the sake of argument only that Large Antennas and Small Antennas collectively constitute a single project, then the DPP should have previously informed Intelsat that all of the Large Antennas in fact were not fully entitled. To the contrary, in none of the DPP's frequent prior dealings with Intelsat did the DPP indicate or even suggest that Intelsat would need to obtain a conditional use permit for the Large Antennas that had been approved under the 1965 SUP, but not yet constructed. The DPP had at least three (3) such opportunities, specified below:

- The approval of the 1989 CUP (copy attached as Exhibit A);
- The first modification of the 1989 CUP, dated July 14, 1989 (copy attached as Exhibit B); and
- The second modification of the 1989 CUP, dated November 30, 1992 (copy attached as Exhibit C).

In none of these prior dealings did the DPP ever indicate to Intelsat the need to obtain a conditional use permit for the unbuilt Large Antennas, or otherwise suggest that all of the Large Antennas were not fully entitled or that the right to construct them had not fully vested based upon the 1965 SUP. To now require Intelsat to obtain such a permit therefore appears to be inconsistent with the DPP's prior practice and handling of this file. To our knowledge, there have been no material changes in the relevant facts, including the intended use and development of the property, or in the applicable law since 1989 that should suddenly justify the imposition of a condition requiring Intelsat to obtain a conditional use permit for the unbuilt Large Antennas.

* * * *

Based upon the foregoing, we therefore respectfully request that the DPP reconsider the position taken in your August 29, 2006 letter, and provide the written confirmation requested in our letter dated June 15, 2006.[1]

If you have any questions, please do not hesitate to contact the undersigned.

Very truly yours,

McCORRISTON MILLER MUKAI MacKINNON LLP

Joel D. Kam

JDK:kmm
Enclosures
cc: Mr. Anthony Ching, Executive Officer (with Enclosures)
State Land Use Commission
(via facsimile 587-3827)

[1] We reserve the right of Intelsat to respond to the DPP's characterization of the Large and Small Antennas as "nonconforming".

147317.1

DEPARTMENT OF LAND UTILIZATION

CITY AND COUNTY OF HONOLULU

[illegible]

FRANK F. FASI
MAYOR

JOHN P. WHALEN
DIRECTOR

BENJAMIN B. LEE
DEPUTY DIRECTOR

81/CUP1-8(MM)

April 28, 1989

Mr. Tyrone Kusao
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao:

Conditional Use Permit, Type 1
Utility Installation, Type B
COMSAT Paumalu Earth Station Addition
Tax Map Key: 5-9-6: Por. 6

Your request for a Conditional Use Permit, Type 1, to allow six 9-meter in diameter dish antennae and a 7,700-square foot control center in the AG-2 General Agricultural District, has been approved, pursuant to the attached "Findings of Fact, Conclusions of Law, and Decision and Order."

Very truly yours,

JOHN P. WHALEN
Director of Land Utilization

JPW:ik
0145M/2
Attachment

cc: Communications Satellite Corporation

EXHIBIT A

Privileged and Confidential

DEPARTMENT OF LAND UTILIZATION OF THE CITY AND COUNTY OF HONOLULU

STATE OF HAWAII

IN THE MATTER OF THE APPLICATION OF COMMUNICATION SATELLITE CORPORATION FOR A CONDITIONAL USE PERMIT TYPE 1

CASE NO. 88/CUP1-8

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER

I. APPLICATION

1. Basic Information:

APPLICANT/LANDOWNER:	Communication Satellite Corporation (COMSAT)
AGENT:	Tyrone T. Kusao, Inc.
LOCATION:	58-350 Kamehameha Highway - North Shore
TAX MAP KEY:	5-8-6: 8
LAND AREA:	288 Acres
ZONING:	AG-2 General Agricultural District
REQUEST:	A Conditional Use Permit, Type 1 (CUP1), for a utility installation, Type B.

The application was processed in accordance with Section 8.30-5, 4.30, and 4.40-38 of the Land Use Ordinance.

2. Applicant's Proposal: To add six antennae and a one-story 7,700-square foot control building at the existing Paumalu Earth Station on the North Shore. The dish antennae are approximately 30 feet in diameter and 32 feet above ground level. The entire station site is completely enclosed with a six-foot-high chain link fence (Exhibit A).

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This installation will track, monitor, and control numerous satellites in space for INTELSAT, an international organization comprised of member nations. The station will serve the Pacific region and is one of many earth stations located throughout the world.

II. FINDINGS OF FACT

On the evidence presented, the Director has found:

1. Description of Site: The 223-acre site owned by COMSAT is located across Sunset Beach on a plateau of the Koolau Mountain Range. The property is 480 to 500 feet above sea level and located a half-mile away from existing residential developments that are along Kamehameha Highway.

   The Paumalu Earth Station occupies approximately 24.6 acres within the 223-acre site and houses two separate operations. COMSAT operates 4 antennae for international uses on 13.6 acres of land (TMK 5-9-6: 29 and 31); GTE Satellite Corp. operates 3 antennae for domestic uses on 11 acres (TMK 5-9-6: 28). The proposed COMSAT expansion area would add 2.04 acres for a total developed area of 26.64 acres (see Exhibit B).

2. Land Use: The Paumalu Earth Station is comprised of seven antennae, a control center, and support buildings. The surrounding undeveloped pastureland is leased for livestock grazing and caretaker's dwelling unit.

3. Background: The COMSAT facility was established on a 249-acre site in 1965, under a (State) Special Permit (65/CUP-92). This earth station, one of three authorized in the United States at the time, was originally comprised of a control building and two 85-foot diameter dish-type antennae.

   In 1974, GTE Satellite Corp. obtained a Conditional Use Permit (74/CUP-19) and a (State) Special Permit (74/SUP-8) for an earth station to provide long distance telephone service between the U.S. mainland, Alaska, Jamaica and Puerto Rico. The implementation of this second facility was largely due to the Federal Communications Commission's (FCC) order that domestic and international satellite service be separated. This project utilized an 11-acre portion of land owned by COMSAT, adjacent to the existing communications facility.

   In 1980, the permits approving the domestic communications facility (74/CUP-19 and 74/SUP-8) were modified to include a second antenna on the site.

   In 1987, a Conditional Use Permit Type 1 was granted to AT&T Communications for the construction of a satellite to send and receive communications signals for NASA's space shuttle program.

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All parcels (TMK 5-9-6: 5, 28, 29, and 31) have been jointly developed. Therefore, a Conditional Use Permit, Type 1, is not required.

4. Community Concerns: A presentation was made to the North Shore Neighborhood Board on March 20, 1989. The Board unanimously passed a motion in support of the proposed expansion.

III. ANALYSIS

General Requirements: The Director may allow a conditional use on a finding that the use satisfies the following criteria:

1. The use is permitted as a conditional use in the underlying zoning district and conforms to the requirements of the Land Use Ordinance (LUO).

The six antennae are permitted as a Utility Installation, Type B, in the AG-2 General Agriculture District as a Conditional Use, Type 1, subject to approval of a Conditional Use Permit (CUP). The applicant's facility meets the Land Use Ordinance (LUO) requirements in the following areas:

a. Lot area and width: The two-acre minimum lot area and 150-foot minimum lot width and depth of the AG-2 District are met by the 223-acre site.

b. Building heights and setbacks: In AG-2 Districts, the maximum height permitted for agricultural structures is 25 feet, if height setbacks are provided. The new antennae will exceed this limit by 6.7 feet. Since the proposed antennae are a third the size of the largest existing antenna and will be located away from public view, protrusion beyond the 25 feet height limit is not considered significant and the strict application of the height limit may be waived under Section 3.150 of the Land Use Ordinance, Waiver of Requirements for Public Uses and Utility Installations, by the Director.

c. Parking: The LUO allows the Director to determine parking requirements for uses not specifically listed. There are presently 13 employees manning the station on a 24-hour basis, with approximately 4 employees on any given shift. The ten parking spaces that will be provided is considered adequate. If additional parking is necessary, the site can readily accommodate more parking space.

d. Screening and Buffering: Since the Paumalu Earth Station is 400 feet above sea level, the site cannot be seen from Kamehameha Highway. However, two of the original 85-feet in diameter antennae clearly protrude from the plateau and are visible along a short stretch of Kamehameha Highway. A minimum requirement for Utility Installation, Type B, is the submittal of a landscaping plan. Since the site is

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purposely kept free of trees to avoid interference with the station's operations, a landscaping plan is not required. The only landscaping will be the lawn areas, not occupied by the control center, antennae, and support buildings. Additional visual screening is not necessary.

2. The site is suitable for the proposed use considering size, shape, location, topography, infrastructure, and natural features.

   a. Site size, shape, location, and topography: The approximate 223-acre site is suitable for the project. The area is zoned AG-2; country-zoned districts are to the north. The gently sloping topography of the lot is appropriate for the facility.

   b. Infrastructure:

      Traffic: The project is not expected to adversely impact vehicular traffic in the area. The entire station is off-limits to the public for security reasons and visitations are by appointments only. On any given work shift, there will only be four employees.

      Water: There are no existing City and County water facilities in the area. The site is served through a private pump connected to a Board of Water Supply reservoir.

      Sewage: Public sewers are presently not available for the proposed development. The State Department of Health will only permit a single individual wastewater system (IWS) at the facility. COMSAT plans indicate that wastewater from the new building will be treated by means of an aerobic unit and disposed of in leach fields. Wastewater from the existing control building will be discontinued as all facilities will be moved to the new control building.

      Drainage: An adjoining resident and property owner complained that a pipe culvert under the COMSAT access road is diverting run-off water into her property causing severe erosion. DPW is recommending a drainage study be completed to assess the drainage problem and determine measures to mitigate concerns.

3. The use will not alter the character of the surrounding area in a manner substantially limiting, impairing, or precluding the use of surrounding properties for the principal uses permitted in the underlying zoning district.

   The 2.04 acres required for the proposed installation represents under 1% of the applicant's total land ownership in this area. The proposed uses are consistent with the activities of the Earth Station over the past 20 years. The facility will have only a minor impact on the current grazing activity, a principal permitted use in the AG-2 zoning district.

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4. The use at its proposed location will provide a service or facility which will contribute to the general welfare of the community-at-large or surrounding neighborhood.

The facility provides telemetry, tracking, command, and monitoring services of INTELSAT satellites. This service contributes to the welfare of Hawaii and the Pacific Region.

IV. CONCLUSIONS

The Director hereby makes the following Conclusions of Law:

The proposed project meets all general requirements for Conditional Uses and minimum development standards for Utility Installations, Type B. A height waiver can be granted as the circumstances and conditions do not adversely affect the health or safety of persons, and will not be materially detrimental to the public welfare or injurious to nearby property improvements.

V. DECISION AND ORDER

Based on the Findings of Fact and Conclusions of Law, the Director of Land Utilization hereby approves the application for a Conditional Use Permit (Type 1) and height waiver for the construction of six satellite antennae and a 7,700-square foot control building on 2.04 acres of land within an AG-2 General Agricultural District in Paumalu, Tax Map Key 5-9-6; Por. 5, as shown on Exhibits B and C, subject to the following conditions:

1. Prior to the issuance of a Building Permit, the applicant shall submit a grading and drainage plan for the proposed project to the Department of Public Works (DPW) for review and approval.

2. Prior to the issuance of a Certificate of Occupancy, the applicant shall submit to DPW for review and approval a drainage study that analyzes the concerns of adjacent residents and proposes measures to mitigate concerns.

3. Prior to the issuance of a Certificate of Occupancy, the two original 85-foot diameter dish antennae will either be removed from the site, re-sited so that they are not visible above the ridgeline as seen from Kamehameha Highway, or replaced with a 30-foot diameter dish antenna.

4. The Director may at any time impose additional conditions when it becomes apparent that a modification is necessary and appropriate in accordance with Section 4.30(B) of the Land Use Ordinance, as amended.

5. Any modifications to the project and/or conditions stated herein shall be subject to the approval of the Director of Land Utilization.

6. In the event of noncompliance with any of the conditions of this approval, the Director may initiate action to terminate the use until such time compliance is obtained.

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7. Violations of this permit shall be subject to Article 8 of the Administrative and Enforcement Section 8.60 of the Land Use Ordinance, as amended.

Dated at Honolulu, Hawaii, this 28th day of April, 1989.

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
STATE OF HAWAII

By _____
JOHN P. WHALEN, Director

JPW:lk
Attachment
0116N

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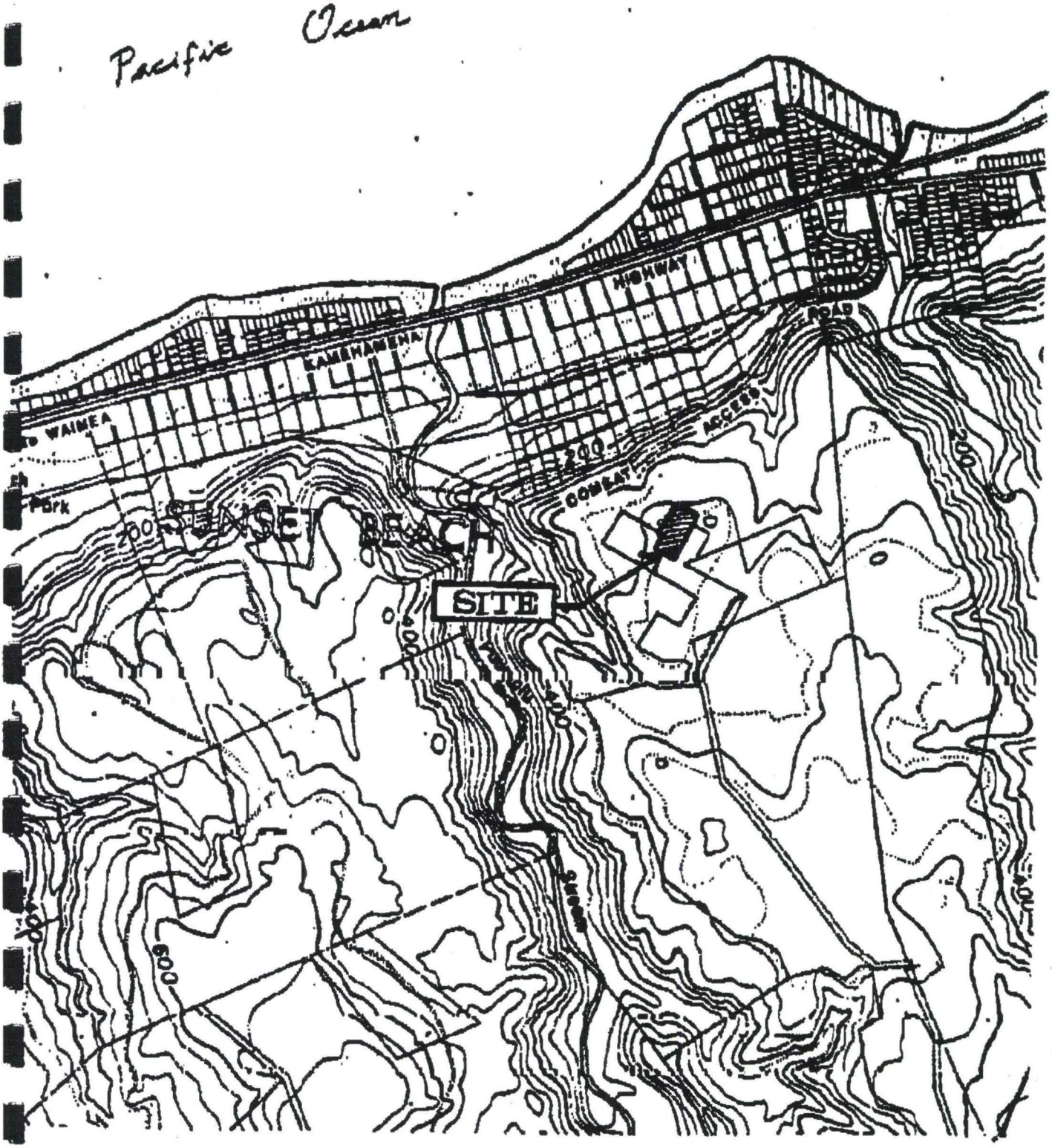

LOCATION MAP

NORTH

EXHIBIT A

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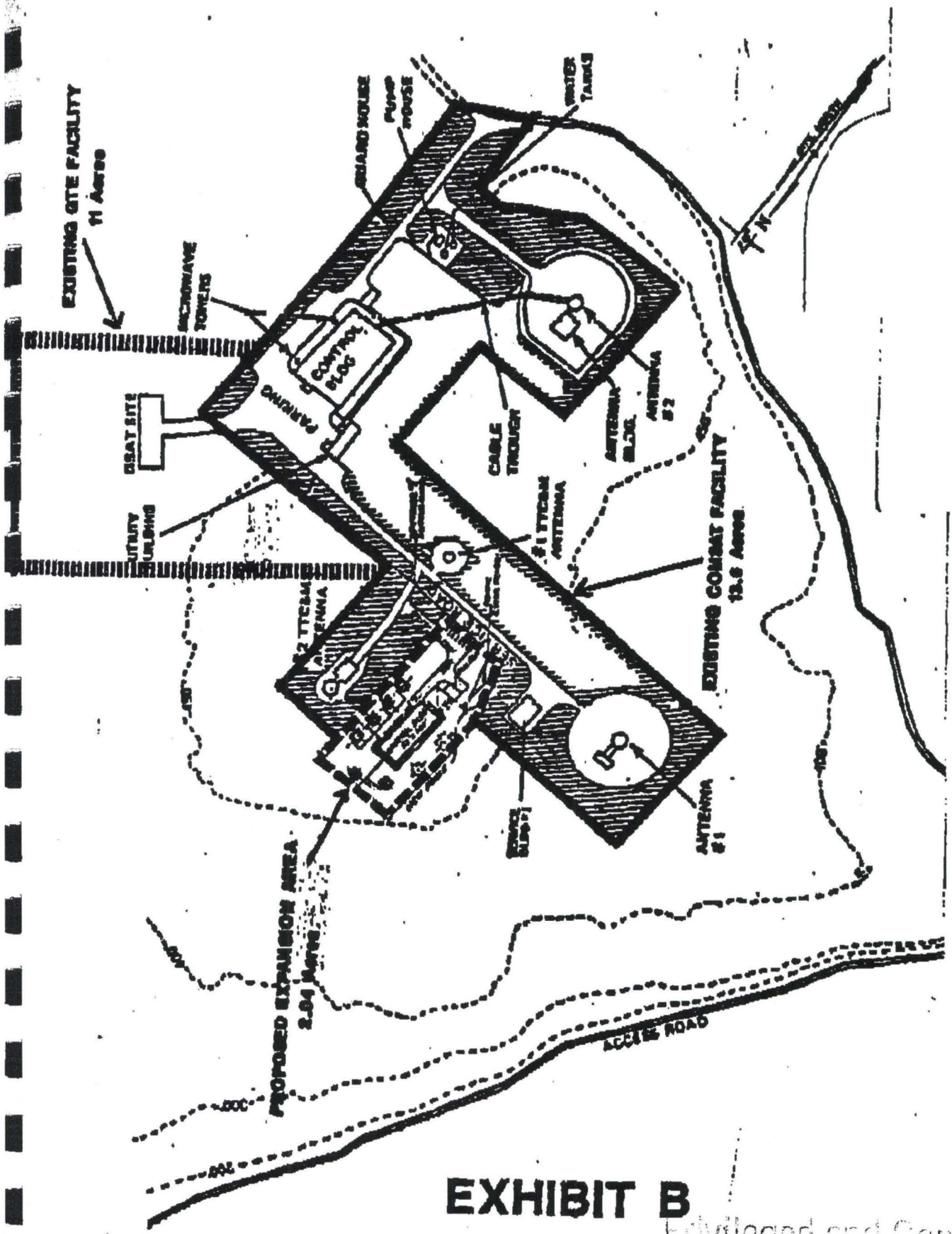

EXHIBIT B

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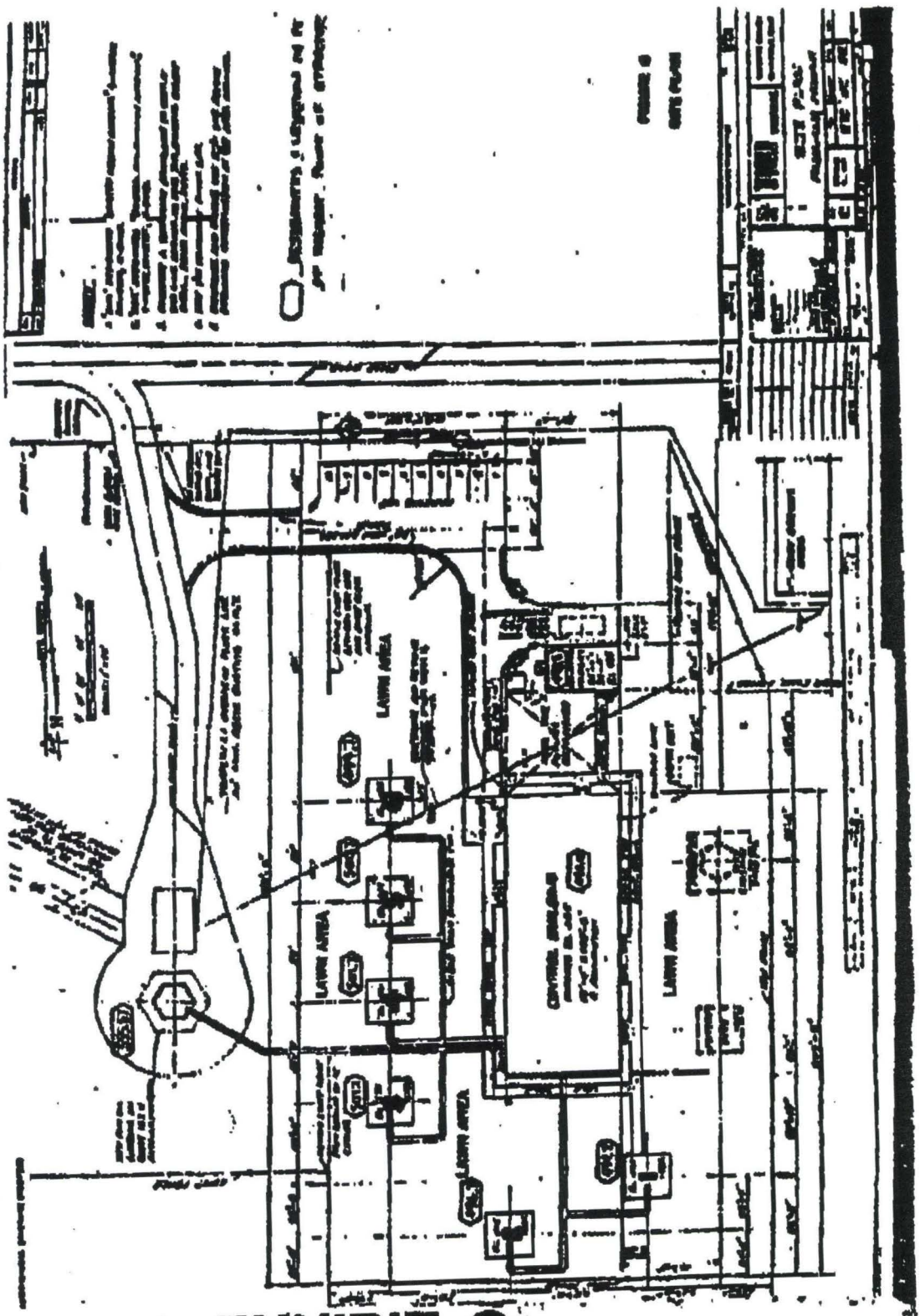

EXHIBIT C

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DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813 • (808) 523-4432

FRANK F. FASI
MAYOR

JOHN P. WHALEN
DIRECTOR

BENJAMIN B. LEE
DEPUTY DIRECTOR

89/CUP1-8(NN)

July 14, 1989

Mr. Charles Key
Damon Key Bocken Leong Kupchak
1001 Bishop Street, Pauahi Tower 1600
Honolulu, Hawaii 96813

Dear Mr. Key:

COMSAT Paumalu Earth Station
Conditional Use Permit, Type 1
Modification to 89/CUP1-8
Tax Map Key: 5-9-6: Por. 5

We received your July 3, 1989 letter requesting two modifications to the April 28, 1989 Findings of Fact, Conclusions of Law and Decision and Order.

The following modifications are hereby approved:

1. On page 4, 2.,b. Infrastructure, delete paragraph relating to sewage and replace with the following:

   Sewage: Public sewers are presently not available for the proposed development. Applicant is required to comply with the requirements of the Department of Health concerning the use of wastewater facilities in both the existing control building and the new control building.

2. On page 5, V. Decision and Order, delete Condition No. 3 and replace with the following:

   3. Prior to obtaining a building permit, the applicant shall prepare and submit to the Director for approval a landscape plan. Special emphasis shall be placed on planting and cultivating trees that will, within five years from the date of this Decision and Order, screen the two original 85-foot diameter dish antennas from Kamehameha Highway; otherwise, at the end of said five-year period the Applicant must justify the continued use of said antennas, and if the Applicant does

EXHIBIT B Privileged and Confidential

not justify said continued use, then the Applicant must either remove the two antennas from the site or re-site said antennas so that they are not visible above the ridge line as seen from Kamehameha Highway, or replace same with a 30-foot diameter dish.

Please note that we have modified the condition you proposed relating to landscaping. It is our understanding, based on our June 8, 1989 meeting, that COMSAT intends to screen the original antennae with tall vertical and canopy trees. We believe the above condition more accurately addresses your intent.

Please also note that all other conditions of the Conditional Use Permit, Type 1, are still in effect.

Should you have any questions, please contact Nadine Nakamura of our staff at 527-6274.

Very truly yours,

JOHN P. WHALEN
Director of Land Utilization

JPW:fm

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813 • (808) 523-4432

Rec'd 12/1/92

FRANK F. FASI
MAYOR

DONALD A. CLEGG
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

89/CUP1-8(WE)

November 30, 1992

Mr. Charles W. Key
Damon Key Bocken Leong Kupchak
1001 Bishop Street
Suite 1600, Pauahi Tower
Honolulu, Hawaii 96813-3480

Dear Mr. Key:

Modification to Conditional Use Permit, Type 1
Utility Installation, Type B
COMSAT Paumalu Earth Station
Tax Map Key 5-9-6: Por. 5 (89/CUP1-8)

This is in response to your letter dated November 18, 1992, in which you requested, on behalf of your client, Comsat, a modification to Conditional Use Permit 89/CUP1-8 to address the following:

1. To approve, retroactively, the location and installation of one of the six 9-meter diameter dish antennae approved pursuant to 89/CUP1-8 at the area designated Site C instead of the area designated Site K on the Site and Arrangement Plan dated and time-stamped November 23, 1992, 9:19 a.m.; and

2. To permit the construction of a new 9-meter diameter dish antenna at Site K for a total of seven antennae on the subject parcel.

We have reviewed the location and the construction of the sixth antenna at Site C. Site C is located within the same parcel as the sites of the antennae approved under 89/CUP1-8, the antennae is of the same size as the approved antennae, and the installation of the antenna at Site C instead of Site K did not increase the number of antennae approved under 89/CUP1-8. Therefore, your request is considered minor and on that basis your request is APPROVED as a MINOR MODIFICATION to 89/CUP1-8.

EXHIBIT C

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We have also reviewed your request for permission to install another 9-meter diameter dish antenna at the previously approved Site K, which will result in a total of seven antennae located on the subject property. We note that Site K was previously approved under 89/CUP1-8 as the location for the installation of a 9-meter diameter dish antenna and that the proposed 9-meter diameter dish antenna will be of the same size as existing antennae on the property. Therefore, your request is also APPROVED subject to the following conditions:

1. The Site and Arrangement Plan dated and time-stamped November 23, 1992 9:19 a.m. is the approved plan. Any deviation or modification to the approved plan shall require prior approval from the Director of Land Utilization.

2. The conditions of 89/CUP1-8, are still in effect, are applicable to Site C and shall be complied with.

With this letter you may proceed to obtain your building permit.

If you have any question, please contact William Enriques of my staff at 523-4817.

Very truly yours,

LORETTA K.C. CHEE, Acting Director
Department of Land Utilization

LKC:wpe
A.comsat.wpe

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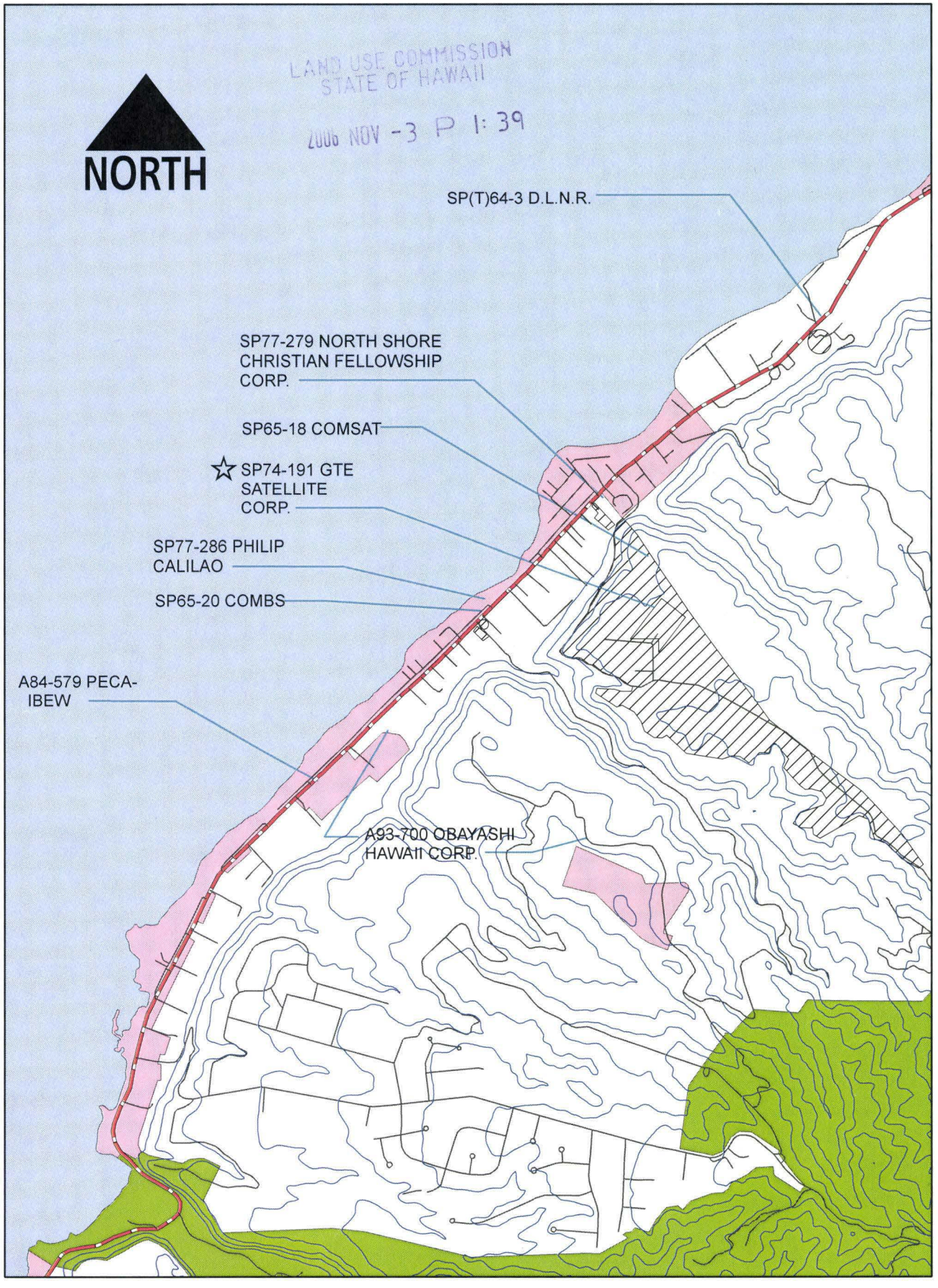
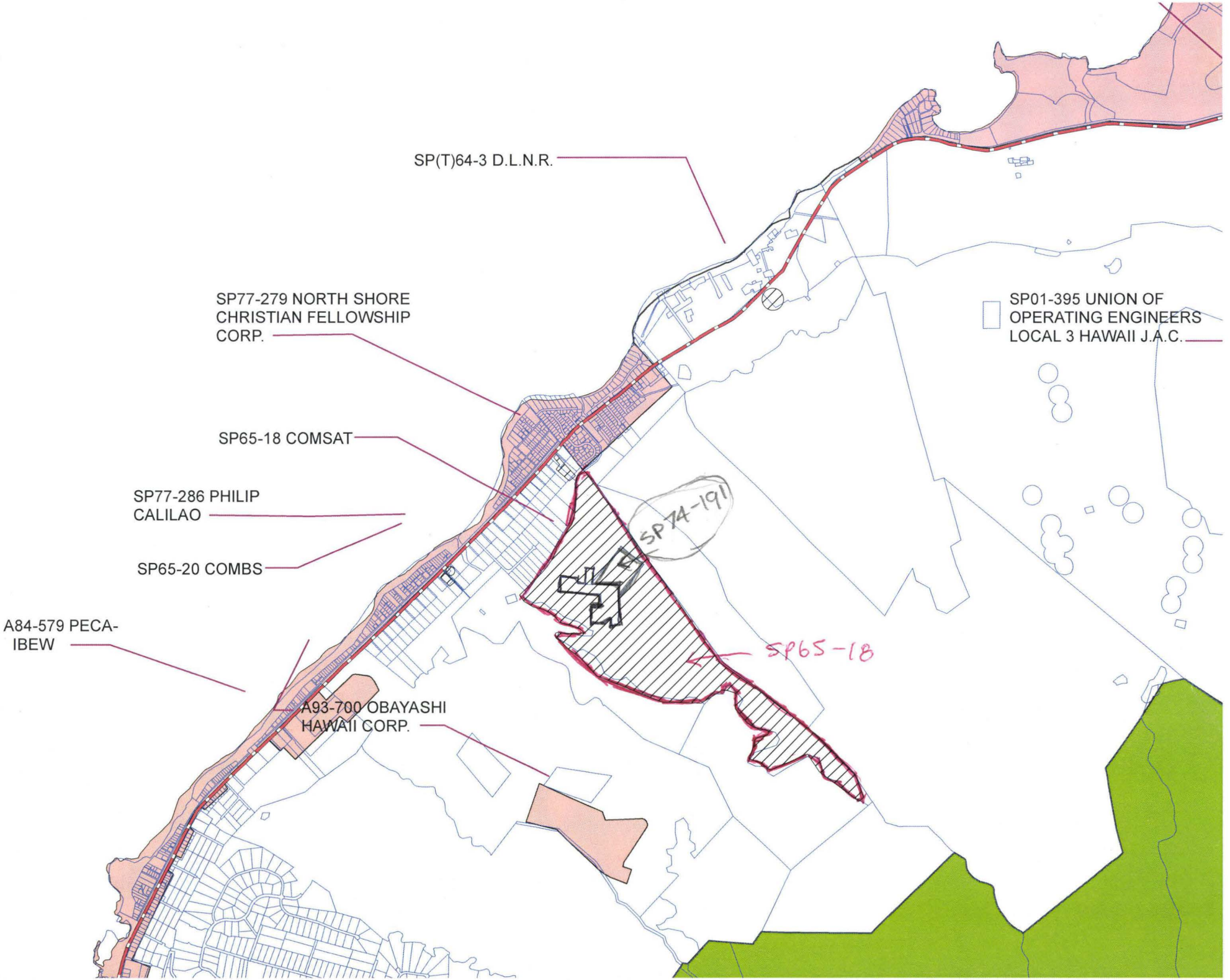
FYI

LAND USE COMMISSION
STATE OF HAWAII
2006 NOV -3 P 1:39




SP(T)64-3 D.L.N.R.
SP77-279 NORTH SHORE CHRISTIAN FELLOWSHIP CORP.
SP01-395 UNION OF OPERATING ENGINEERS LOCAL 3 HAWAII J.A.C.
SP65-18 COMSAT
SP77-286 PHILIP CALILAO
SP65-20 COMBS
SP74-191
SP65-18
A84-579 PECA-IBEW
A93-700 OBAYASHI HAWAII CORP.

DEPARTMENT OF PLANNING AND PERMITTIN
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 523-4432 • FAX: (808) 527-6743
DEPT. WEB SITE: www.honoluludpp.org • CITY WEB SITE: www.honolulu.gov

Can't create file hold for expected update

LAND USE COMMISSION
STATE OF HAWAII
2006 AUG 32 A 8:45

MUFI HANNEMANN
MAYOR

HENRY ENG, FAICP
DIRECTOR

DAVID K. TANOUE
DEPUTY DIRECTOR

2006/ELOG-1446 (RY)
65/VLOG-32
89/CUP1-8

August 29, 2006

Mr. Joel Kam
McCorriston Miller Mukai MacKinnon LLP
P.O. Box 2800
Honolulu, Hawaii 96803-2800

Dear Mr. Kam:

Re: Intelsat Global Service Corporation (Intelsat)
Paumalu, North Shore, Oahu
Tax Map Key: 5-9-6: 5, 29 and 31

This responds to your request to allow two (2) new dish type antennas on the above site. A review of the State Special Use Permit (SUP; File No. 65/VLOG-32) and the Conditional Use Permit (CUP; File No. 89/CUP1-8) indicates that additional antennas may be allowed by modification of the existing Special Use Permit, and a new Conditional Use Permit.

The antennas allowed under the 1965 SUP are "nonconforming" in that they were not authorized by a CUP. Conversely, the antennas and accessory structure and uses allowed under the 1989 CUP, are nonconforming because they lack an SUP. As you can see, neither the SUP nor the CUP covers all existing or proposed antenna improvements. In addition, we have no record that indicates that the six (6) antennas approved under the CUP did not require approval under the SUP. The nine (9) existing antennas exceed the maximum number of antennas permitted under the SUP. Therefore, the two (2) proposed antennas require modification of this SUP. Further, the SUP must be modified to include the antennas that were authorized by the 1989 CUP. Similarly, the two (2) proposed antennas that were not covered by the CUP, require a new CUP.

Since the SUP is the longer land use permit process, modification of the SUP should precede the CUP application.

In modifying the SUP, we note that the original permit granted approval specifically for "communication satellite earth stations." If this is no longer an accurate description of the use, you may consider amending the use to the more generic description, "dish antennas" in your modification request. In addition, we note that the 1965 SUP covered the entire land area of Parcel 5, or approximately 249 acres. Given that the antenna use only involves a relatively small portion of this property, you may wish to consider limiting the SUP to only the portion of

the site that would be used for the antenna improvements, and accessory uses and structure operated or owned by Intelsat; and, any areas required for access, security, screening and/or buffering. Doing so may shorten the process for future modifications.

If you have any questions on the SUP, please contact Raymond Young of our staff at 527-5839. Questions on the CUP should be referred to Bob Bannister at 527-5025.

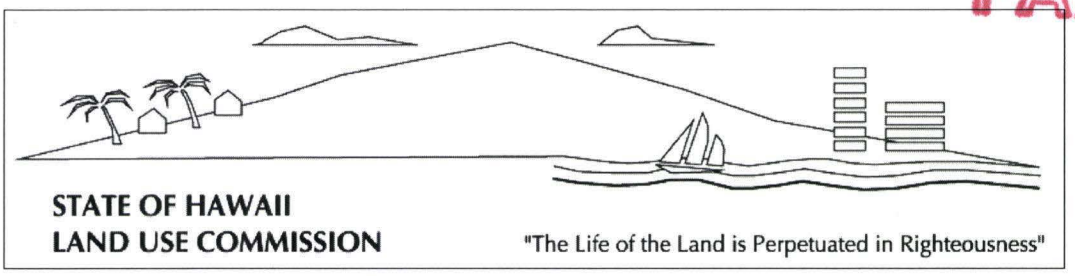
Very truly yours,

Henry Eng, FAICP, Director
Department of Planning and Permitting

HE:lh
doc: 47321

cc: State Land Use Commission

FAXED



STATE OF HAWAII
LAND USE COMMISSION

"The Life of the Land is Perpetuated in Righteousness"

FACSIMILE TRANSMITTAL SHEET

TO: Diane Erickson	FROM: Caroline Lorenzo
COMPANY: Dept. of the Attorney General	DATE: 7/13/2006
FAX NUMBER:	TOTAL NO. OF PAGES INCLUDING COVER: 12
PHONE NUMBER: 586-0618	SENDER'S REFERENCE NUMBER:
RE: Letter dated 6/15/06 from McCorriston Miller Mukai MacKinnon LLP	YOUR REFERENCE NUMBER:

☐ URGENT ☐ FOR REVIEW ☐ PLEASE COMMENT ☐ PLEASE REPLY ☐ PLEASE RECYCLE

NOTES/COMMENTS:

Hi Diane,

Transmitting the attached for your review and comment, per Tony.

Should you have any questions or need further assistance, please call Tony at 587-3826.

Have a great day!

Thanks,
Caroline

Oh! Sorry we already sent to Diane and she commented. You can file this

P.O. BOX 2359
HONOLULU, HAWAI`I 96804-2359
TELEPHONE: 808-587-3822
FAX: 808-587-3827

Diane
pls comment

McCorriston Miller Mukai MacKinnon LLP

ATTORNEYS AT LAW

LAND USE COMMISSION
STATE OF HAWAII

2006 JUN 15 P 4:15

June 15, 2006

VIA HAND DELIVERY

Mr. Henry Eng, Director
Department of Planning and Permitting
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Mr. Anthony Ching, Executive Officer
State Land Use Commission
Leiopapa A Kamehameha Building
235 South Beretania Street, Room 406
Honolulu, Hawaii 96813

Re: Intelsat Global Service Corporation
Tax Map Key Nos. (1) 5-9-6: 5, 29 and 31

Dear Messrs. Eng and Ching:

This firm represents Intelsat Global Service Corporation ("Intelsat"), in connection with the above-referenced property (the "Property").

In September 1965, the City and County of Honolulu, Zoning Board of Appeals approved an application by Castle & Cooke, Inc. and Communications Satellite Corporation for a special permit to allow the "*construction and operation of a communication satellite earth station and related facilities*" in the State Land Use Agricultural District. In October 1965, the State Land Use Commission approved the granting of this special permit. A copy of the ZBA's Findings of Fact, Conclusions of Law, and Decision and Order and a copy of the LUC's letter of approval (collectively, the "Special Permit") are attached hereto as Exhibit A.

The Special Permit specifically authorized, among other things, the construction of " . . . *two 85-foot diameter dish-type antennas on pedestals. As the system expands, three more will be added. . .* " In other words, a total of five antennas were authorized under the terms of the Special Permit.

Pursuant to the Special Permit, three antennas were built between 1966 and 1969. Thereafter, a fourth antenna was built sometime between 1980 and 1985. One of those four antennas was removed sometime between 1990 and 1995. Hence, although a total of four antennas were built under the Special Permit, only three of those antennas exist as of today.

P.O. Box 2800 • Honolulu, Hawaii 96803-2800
Five Waterfront Plaza, 4th Floor • 500 Ala Moana Boulevard • Honolulu, Hawaii 96813
Telephone: (808) 529-7300 • Fax: (808) 524-8293 • E-mail: info@m4law.com

In November 2002, Communications Satellite Corporation, a satellite communications company which later changed its name to Comsat Corporation ("Comsat"), sold the Property to Intelsat, another satellite communications company. Intelsat would now like to build two more dish-type antennas in accordance with the terms of the Special Permit; these two new antennas would be approximately located as shown on the aerial photo attached hereto as Exhibit B, well within the 249 acres covered by the Special Permit[1]. Based upon the fact that only three of the five authorized antennas exist as of today, we believe the Special Permit authorizes Intelsat to build the remaining two antennas without the need for any modification of the Special Permit or the need for any new special permit. On May 19, 2006, representatives of Intelsat met with Mr. Raymond Young of the DPP to discuss this matter, and based upon such discussion Intelsat believes Mr. Young concurs with this position.

Based upon the foregoing, Intelsat respectfully requests written confirmation from your respective offices that Intelsat may build the two remaining dish-type antennas in accordance with the terms of the Special Permit, without the need for any modification of the Special Permit or the need for any new special permit.

* * * *

If you have any questions or require further information, please do not hesitate to contact the undersigned.

Very truly yours,

McCORRISTON MILLER MUKAI MacKINNON LLP

Joel D. Kam

Enclosures
Cc w/ encls: Intelsat Global Service Corporation

[1] Exhibit B not only reflects the planned location for the two new antennas (approximately in the center of the page), but also shows the three existing antennas covered by the Special Permit – designated as "*1T Antenna*", "*PAM-2 Antenna*" and "*KU Band Antenna*". All other antennas shown on Exhibit B are either covered by a different permit or are situated on an adjacent parcel of land not owned by Intelsat.

ZONING BOARD OF APPEALS OF THE CITY AND COUNTY OF HONOLULU

STATE OF HAWAII

IN THE MATTER OF THE APPLICATION

OF

CASTLE & COOKE, INC., AND COMMUNICATIONS SATELLITE CORPORATION FOR A SPECIAL PERMIT IN AN AGRICULTURAL DISTRICT

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER

I. APPLICATION

The Zoning Board of Appeals, at its meetings on July 22, 1965, August 19, 1965, and September 7, 1965, considered the application of Castle & Cooke, Inc. and Communications Satellite Corporation for a Special Permit in order to permit the construction and operation of a communication satellite earth station and related facilities within an area classified as Agricultural District by the State Land Use Commission.

II. FINDINGS OF FACT

On the basis of the evidence presented the Board made the following Findings of Fact:

1. The land in question is identified by Tax Map Key 5-9-06: Parcel 5 and has an area of approximately 249 acres.

2. The land is located on the Paumalu side of the Kaumala-Paumalu boundary, on a plateau approximately 1,500 feet mauka of Kamehameha Highway.

3. The Land Use Commission classification of the land is "Agricultural District."

EXHIBIT A

4. The property interests of the land are as follows: fee owner: Castle & Cooke, Inc.; lessee: Meadow Gold Dairies; sublessee of part of the area (107 acres): RCA; and optionee to purchase land: Communications Satellite Corporation.

5. Comsat has entered into a contract with Castle & Cooke, Inc. to purchase the land, subject to obtaining the necessary permit to construct satellite earth station facilities on said land.

6. The existing use of the area is as follows: one acre, identified as Lot 1-C, contains RCA buildings; 106 acres, identified as Lot 1-B, contains antennae of RCA; and the remainder of the area is used for grazing of cows by Meadow Gold Dairies.

7. Comsat proposes to construct a control building and other structures which would blend harmoniously with the surrounding uses. Initially, they will build two 85-foot diameter dish-type antennae on pedestals. As the system expands, three more will be added. The control building and the antennae will be surrounded by security fencing, but the interconnecting areas will be left open for free passage. A large area is required for physical separation of the antennae and the control buildings for safety purposes and to avoid interference.

8. The earth satellite station will be one of three such stations authorized in the United States. One other station is authorized for Maine, and another is authorized for northwestern U. S.

9. Comsat, together with the cooperation of the Hawaiian Telephone Company, has determined that the area in question is

the ideal site for the station from the standpoint of electrical interference and other problems.

10. Comsat hopes to have the station operational sometime in 1966, since by that time they hope to launch a satellite over the Pacific Ocean for the start of satellite communications service between the mainland U. S. and Hawaii and between Hawaii and Japan and other nations in the Pacific area.

11. No protests were filed.

III. CONCLUSIONS OF LAW

The Board made the following Conclusions of Law:

1. The proposed communication satellite earth station constitutes an unusual and reasonable use within the area classified as Agricultural District by the State Land Use Commission.

2. The proposed communication satellite earth station would promote the effectiveness and objectives of the State Land Use Law (Chapter 98H, R.L.H. 1955, as amended).

3. The proposed use will not alter the essential character of the surrounding area and will not adversely affect the adjoining property owners.

IV. DECISION AND ORDER

Pursuant to the foregoing Findings of Fact and Conclusions of Law, it is the decision of the Board that a Special Permit be issued to the applicants, and it is hereby so ordered, subject to final approval by the State Land Use Commission.

Dated at Honolulu, Hawaii, this _____ day of _____, 1965.

ZONING BOARD OF APPEALS OF THE CITY AND COUNTY OF HONOLULU, STATE OF HAWAII.

_____
Chairman

APPROVED AS TO FORM:

_____
Deputy Corporation Counsel

I hereby certify that the attached matter was duly considered by the Zoning Board of Appeals, City and County of Honolulu, on July 22, 1965, August 19, 1965, and September 7, 1965, and that the attached is a true and correct copy.

Dated at Honolulu, Hawaii, this _____ day of _____, 1965.

_____
Chairman
ZONING BOARD OF APPEALS OF THE CITY AND COUNTY OF HONOLULU, STATE OF HAWAII.

Dated at Honolulu, Hawaii, this 7th day of September, 1965.

ZONING BOARD OF APPEALS OF THE CITY AND COUNTY OF HONOLULU, STATE OF HAWAII.

George L. Brown
Chairman

APPROVED AS TO FORM:

Deputy Corporation Counsel

I hereby certify that the attached matter was duly considered by the Zoning Board of Appeals, City and County of Honolulu, on July 22, 1965, August 19, 1965, and September 7, 1965, and that the attached is a true and correct copy.

Dated at Honolulu, Hawaii, this 7th day of September, 1965.

George L. Brown
Chairman
ZONING BOARD OF APPEALS OF THE CITY AND COUNTY OF HONOLULU, STATE OF HAWAII.

September 16, 1965

Pratt, Moore, Bortz & Vitousek
1100 First National Bank Building
Honolulu, Hawaii

ATTENTION: Mr. Thomas P. Goodbody

Gentlemen:

SUBJECT: Special Permit - Paumalu, mauka of Kam Highway
Tax Map Key: 5-9-06: 5
Applicants: Castle & Cooke, Inc. and Communications Satellite Corp.
By: Pratt, Moore, Bortz & Vitousek

The Zoning Board of Appeals, at its meeting on September 7, 1965, considered your application for a Special Permit to construct and operate a communication satellite earth station and related facilities within an area classified as Agricultural District by the State Land Use Commission and the decision was that a Special Permit be issued.

We have transmitted to the State Land Use Commission your application together with Findings of Fact, Conclusions of Law, and Decision and Order, and the Board's Minutes of July 22, 1965, August 19, 1965, and September 7, 1965.

Very truly yours,

ZONING BOARD OF APPEALS

By
Frank Skrivanek
Planning Director

RT:ef

STATE OF HAWAII
LAND USE COMMISSION

County Board Room
Lihue, Kauai

2:00 P.M.
October 1, 1965

STAFF REPORT

SP65-18 - COMMUNICATIONS SATELLITE CORPORATION

A petition for a special permit from the Communications Satellite Corporation has been received and processed by the Zoning Board of Appeals of the City and County of Honolulu. Accordingly, the Zoning Board of Appeals has ordered issuance of a special permit to the petitioners, subject to final approval by the State Land Use Commission. (See Findings of Fact, Conclusions of Law, and Decision and Order of the Zoning Board of Appeals in the files.)

The Land Use Commission staff has evaluated all data submitted to date, inspected the propcsed site and the surrounding lands, and applied the mandatory test as spelled out by the State Land Use District Regulations. Accordingly, the staff finds that it is particularly impressed by the fact that the potential of the agricultural lands involved will not be diminished by the proposed use since the lands will be used primarily for antenna fields.

It is the staff's recommendation that the petitioner's request for a special permit be approved.

JOHN A. BURNS
GOVERNOR

GEORGE S. MORIGUCHI
EXECUTIVE OFFICER

STATE OF HAWAII
LAND USE COMMISSION
426 QUEEN STREET
HONOLULU, HAWAII 96813

October 7, 1965

CHAIRMAN
MYRON B. THOMPSON

VICE CHAIRMAN
C. E. S. BURNS

GORO INABA
SHIRO NISHIMURA
CHARLES S. OTA
ROBERT C. WENKAM
LESLIE E. L. WUNG

JAMES P. FERRY, EX-OFFICIO
LAND AND NATURAL RESOURCES

SHELLEY M. MARK, EX-OFFICIO
PLANNING AND ECONOMIC DEVELOPMENT

Mr. Frank Skrivanek, Director
Planning Department
City & County of Honolulu
Honolulu Hale Annex
Honolulu, Hawaii

Dear Mr. Skrivanek:

At its meeting on October 1, 1965, the Land Use Commission voted to approve the grant of a special permit to Communications Satellite Corporation for the construction and operation of a communication satellite earth station and related facilities, on approximately 249 acres of land described by TMK 5-9-06: 5.

We are enclosing our staff report for your information.

Very truly yours,

George S. Moriguchi

GEORGE S. MORIGUCHI
Executive Officer

Encl. - 1
cc: Chairman Thompson
Mr. Thomas P. Goodbody
Department of Taxation
Dept. of Land & Natural Resources


1T Antenna
New Antennas
PAM-2 Antenna
KU Band Antenna
EXHIBIT B
©2006 Google - Imagery ©2006 DigitalGlobe

COMMUNICATIONS SATELLITE CORPORATION

APPLICATION FOR AUTHORITY TO CONSTRUCT A HAWAIIAN EARTH STATION COMPLEX

July 12, 1965

Before the

FEDERAL COMMUNICATIONS COMMISSION

Washington, D. C.

In the Matter of the Application of	)	
	)	
COMMUNICATIONS SATELLITE CORPORATION	)	
	)	
for authority to construct a satellite earth station complex in Hawaii for operation with communications satellite systems, and for approval of the technical characteristics thereof.	)	File No. ____

APPLICATION

Communications Satellite Corporation (the "Applicant"), in conformity with the authorization granted it by Section 305(a)(3) of the Communications Satellite Act of 1962 (the "Satellite Act"), and with the terms of the Commission's Report and Order, issued May 13, 1965, FCC File No. RM-644 (the "Order"), hereby applies under Section 214(a) and Sections 308, 309 and 319 of the Communications Act of 1934 (the "Communications Act"), as amended, and Sections 201(c)(4), 201(c)(6), and 201(c)(7) of the Satellite Act, (a) for the grant to the Applicant of authority to construct, or to cause to be constructed, a satellite earth station complex as herinafter defined, in Oahu, Hawaii, for operation with

"Early Bird" (HS-303) type satellites, and subsequently with advanced satellites of the global communications satellite system (the "Global System"), and (b) for the approval by the Commission of the technical characteristics of the Earth Station Complex.

In support of this Application, the Applicant sets forth the following information:

1. Applicant is a corporation organized and existing under the laws of the District of Columbia, pursuant to the Satellite Act.

2. The principal office of the Applicant is located at 1900 L Street, N.W., Washington, D. C. Correspondence concerning this Application may be addressed to the officer of the Applicant signing this Application, at Communications Satellite Corporation, at the above address.

3. The Articles of Incorporation and the By-Laws of the Applicant are on file with the Commission as part of an earlier application by Applicant for Commission approval of a Credit Agreement (FCC File No. ABM-1-CSA).

4. Pursuant to the provisions of Section 401 of the Satellite Act, the Applicant is deemed to be a common carrier

within the meaning of Section 3h of the Communications Act, and as such shall be fully subject to the provisions of Title II and Title III of the Communications Act.

5. The principal business of the Applicant, as set forth in Section 305(a) of the Satellite Act, is to construct, own and operate by itself, or in conjunction with foreign governments or business entities, a commercial communications satellite system, to furnish for hire channels of communication to United States communication common carriers and to other authorized entities, foreign and domestic, and to own and operate satellite terminal stations when licensed by the Commission under Section 201(c)(7) of the Satellite Act.

6. The term "communications satellite earth station complex" (the "Earth Station Complex"), in accordance with the definition of the term set forth in Section 25.103(d) of the Commission's Rules, includes: (i) transmitters, receivers, communications antennas and associated equipment (separately referred to as the "Earth Station") located at the earth station site; (ii) the communications facilities (wire, cable, radio) used to transport the traffic between the Earth Station and the Interface Center (separately

referred to as the "communications links"); and (iii) channel deriving equipment, including multiplex and demultiplex equipment, primarily located at the Interface Center, "where communications terminal equipment of the carriers interconnects with the terminal equipment of the communications satellite station complex" (separately referred to as the "Interface Center").

7. The Earth Station Complex will be established to operate as an integral part of the Global System. The advanced satellites for this system are currently under intensive study by the Applicant and its foreign partners in the international joint venture created by the Agreement Establishing Interim Arrangements for a Global Commercial Communications Satellite System (the "Interim Agreement") and the Special Agreement, dated August 20, 1964. It is currently planned that such advanced satellites will be launched in late 1967 and early 1968. In addition, the Applicant presently is considering plans to launch an Early Bird type satellite over the Pacific Ocean in the Fall of 1966 in order to provide initial communication-satellite service in the Pacific area more than one year before the advanced satellites are available. Both programs are subject

to the approval of the Commission, and the agreement of the members of the Interim Communications Satellite Committee (the "Interim Committee"). The Earth Station Complex initially will provide direct service between the State of Hawaii and the continental United States, when operating in conjunction with an Earth Station Complex in the northwestern United States to be owned and operated by Applicant (see the Application, filed with the Commission this date by Applicant, for authority to construct, or to cause to be constructed, an Earth Station Complex in the northwestern United States), and between the State of Hawaii and Japan and other nations in the Pacific area. Subsequently, as the advanced satellites are deployed, and as other nations construct earth stations which have access to the same satellites as the Earth Station, additional direct satellite communications services will be established with such nations. As discussed more fully in succeeding paragraphs, plans for the Earth Station Complex are being carefully coordinated with plans for launches of Early Bird type satellites and advanced satellites so that it will be operational at the time that the initial need for it exists and so that it

will be capable of an orderly expansion as requirements for satellite communications increase.

8. In regard to the channel capacity of the Earth Station Complex, current performance specifications for advanced satellites call for a capacity of 1000 to 1200 voice-grade circuits per satellite. Accordingly, it is planned that the Earth Station Complex will be capable of handling between 1000 and 1200 voice-grade circuits, when operated in conjunction with advanced satellites. Such capability will be ample to meet the projections developed by the Interim Committee's Advisory Subcommittee on Technical Matters of estimated demand for satellite circuits through 1972.* The number of voice-grade circuits actually handled at the Earth Station at any point in time, however, will depend upon traffic requirements. For example, in the Fall of 1966, when a Pacific Early Bird type satellite launch

---

*Applicant believes that, for long-range planning purposes, the Earth Station Complex should be constructed so as to be capable of expansion to meet 1972 traffic requirements, and that such planning is necessary without regard to any re-allocation of ownership interests in the Earth Station Complex which the Commission may deem appropriate at the end of the two-year period of its Interim Policy.

is planned, the Earth Station Complex will be able to handle the number of circuits equal to the capacity of such a satellite. In late 1967 and early 1968, when advanced satellites are launched, present estimates indicate that a demand for satellite channels to the continental United States, Japan and Australia, on the order of at least a total of 100 voice-grade circuits and a television channel and such estimates might have to be increased if other nations in the Pacific area establish earth stations by that time. By 1972, demand for satellite channels in the Pacific area is expected to total approximately 400 voice-grade circuits, and additional television capacity. Thus, the Earth Station Complex is planned so that this channel capacity can grow with demand.

9. The Earth Station will occupy a site, of approximately 248 acres, the location of which is 21° 40' 18" North Latitude, and 158° 02' 09" West Longitude, at Paumalu, Oahu, Hawaii. Annex A includes information concerning the precise location of the proposed antenna systems and the maximum height of each antenna.

10. The technical characteristics of the Earth Station are set forth in Annex A. Such characteristics are consistent

with performance necessary to meet projected traffic requirements. Annex A includes detailed information in regard to the emission characteristics of the Earth Station, and in regard to the Earth Station's transmitting apparatus and frequency control apparatus. Withrespect to the measurement of the frequencies to be used by the Earth Station, its transmitter frequencies will be monitored periodically during operations. With respect to the measurement of the satellite transmitter frequencies, such frequencies will be measured and checked periodically at the Earth Station. The transmitters at the Earth Station will be operated from the Earth Station itself, and not from a remote control point. With respect to the physical characteristics of the antenna systems to be built at the Earth Station, reference is made to the information contained in Annex A. With respect to the problem of interference from other receiving and transmitting station antenna systems and with respect to the effect on the Earth Station of the existence of certain natural formations or man-made structures in the area of the Earth Station, reference is made to information contained in Annex B.

11. Applicant's program for the design and construction of the Earth Station Complex, as set forth more fully in Annex A, is designed to provide an initial operational capability in the Pacific, through operation with Early Bird type satellites, in the Fall of 1966, and a full capability to operate with advanced satellites in late 1967 and early 1968. Accordingly, Applicant plans to construct two antenna systems at the Earth Station by the Fall of 1966. The second antenna system is necessary to assure the reliability required for commercial operations. The short leadtime available makes it essential that the construction of these antenna systems commence as soon as possible. Procurement of these antenna systems will be based on available equipment. The construction program will commence promptly upon the approval of this Application by the Commission. It is presently planned that the antenna systems will be constructed, tested, and ready for operation by the Fall of 1966. In addition, it is presently contemplated that a decision with respect to the type of satellite system will be made in the Fall of 1965. If a medium altitude system is selected, a third antenna system will be required

by early 1968. The longer leadtime will permit a six to twelve month period of design work on this antenna system, and would be expected to result in antennas of advanced design. With respect to such a third antenna system, Applicant will amend this Application to request authority for construction when the design phase for the antenna system is completed. With respect to the programs for the establishment of the communications links and the Interface Center, it is presently planned that the design, construction and establishment of these portions of the Earth Station Complex will be geared to the above-mentioned requirement for a late 1966 operational capability with an Early Bird type satellite and to a more comprehensive capability to operate with the advanced satellites in late 1967 and early 1968. For further details of this program, see paragraphs 16 and 17, and Annex D.

12. With respect to the frequencies for the initial operation of the Earth Station with an Early Bird type satellite in the Fall of 1966, Applicant has designated those frequencies that are currently being used by the Early Bird satellite over the Atlantic Ocean and by participating earth stations. The choice of frequencies for

operation of the Earth Station with the advanced satellites necessarily will depend on decisions to be made in the Fall of 1965 in regard to the satellite system. Accordingly, Applicant contemplates that only after such decisions have been made will specific frequencies for operating the Earth Station with the advanced satellites be requested.

13. With respect to domestic frequency coordination, Annex B includes the details of the analysis made in accordance with Section 25.251 of the F.C.C. Order in Docket 15723. The necessary coordination with domestic terrestrial services has been effected on the basis of co-channel operation, and it is established in Annex B that, in the 5925-6425 Mc/s band, potential interference problems may exist only for three stations for which Hawaiian Telephone Company ("Hawaiian") plans to file applications for construction permits at some future date. Representatives of Applicant and Hawaiian have concluded that the site chosen represents the best choice in the interests of both companies and that by the adjustment by Hawaiian of its operations, satisfactory solutions will be available with respect to each of the three potential interference problems. In the 3700-4200 Mc/s band, no potential interference with the earth station exists in Hawaii. The 4Gc/s coordination distance map is contained in Annex B, as required.

Applicant has also been in contact with the Department of Defense to determine the existence of any potential interference problems between the proposed earth station and military installations in Hawaii. Federal Communications Commission engineers have received copies of all correspondence. A detailed analysis by the Department of Defense is expected by 15 July. This data will be supplied to the Commission, when it becomes available, as a supplement to the Application.

14. With respect to coordination with foreign administrations, the material presented in Annex C includes maps giving coordination distance contours and details of the Earth Station antenna radiation patterns. These coordination distance computations are based on the procedures set forth in Recommendation 1A of the 1963 Extraordinary Administrative Radio Conference (EARC), although the values of maximum Earth Station effective radiated power and minimum antenna elevation angle are those adopted by the Commission in the Report and Order, Docket No. 15723. On the basis of such computations, the United Kingdom, as the owner of certain Pacific islands within the EARC coordination distances, is the only other administration with whom coordination is required pursuant to such procedures.

15. With respect to Applicant's program for the acquisition of land at the Earth station site, Applicant has obtained an option for the purchase of land required for the proposed site, and has reached agreement with the holder of the leasehold interest in such property, which will permit Applicant to construct and operate the earth station thereon. A site layout plan, also included in Annex A, indicates the tentative locations of the two proposed antenna systems. The property (exclusive of a portion of it which is under a sublease to RCA Communications, Inc. and is used as a high frequency radio receiving station) is sufficient in size and shape to accommodate up to five antenna systems.

16. Pursuant to the Commission's Report and Order issued May 13, 1965, Applicant proposes to establish an Interface Center in the Honolulu area to process traffic to be transmitted to and received from the Earth Station via the communications links. As set forth more fully in Annex D, the Interface Center will be equipped with multiplex equipment to process traffic in any conventional form, from a single teletypewriter channel to a supergroup, as well as color and monochrome television. As a consequence, Applicant will be in a position to assure

that all authorized users, as required by the Satellite Act, have equitable and nondiscriminatory access to the satellite system. Applicant believes that the planned arrangements described in Annex D meet the service requirements of the U. S. international carriers in regard to the interconnection of their communications terminal equipment to the equipment of Applicant at its Interface Center. Applicant proposes to own and operate the multiplex and demultiplex as well as other equipment at the Interface Center. In regard to the physical facilities in which the Interface Center is to be housed, Applicant may own or lease such facilities, depending on local conditions. Applicant will promptly inform the Commission at such time as a specific location for the Interface Center in the Honolulu area is selected. As set forth more fully in Annex D, it is presently planned that procurement of equipment for the Interface Center will commence upon approval of this Application, and that the Center will be established and ready for operation by September 1966. There is also set forth in Annex D a description of the multiplex-demultiplex equipment at the Earth Station which is used for baseband arrangement.

17. With respect to the provision of communications links, Applicant requires broadband services in order to transmit the basebands multiplexed at the Interface Center to and from the Earth Station. Applicant has concluded, after careful consideration, that if a carrier can fully meet the Applicant's requirements, it would be preferable, in order to prevent duplication of facilities, to obtain such services from a domestic carrier rather than to establish completely new transmission facilities. Accordingly, Applicant has requested Hawaiian to provide such broadband services between the Interface Center to be located in the Honolulu area and the Earth Station at Paumalu, Oahu. (Copies of Applicant's letter to Hawaiian dated June 28, 1965, requesting such service, and the reply of Hawaiian, dated July 2, 1965, are attached hereto as Attachments 1 and 2, respectively, to Annex D.) Under the proposed agreement, Applicant would deliver to Hawaiian, at the Interface Center, a multiplexed baseband, the characteristics of which would be described to Hawaiian. Hawaiian would then transmit the baseband to the Earth Station, delivering it there in the same form in which it was received from the Applicant at the Interface Center. Traffic in the reverse direction would be handled in the same manner. Applicant, therefore, would have control of multiplexing of satellite traffic at the Interface Center and through to the Earth

Station. This requirement, as well as others necessary to assure that the provision of broadband services to the Applicant are under its direction and control in conformity with the Order, will be contained in the agreement to be concluded between Applicant and Hawaiian in regard thereto. The agreement will also make provision for alternate routing by the carrier to assure continuity of service.

18. With respect to the procurement program for the establishment of the Earth Station Complex, Applicant plans that procurement for the construction and equipping of the Earth Station and the Interface Center will be fully in accord with the Commission's Procurement Regulations, with industry-wide competition being sought. With respect to estimated costs, reference is made to Applicant's letter to the Commission, dated June 30, 1965. The estimated total cost of such procurement program is $6,000,000.

19. As part of its Earth Station Complex, Applicant requires, for the purpose of calibrating the antenna systems at the Earth Station, a boresight tower facility. A site for this facility has not yet been selected. Applicant will promptly amend this Application as soon as such a site has been selected, and will include therein detailed technical plans relating to that facility.

20. With respect to alien ownership of the capital stock of the Applicant, as of the close of business on July 7, 1965, there were outstanding 10,000,014 shares of the common stock, without par value, of the Applicant, of which 189,087 shares were held by or for the account of, or in trust for, persons of the classes described in paragraphs (1), (2), (3), (4) and (5) of Section 310(a) of the Communications Act of 1934, as amended. All of the directors and officers of Applicant are citizens of the United States.

21. With respect to ownership of the common stock of Applicant, Section 304(b)(2) of the Satellite Act prohibits a stockholder who is not also an authorized carrier, as defined in that Act, from owning more than ten per centum of the shares of voting stock of the Applicant issued and outstanding. American Telephone and Telegraph Company and International Telephone and Telegraph Corporation, as authorized carriers, are the owners, respectively, as of the close of business on July 7, 1965, of 2,895,750 shares and 1,050,000 shares of the Applicant's common stock, and no other person owns of record or, to the knowledge of the Applicant, owns beneficially but not of record, shares constituting more than 10% of the total number of shares of the Applicant issued and outstanding.

22. With respect to other radio stations presently owned or controlled by the Applicant, the Applicant, in conjunction with its foreign partners, pursuant to the Interim Agreement and the Special Agreement, owns and controls the HS-303 Early Bird communications satellite now in orbit over the Atlantic Ocean, authorization for the operation of which was granted by the Commission on June 22, 1965. The Applicant also leases the earth station at Andover, Maine, from AT&T. Applicant has also exercised control of the TAA-2 antenna at the Naval Missile Center, Point Mugu, California, in the Olympic Games Project, pursuant to the Order and Authorization of the Commission dated July 22, 1964, FCC File No. 2-CSG-P-65. The Applicant contemplates ownership and operation of earth stations in the northwestern and northeastern parts of the United States, applications for the construction or acquisition of which have been filed this date with the Commission, pursuant to its Order, dated May 12, 1965.

23. The funds required for the construction and operation of the Earth Station Complex (other than such funds as may represent revenues derived from the operation of the Earth Station) will be provided out the net proceeds

of the public offering of common stock of the Applicant, in the amount of approximately $195,000,000.

24. The Earth Station will be owned and operated by the Applicant; the communications links will not be owned by Applicant, but the provision of services via such links will be under its direction and control; and the equipment at the Interface Center will be owned and operated by Applicant.

25. With respect to proceedings in a Federal Court to which Applicant has been a party (para. 21), Applicant has been the defendant in a civil proceeding, which is still pending, in the U. S. District Court (District of Columbia), Poirier v. Welch, et al., Civil Action No. 2254-64.

26. Applicant submits that, in carrying out the program for the establishment of the Earth Station Complex set forth in this Application, it will be carrying out the purposes and objectives of the Satellite Act and furthering the national policy with respect to the expeditious establishment of the initial U. S. earth stations, established by the Commission in its Order.

27. Applicant further submits that the urgent need to have the Earth Station Complex operational by the Fall of 1966 indicates the need of prompt action by the Commission upon this Application.

28. Applicant waives any claim to the use of any particular frequency or of the ether as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise.

WHEREFORE, Communications Satellite Corporation submits that the public interest, convenience and necessity require the granting of this Application.

Respectfully submitted,

COMMUNICATIONS SATELLITE CORPORATION

By Signed
Joseph V. Charyk
President

July 12, 1965

Attachments: Annex A - Description of the Paumalu Earth Station

Annex B - Calculations of Interference and Coordination Distances for Domestic Services for the Paumalu Earth Station

Annex C - Technical Information in Regard to International Coordination of Frequency Usage of Satellite Earth Station at Paumalu, Oahu

Annex D - Description of the Satellite Traffic Interface Center, Communications Links and Related Earth Station Equipment of the Paumalu Earth Station Complex

ANNEX A

DESCRIPTION

OF THE

PAUMALU EARTH STATION

DESCRIPTION OF THE PAUMALU EARTH STATION

1.0 INTRODUCTION

The communications satellite earth station to be constructed at Paumalu, Oahu, Hawaii, by the Communications Satellite Corporation will be used initially to provide communications service between the United States and Pacific locations. This Annex presents in detail a physical and functional description of the station, as well as the planned construction program.

1.1 Site Plan - General Layout

The physical site which has been selected for the proposed earth station in Hawaii is located on the Island of Oahu and was selected for its relative freedom from microwave interference problems to existing and planned terrestrial systems in the Islands. Other favorable factors are its location in a relatively dry area in a lightly populated region on Oahu. The area is free from industrialization and has well-developed and readily available utilities. The site has a good private access road from the main highway. It is away from main airways and harbor facilities, and is located conveniently for access to terrestrial communications. A relatively short microwave entrance link will be required. The site is located in as much of a "bowl" as can be found in the Hawaiian Islands with a "sea" horizon of less than 1 degree elevation.

The site consists of a 248-acre plateau at an elevation of approximately 400 feet of which a section of approximately 107 acres is presently under lease to RCA Communications, Inc. for use as an HF receiving site. Figure A-1 is a map of the island of Oahu indicating the relative site location.

The site selected for the Paumalu station is shown in Figure A-2. The site is adequate to permit construction of a central control building and five separate antenna systems. Power lines entering the site will be underground. All power and control lines between the antenna systems and the control building will be in underground troughs.

An access road from the main highway exists. Ample parking facilities and delivery access will be provided at the control building. Roadways to each antenna system will also be provided.

Initial construction will consist of two antenna systems with associated ground communications equipment and the control building, as well as the access roads and utility systems. Completion of the overall station is scheduled for the Fall, 1966.

The control building will consist of a single story building and will contain the following major sections, as described in the functional layout plan of Figure A-3.

1. Communications and Command Control Room
2. Ground Communications Equipment Room
3. Power Control Facilities
4. Entrance Link Equipment
5. Heating and Air Conditioning
6. Test, Repair and Shop Facilities
7. Teleprinter and Message Center
8. PBX and Station Intercom
9. Offices, Conference Rooms, Storage
10. Shipping and Receiving - Loading Platform.

A boresight facility will be provided near the station. It will include translators, antennas, test generators and power. The facility will be remotely controlled from the main station.

1.2 Functional Description

The Paumalu earth station will provide the facilities necessary for transmitting and receiving commercial communications traffic via active satellites. The traffic to be transmitted including multi-channel telephony, telegraph, facsimile, high speed data and both color and monochrome television will be accepted from the entrance links and suitably processed for transmission to the satellite. Similar operations will be performed in reverse on the receive side for return traffic.

The station will also be provided with facilities for command and telemetry functions necessary to overall system operation.

For communications purposes the station will include frequency modulated high power transmitters;low noise FM receivers and demodulators; multiplex equipment (see Annex D); signal processing; control, monitoring, alarm and recording equipment; entrance link equipment; instrumentation and test equipment; power equipment; and all other equipment and facilities needed for commercial operation as shown in the block diagram in Figure A-4. Transmission from the earth station to satellites will be accomplished using frequencies in the 5925 to 6425 Mc/s band while reception will take place in the 3700 to 4200 Mc/s band.

1.2.1 Satellite Systems

a. The paumalu station will be designed for operation with statellites at any altitude between 5000 nautical miles in any inclination from polar to equatorial, and synchronous altitudes for satellites in stationary orbits. The station will also be capable of providing tracking, telemetry and command functions for orbit injection purposes and necessary control maneuvers.

b. The station will be designed for use with satellites of the active type using simple frequency translation transponders.

1.2.2 Earth Station Performance

a. Receiver System Performance

A receiving system capability of at least the equivalent of an 85-foot antenna with 50% efficiency and a

$50^{\circ}K$ system noise temperature in clear weather will be the specified performance for the antenna systems.

b. Antenna Pointing and Tracking

1) An autotrack system will be provided with each antenna system for automatically tracking satellites using a microwave beacon in the 3700-4200 Mc/s band.

2) Each antenna system will be provided with a programmed tracking capability.

c. Reliability of Service

1) The station design will permit reliable operation on a continuous basis. Two antennas will be installed to provide complementary back-up capability. Standby equipment will be included for the complete RF transmit and receive chains as well as all other "in line" equipments to the entrance link. Other systems such as autotrack and other "off line" functions will utilize standby equipment where necessary and economical. All electronic equipment will use solid state components where practicable. Modular equipment construction will be utilized to minimize repair time in the event of failures.

2) Environmental conditions have been studied for Paumalu location, and it has been determined that heavy rain and high wind conditions are rare occurrences. It has been concluded that radome protection for the antennas will not be required.

3) Primary power system reliability will be consistent with the requirements for reliable operation. Two commercial

power entrances will be provided.

d. Maintenance

In-service testing and equipment redundancy concepts will be employed so that routine maintenance can be performed during normal communications operations. A maintenance routine and schedule will be followed for all equipments. A repair facility will be located at the station, as well as storage facilities for spare equipment and parts.

2.0 CONSTRUCTION PROGRAM

As previously indicated, the construction planned for the earth station complex is designed to provide (i) an early operational capability in the Fall of 1966; (ii) a more comprehensive capability to operate with advanced satellites in late 1967; and (iii) expansion capability to meet 1972 traffic estimates.

2.1 Antenna Systems

The requirements for an early operational capability in the Pacific area have been used to develop the basic framework for the earth station construction program. Two antenna systems and associated ground communications equipment are scheduled for completion in the Fall of 1966 to meet this requirement. The short construction period requires that electronic equipment and antennas be of existing design. Procurement of the antenna systems and ground communications equipment has been planned on the basis of performance characteristics of currently available equipment.

The proposed construction program for plant and facilities such as buildings, utilities, roads and other site improvements will be such that the control building, access roads, water and power and all construction for the first antenna system will be completed during this initial phase.

2.2 Third Antenna System

In the Fall of 1965, it is expected that a decision with respect to the type of satellite system will be made. Should a medium altitude system be selected, a third antenna system will be required at the site. The longer leadtime available would permit a six to twelve month period of design work which would result in an antenna of advanced design. The construction of this antenna system would be scheduled for completion in early 1968.

Additional construction of roads, cable and power troughs will be required for the third antenna system and will be performed at that time.

2.3 Equipment Descriptive Specifications

The foregoing describes the construction program for the Paumalu earth station. The following paragraphs give a description of the equipment to be provided.

These specifications are shown for the proposed equipment. At the end of the descriptive specifications, the technical characteristics of the completed station are tabulated.

2.3.1 Antenna Systems

The antenna systems will provide antenna pointing, receiving and radiating capabilities for receiving from, and transmitting to, the satellite. Each antenna system will consist of a Cassegrain feed parabolic antenna with the equivalent gain of an 85-foot diameter parabola with 50% overall efficiency. Equipment for pointing, driving, and calibrating each antenna is included with an antenna control unit.

The overall characteristics for either antenna system are:

a. Reception

1)	Frequency Range:	3700 to 4200 Mc/s (Feed system will cover 4000 to 4200 Mc/s initially).
2)	Polarization:	Linear with any orientation, initially; circular and/or linear for the advanced satellite system.
3)	Gain at 4 Gc/s:	57.7 db

b. Transmission

1)	Frequency Range:	5925 to 6425 Mc/s (Feed system will cover 6225 to 6425 Mc/s initially).
2)	Polarization:	Linear with any orientation, initially; circular and/or linear for the advanced satellite system.
3)	Gain at 6 Gc/s:	61 db

c. Beacon Tracking

1) Frequency: 3700 to 4200 Mc/s

2) Polarization: Linear with any orientation
Circular and/or linear for advanced satellite system

d. Coverage

1) Azimuth Range: 0 to 360°

2) Elevation Range: Nominal, 5 to 88°

e. Height of Antenna Structure: Less than 110 ft.

2.3.2. Wideband Receiving Group

a. Dual Low Noise Receiver

The receiving group will consist of two principal parts, a cryogenically cooled low noise radio frequency amplifier assembly and a receiver assembly including IF, demodulation and baseband circuitry.

1) Frequency Range: (each unit) 3700 to 4200 Mc/s

2) RF Bandwidth: (each unit) 30 Mc/s

3) Operating Frequencies:
4081 Mc/s, 4160.75 Mc/s } - initially
To be determined for advanced satellite system

4) Receiver Noise Temp: 10°K, nominal

2.3.3 Wideband Transmitter Group

a. Dual FM Transmitter

The performance parameters tabulated below are requirements for the FM ground transmitter group (each unit):

1)	Frequency Range:	5925 to 6425 Mc/s
2)	Operating Frequencies:	6301.02 Mc/s, 6389.97 Mc/s (tunable over band) To be determined for advanced satellite system.
3)	Power Output Capability:	5kw, CW
4)	Bandwidth:	30 Mc/s (tunable over band)
5)	Baseband Input:	30 c/s to 5 Mc/s
6)	Deviation Capability:	±10 Mc/s ±15 Mc/s for advanced system

2.3.4 Signal Processing Group

This group will consist of equipment necessary to process the traffic signals for transmission, including:

a. Necessary equipment to provide compatibility between signals from the communications links and the earth station equipment.

b. Message Pre-emphasis and De-emphasis

c. Baseband Pilot and Alarm equipment

d. Facilities for voice and teletype order wire over the satellite facilities.

e. Television Pre-emphasis and De-emphasis

f. Television Sound Channel Processing

2.3.5 Instrumentation and Display Group

A control facility will be provided from which all earth station control and monitoring functions can be performed. This control will provide for all operational and equipment control and monitoring functions at the station associated with the ground communications equipment as well as the antenna systems.

a. Measurements

The following measurements subject to system control will be available:

1) Antenna position and servo error
2) Received signal strength (communications and tracking signals)
3) Modulation level-transmit
4) Transmitter power level
5) Pilot levels
6) Link Noise

b. Test Equipment

Test equipment required for normal operation, maintenance and calibration of the station will be provided. This equipment will include oscilloscopes, noise measuring set,

group delay test set, signal generators, etc., and will be rack or dolly mounted as required.

c. Timing

A timing system will be provided for the purpose of time encoding all data. The timing system will be capable of operation from synchronizing signals sent from a control center at a remote location.

d. Frequency Measurement

Both the satellite transmitters and the earth station transmitters will be measured by digital counters, with an accuracy of 1 part in 10^8. The calibration of the digital counter will be checked against NBA time signals transmitted by the U. S. Navy.

2.3.6 Baseband Equipment

The baseband equipment to be provided will be compatible with ground communications equipment and provides the appropriate interface to the entrance link facility. The equipment will include distribution frames, monitoring equipment, multiplex equipment, pilot tone and alarms, test and maintenance, television sound equipment, power supplies, patch facilities and ancillary equipment. Equipment will be of standard design wherever possible and specific quantities will be based on initial operating requirements, with expansion capability to meet projected requirements through 1972.

2.3.7 Satellite Command and Control

The station will be used to control the placement of satellites into their orbits and will, from time to time, be used as a command transmit facility for the purpose of performing satellite attitude and position corrections. The station will incorporate the necessary equipment to perform such functions.

This equipment will nominally consist of:

1) Command Deviator
2) Command Encoder
3) Telemetry Receiver
4) Telemetry Displays
5) Recorders
6) Display and monitoring units incorporated in the control console.
7) Teletypewriter terminal equipment with teletypewriter to accept centrally originated commands at the station, and to report spacecraft status and response to the system control center.

2.3.8 Power Facilities

The Paumalu station will be furnished with two commercial 3-phase power access lines which will be interconnected to provide automatic cut-over.

3.0 TABULATION OF TECHNICAL CHARACTERISTICS

1)	Nature of Service	Communication Satellite
2)	Class of Station	Satellite Earth Station
3)	Location of Site	
a)	City	Honolulu
	Island	Oahu
	State	Hawaii
b)	Geographical Coordinates:	21° ~~08' 49"~~ 40' 18" N. Latitude ~~159° 41' 43"~~ 158° 02' 09" W. Longitude
4)	Communications Transmitter	
a)	Make and Model	Special transmitter using klystron type VA 884A (or equal)
b)	Frequency Range	5925 to 6425 Mc/s (Tunable over range)
c)	Operating Frequencies	6301.02 Mc/s 6389.97 Mc/s } - Initially To be determined for Advanced System
d)	Power Output of Transmitter	5000 watts, 37 dbW
e)	Effective Radiated Power	98 dbW maximum
f)	Maximum Modulating Frequency	5000 kc/s

g)	Emission	30000 F9 - initial system To be determined - advanced system
h)	Maximum Deviation	± 10000 kc/s - initial system ± 15000 kc/s - advanced system
i)	Frequency Tolerance	0.001 % (crystal controlled)
j)	Azimuth of Radiation	Any
k)	Radiation in Horizontal Plane	34 dbW per 4 kc/s for initial system*

5) Communications Antenna

a)	Type	Parabolic Reflector Type Cassegrain Feed
b)	Minimum Elevation	5 degrees (except at reduced power for boresight tests)
c)	Antenna Gain	61 db at 6 Gc/s
d)	Beamwidth	0.15° half power at 6 Gc/s
e)	Polarization	Linear with any orientation-initial system Linear with any orientation or circular polarization - advanced system

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* Calculated as follows:

Maximum Main Beam ERP	+98 dbW
Minimum Sidelobe Discrimination	45 db
Maximum Horizontal ERP	53 dbW
Spreading Factor (300 kc/s)	19 db
Maximum Horizontal ERP per 4 kc/s	34 dbW

Coordination has been accomplished for +45 dbW for the 4 kc/s maximum authorized by FCC Docket 15723.

6) Receiving Antennas

a) Communications

Frequency Range	3700 to 4200 Mc/s
Operating Frequencies	4081 Mc/s, 4160.75 Mc/s } initial system To be determined - advanced system
Gain	57.7 db at 4 Gc/s
Polarization	Linear with any orientation- initial system Linear with any orientation or circular polarization - advanced system

b) Receiving System

Noise Temperature	50^{o}K

7) Beacon Receivers

Frequencies	4104.14 Mc/s, 4137.86 Mc/s } initial system To be determined - advanced system

8) Antenna Locations

Antenna #1	21^{o} 40' 25" N. Latitude 158^{o} 2' 18" W. Longitude
Antenna #2	21^{o} 40' 42" N. Latitude 158^{o} 2' 10" W. Longitude

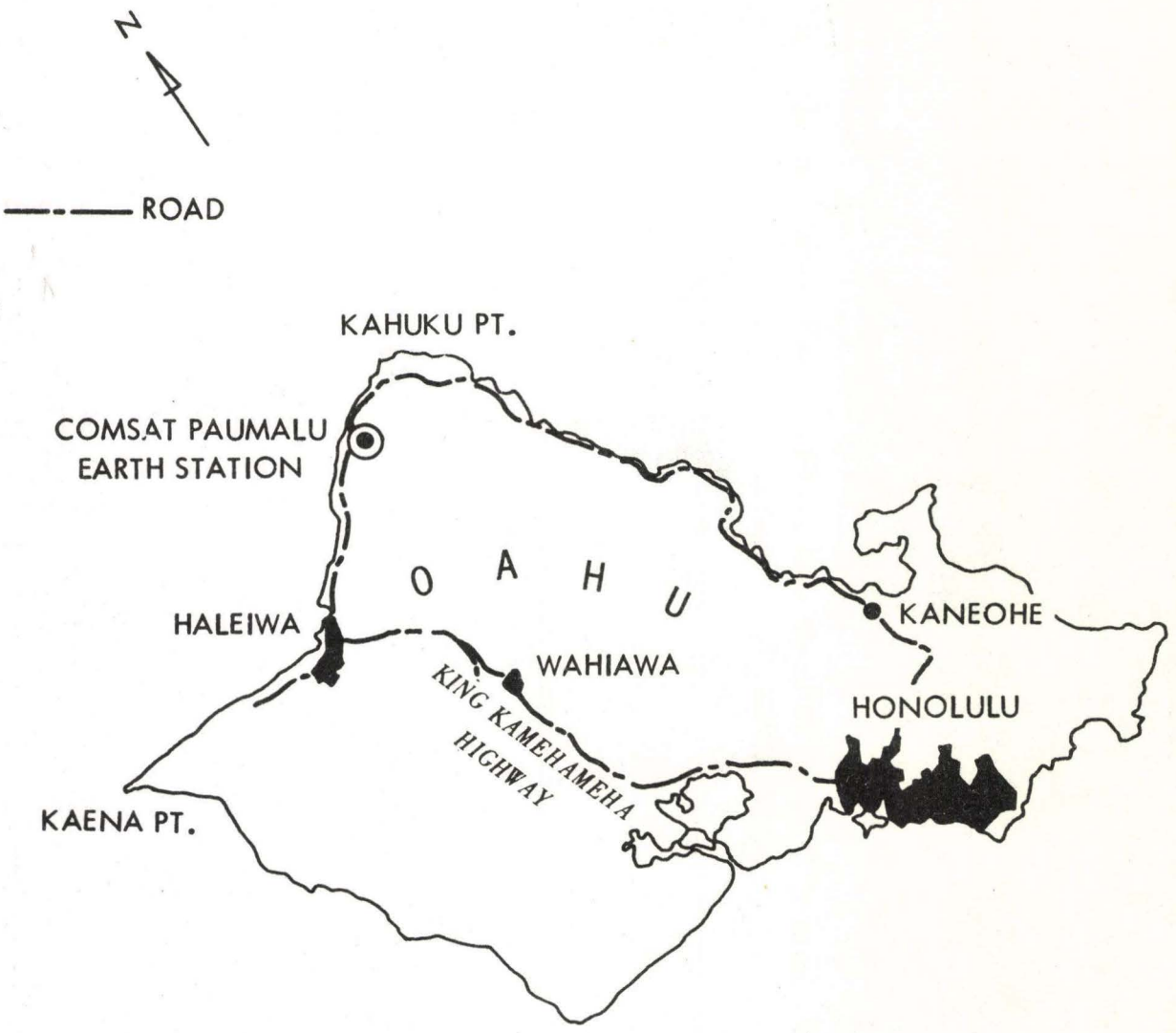


FIGURE A-1 LOCATION OF PAUMALU EARTH STATION

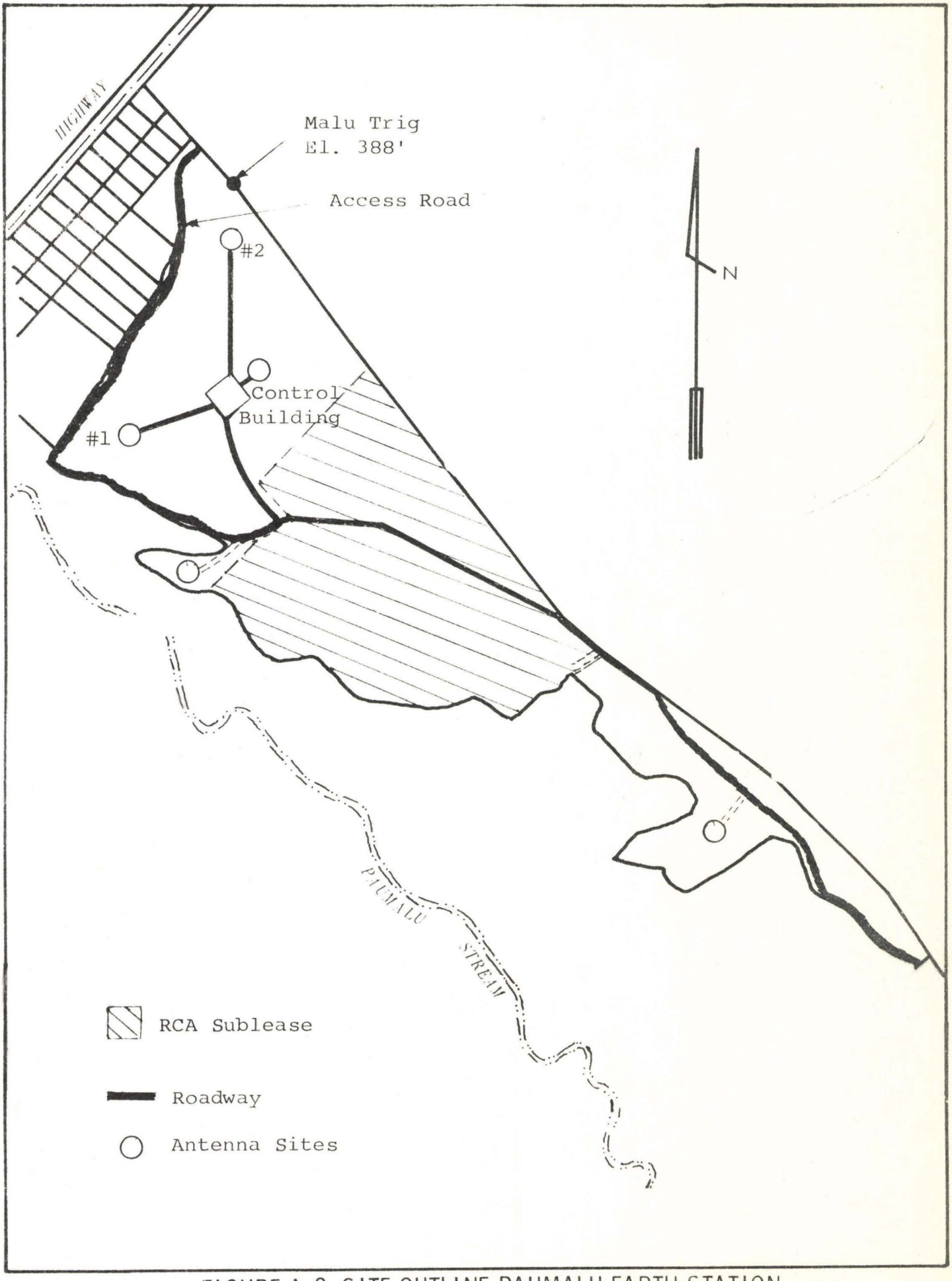
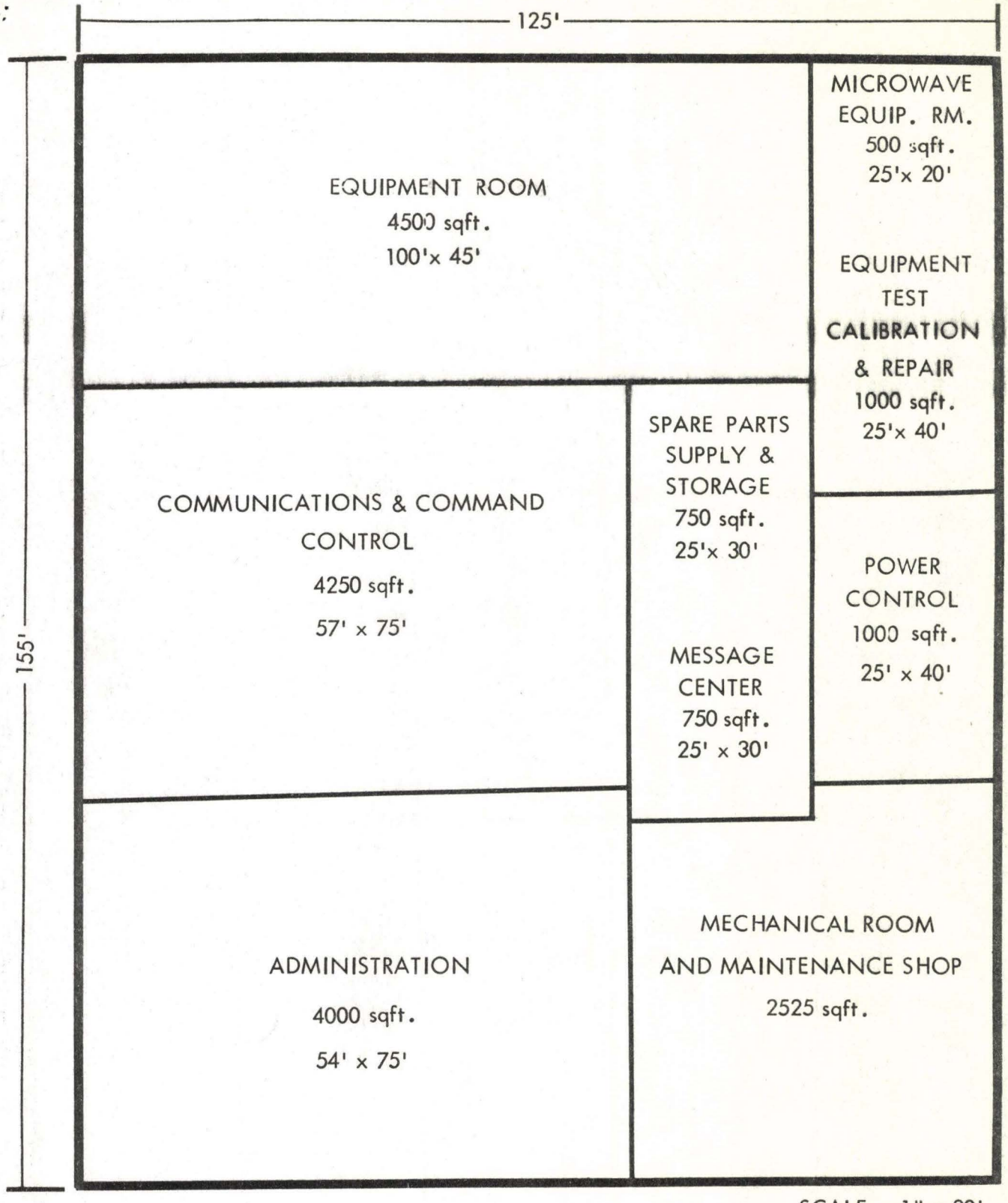


FIGURE A-2 SITE OUTLINE PAUMALU EARTH STATION



SCALE: 1" = 20'

1.	TECHNICAL EQUIP. AREA	5,000 sqft.
2.	" CONTROL "	6,000
3.	" SUPPORT AREA	4,375
4.	ADMINISTRATION "	4,000
	TOTAL =	19,375 sqft.

FIGURE A-3 CONTROL BUILDING

(LAYOUT BY FUNCTIONAL AREAS)

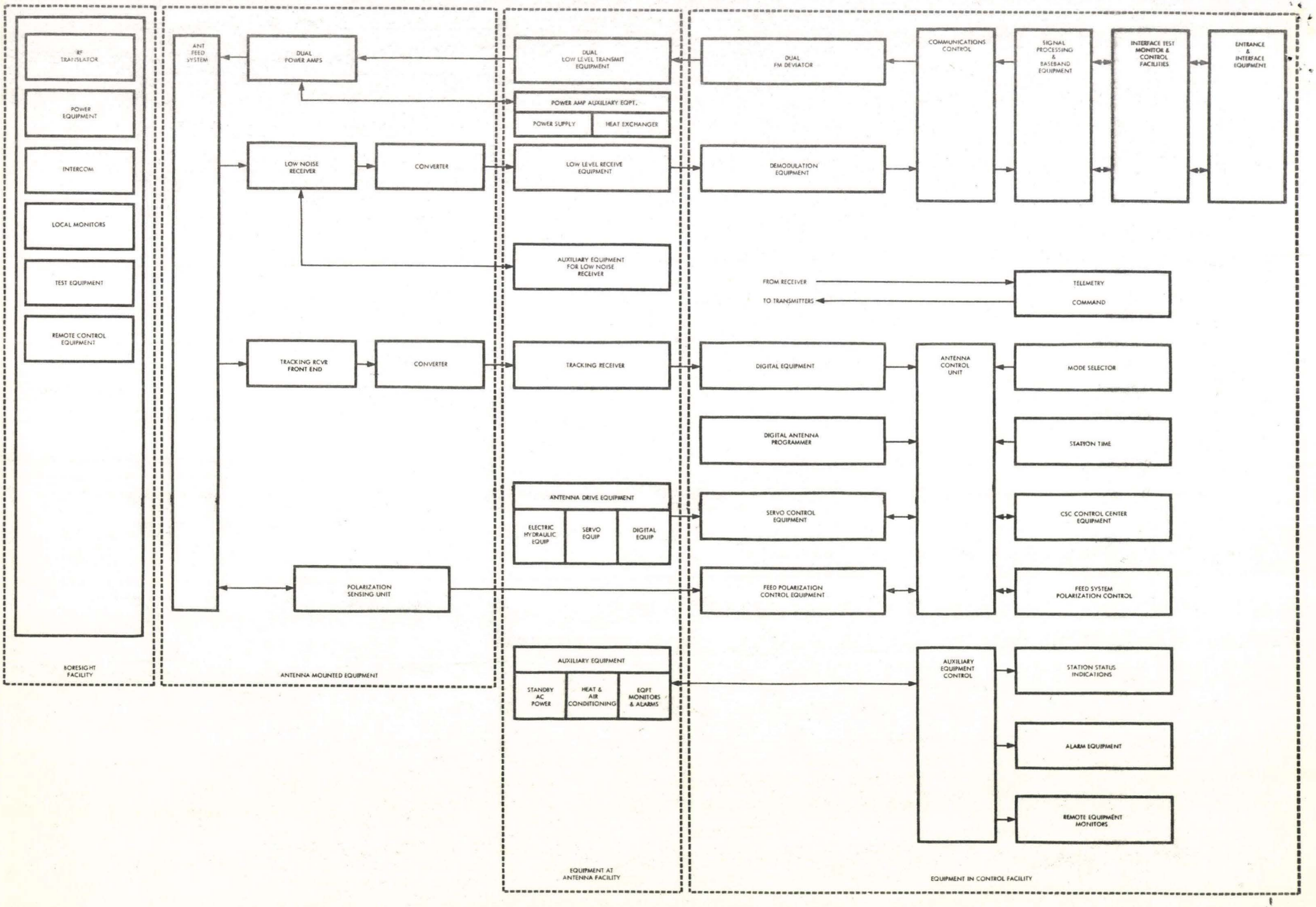


FIGURE A-4 STATION BLOCK DIAGRAM

ANNEX B

CALCULATIONS OF

INTERFERENCE AND COORDINATION

DISTANCES FOR DOMESTIC SERVICES

FOR THE PAUMALU EARTH STATION

1. INTRODUCTION

The Paumalu site was chosen for the location of the Hawaiian terminal of Comsat because it most favorably satisfied all the basic siting criteria, of which the most fundamental is the microwave interference problem. It was determined from a detailed study that use of this site would greatly reduce interference and/or coordination problems. A thorough systematic analysis has been made of this aspect of the site using the procedures outlined-in Reference 1. (List of references attached).

The rules of Reference 1 determine the basic coordination distances required by the Commission. Stations falling within the bounds of the coordination distance contours must then be analyzed in accordance with recognized techniques.

To determine the potential interference between the proposed Paumalu earth station and existing domestic services, the necessary detailed analysis has been made using internationally recognized methods for calculating of propagation loss and has been used where a preliminary analysis has indicated a potential interference problem. Complete details of all such computations are given in this Annex and Appendix I attached hereto.

2.0 SUMMARY OF RESULTS

Fifty-eight microwave receiving sites in the 5925 to 6425 Mc/s band were found to be within the coordination distance of the proposed earth station and, therefore, subject to potential interference as determined from the procedures of Reference 1. Detailed computations of transmission losses between each of these sites and the earth station were made because of the unusual terrain features of the islands.

The results of the interference analysis are shown in Table B-I for a total of 58 potentially interfered-with terrestrial receiving facilities in the 5925 to 6425 Mc/s band.

The results of this analysis have indicated that three planned terrestrial stations will be subject to potential interference of the level established in the coordination procedure.

There are no terrestrial microwave transmission facilities in the 3700 to 4200 Mc/s band in Hawaii. Figure B-1 shows the coordination contours applicable to terrestrial microwave receiving facilities in the 6 Gc/s band, and to terrestrial microwave transmission facilities in

the 4 Gc/s band for the Paumalu earth station. The latter contours are given in 10 db steps down from a maximum ERP_{terr} of 55 dbW.

SECTION II

COORDINATION OF COMSAT TERMINAL TRANSMITTER WITH TERRESTRIAL MICROWAVE RECEIVING FACILITIES IN THE 5925 TO 6425 MC/S SHARED BAND

1.0 COORDINATION PROCEDURE (Reference 1)

As established in the procedures, the mean effective radiated power at the earth station is taken to be 45 dbW per 4 kc/s in the horizontal plane, or 45 + F_s dbW per 4 kc/s toward the radio horizon. Figure B-2 shows the physical horizon of the Paumalu earth station site and values of F_s "Site Shielding Factor," were obtained from Reference 1 for the site. From Table 1 of Reference 1, the minimum permissible basic transmission loss, L_b, to be exceeded 99.9% of the time is:

$$L_b = 45 + 174 = 219 \text{ db} \qquad (1)$$

Figure 2 of Reference 1, corrected by the applicable equation:

$$L_b \text{ (4 Gc/s)} = L_b(f) + 13 - 21.6 \log f_{Gc/s} \qquad (2)$$

yields a coordination distance of d_c = 2000 kilometers for Zone C.

Since all facilities in Hawaii are well within this radius, all terrestrial stations were investigated. They

have been identified by site parameters (site coordinates and elevations) and by their azimuth of reception (assumed to be the azimuth of the antenna main lobe). Station data was obtained from the files of the Federal Communications Commission on existing stations and from the Hawaiian Telephone Company for stations presently in the planning stage.

Path profiles were drawn between all terrestrial stations and the earth station to determine the propagation mode and path characteristics necessary for transmission loss calculations. These calculations were made using the methods outlined in Reference 2 for forward scatter and diffraction paths. Standard formulas were used for line-of-sight paths.

Maximum yearly values for sea level refractivity N_o, as required by these computations, were obtained from Reference 3. The value used was $N_o = 310$ for all sites.

The computations resulted in values for the long-term median basic transmission loss for the forward scatter mode, L_{bs}, the diffraction mode (rough earth or knife edge), L_{bd}, and the line-of-sight mode LOS. The time correction term $V(p, d_e)$ for $p = 0.1\%$ of the time is applied to those cases in which the forward scatter mode was predominant.

To predict time variability for paths in which the diffraction mode predominates, a fixed maximum field strength enhancement of 6 db was assumed. The same value was assumed for the line-of-sight case. The enhanced field cannot typically exceed a level much higher than this without becoming a clear-line-of-sight path.

The basic transmission loss, L_p*, exceeded 99.9% of the time, obtained as L_{bs} - V(p, d_e), L_{bd} - 6 db or LOS - 6 db, was used to determine the maximum permissible antenna gain of the terrestrial microwave receiving site toward the earth station from

$$G_{terr} = L_p - F_s(\theta) - 177 \text{ db} \qquad (3)$$

Where θ is the minimum obstacle elevation angle toward the terrestrial microwave receiving facility as seen from the earth station.

A comparison of this permissible antenna gain is made with the synthesized antenna sidelobe pattern of Figure B-3.

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*The suffix p is used to differentiate between the predicted basic transmission loss for a given path from the L_b displayed in Figure 2 of Reference 1.

This pattern was developed by patterns of horn type antennas and parabolic dishes up to a diameter of 10 feet (43 db gain at 6 Gc/s). The worst sidelobe pattern as a function of the off axis angle was selected to synthesize the pattern of Figure B-3. The comparison made of the applicable azimuth toward the earth station, yields the probable interference conditions.

If $G(\Delta\alpha) > G_{terr}$, then potential interference exists on a co-channel basis. Conversely, if $G_{terr} > G(\Delta\alpha)$, then interference is unlikely.

The safety margin at the receiving site is given by:

$$\Delta P = G_{terr} - G(\Delta\alpha) \qquad (4)$$

A lower limit for the Comsat antenna elevation angle was arbitrarily taken to be either 1 degree above the physical horizon angle θ or 5 degrees, whichever was greater. The 5 degree value complies with the minimum elevation angle specified in Reference 1, and the 1 degree above the radio horizon is used in order to prevent the antenna degrading the receiving system sensitivity.

1.1 Results of the Computations

Tables B-I and B-II show listed all parameters obtained from and used in, respectively, the described computations.

Table B-I provides in its columns, the following information:

1. Microwave receiving site identity,
2. Corresponding transmitter call sign,
3. Calculated path loss, exceeded for 99.9% of the time (db).
4. Applicable site shielding factor, F_s (db),
5. Permitted terrestrial receive antenna gain toward the earth station (db),
6. Exact terrestrial antenna gain or antenna gain from Figure B-3 in the direction of the earth station (db),
7. Margin of potential interference protection or violation (db).

Table B-II provides in its columns, the following information:

1. Microwave receiving site identity,
2. Corresponding transmitter call sign,
3. Long-term median basic transmission loss for forward scatter, L_{bs} (db) (or LOS where applicable),
4. Long-term median basic transmission loss for diffraction, L_{bd} (db),
5. Time variability increment for 0.1% of the time, $V(p, d_e)$, (in db; for diffraction and LOS paths 6 db),
6. Paumalu earth station horizon elevation angle θ (degrees), in direction of terrestrial facility.

7. Azimuth difference between receiving antenna main beam and Paumalu earth station azimuth $\Delta\alpha$ (degrees).

1.2 Conclusion

This analysis revealed that with a horizon ERP of +45 dbW + F_s per 4 kc/s and a 5 degree minimum local look angle of the Comsat antenna, three terrestrial microwave receiving facilities, planned for installation by the Hawaiian Telephone Company might be subject to interference. These are:

1. Wahiawa, Kauai receiving from Kaala,
2. Kaala, receiving from KUR 96,
3. Kaala, receiving from Kauai.

Solutions to these problems require frequency discrimination. The preferred solution is to plan for operation of the terrestrial facilities in other than the 5925 - 6425 Mc/s band. Representatives of Hawaiian Telephone Co. and the applicant have concluded that, by the adjustment by Hawaiian of its operations satisfactory solutions will be available with respect to each of the three potential interference cases.

SECTION III

COORDINATION OF COMSAT TERMINAL RECEIVER WITH TERRESTRIAL MICROWAVE TRANSMITTING FACILITIES IN THE 3700 TO 4200 MC/S SHARED BAND

1.0 COORDINATION PROCEDURE

Although no terrestrial stations operating in the 3700 to 4200 Mc/s band exist in Hawaii, the rules of Reference 1 require that a map, showing coordination contours, be submitted with each application. The equation for determining coordination distance for terrestrial microwave transmission facilities transmitting into an earth station receiving facility is:

$$L_b(0.1\%) = ERP_{terr} + G_{Hor} - F_s + 145 \text{ db} \qquad (1)$$

where ERP_{terr} is the effective radiated power at the microwave transmission facility in the direction of the earth station, G_{Hor} is the maximum vertical off-beam gain of the earth station antenna toward the horizon in the direction to the microwave transmitting facility, and F_s is the site shielding factor. G_{Hor} is equal to $58 - \Delta G(\theta)$, with ΔG obtained from Figure B-4 using $\Delta\theta = 5^o - \theta$.

Using a maximum value for ERP_{terr} of 55 dbW and a maximum value for $G_{Hor} - F_s$ of 21 db for a horizon angle of approximately 4^o at the earth station, the value for

L_b(0.1%) becomes 221 db which corresponds to a coordination distance of 2500 kilometers. In view of the fact that no microwave transmitting stations within that distance of the Paumalu earth station exist, no search was needed.

FUTURE COORDINATION REQUIREMENTS FOR TERRESTRIAL MICROWAVE TRANSMITTER TO OPERATE IN THE SHARED 3700 TO 4200 MC/S BAND

As required by FCC regulations with respect to proper coordination of a satellite earth terminal, the accompanying map in Figure B-1 shows contours of equal interference potential for effective radiated powers to 55 dbW in the direction of the Paumalu earth station in 10 db steps.

LIST OF REFERENCES

1. FCC Docket No. 15723, Appendix I, Paragraph 25.251.

2. Doc. V/2a of 13 January 1965, of the CCIR, relating to Question 185 (v), Study Programmes 188, 190, 192 (V), submitted by the United States of America, titled "Transmission Loss Predictions for Tropospheric Communication Circuits".

3. "Climatic Charts and Data of the Radio Refractive Index for the United States and the World", NBS Monograph 22.

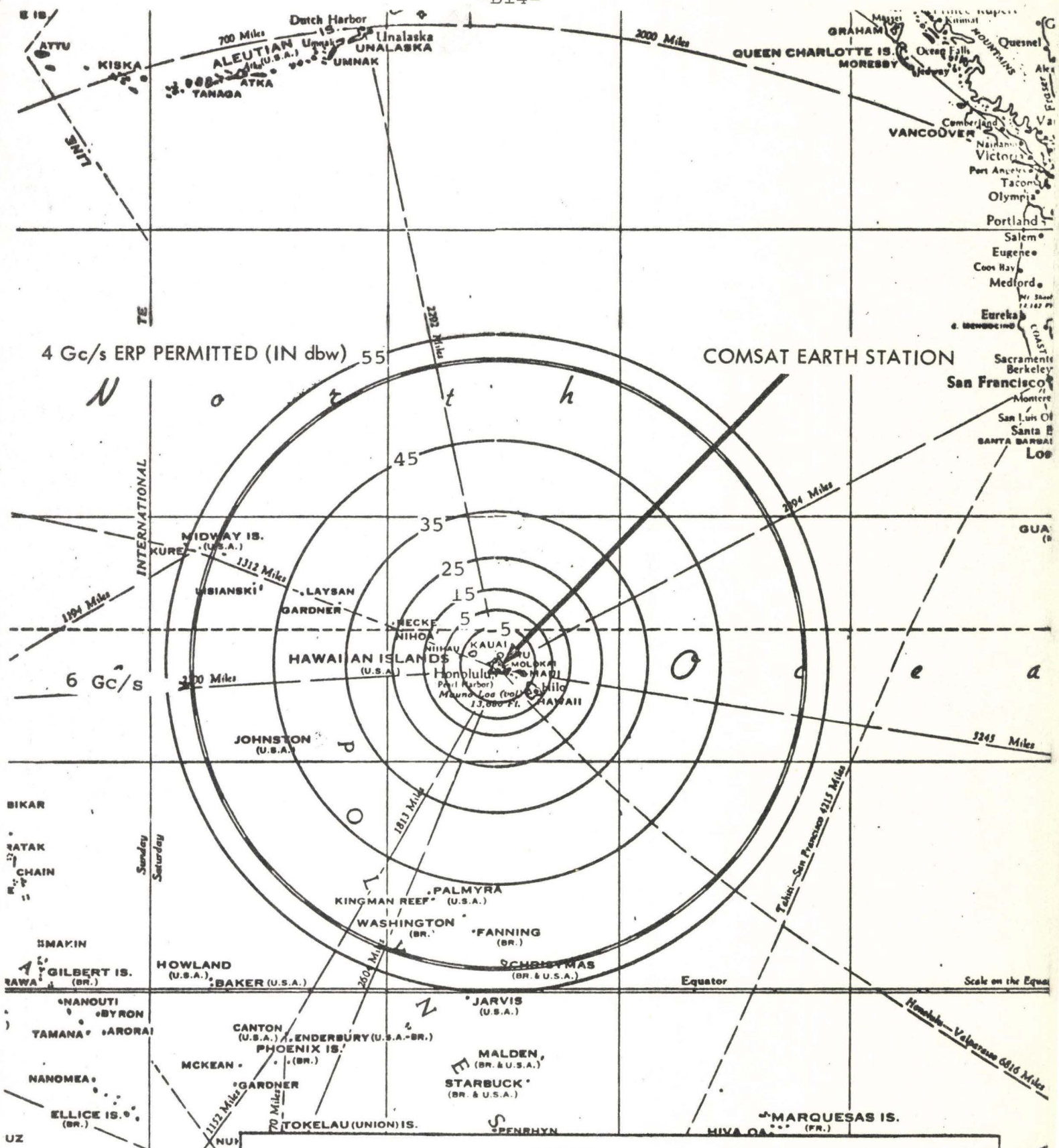

FIGURE B-1

MAP SCALE APPROX: 1" = 840 km

COORDINATION CONTOURS OF ERP AT TERRESTRIAL MICROWAVE TRANSMITTERS IN THE SHARED 4 Gc/s BAND, AND COORDINATION CONTOUR OF TERRESTRIAL MICROWAVE RECEIVERS IN THE SHARED 6 Gc/s BAND (FOREIGN & DOEMESTIC)

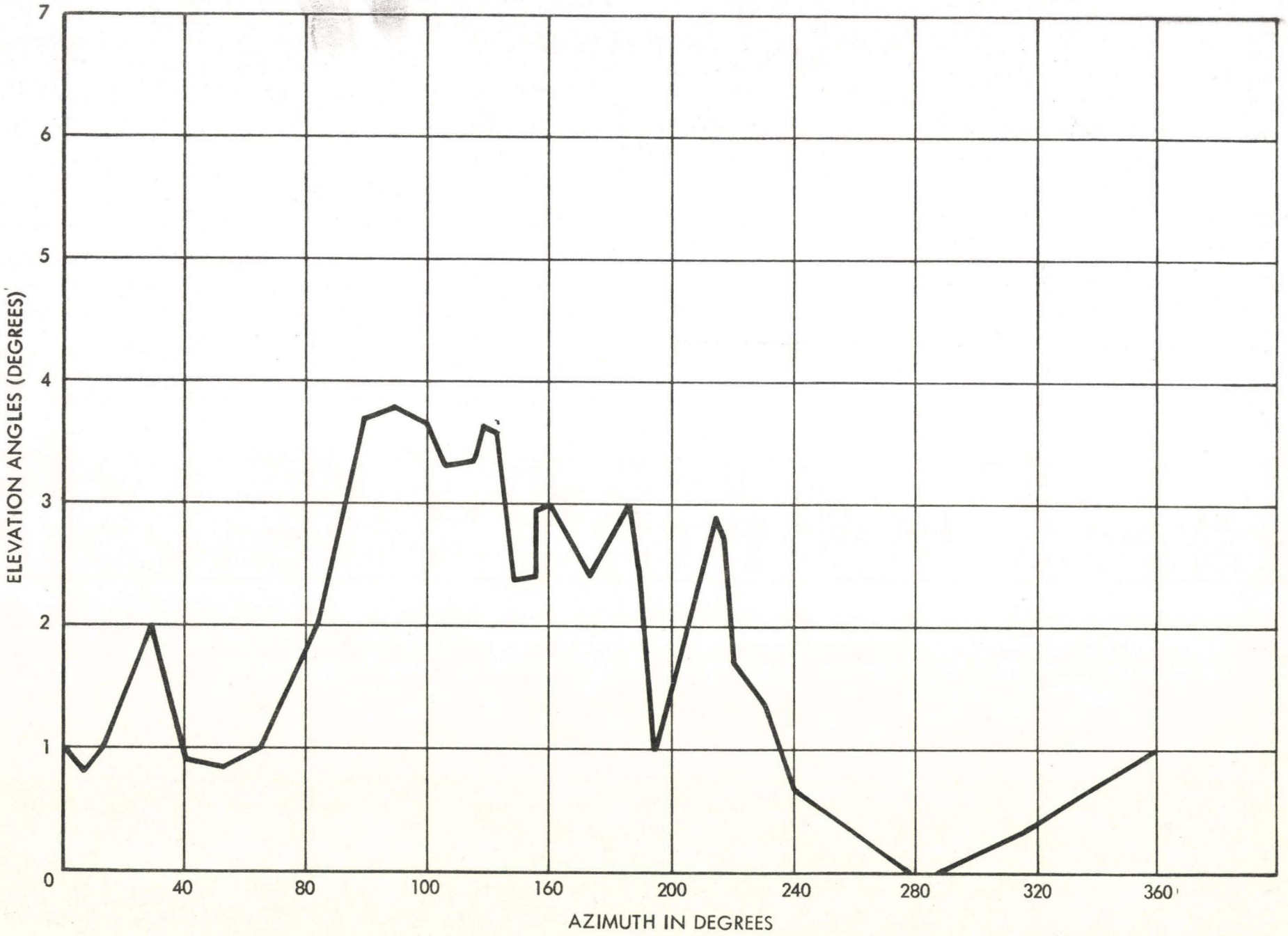

FIGURE B-2 AZIMUTHAL DISTRIBUTION OF ELEVATION ANGLES AT PAUMALU

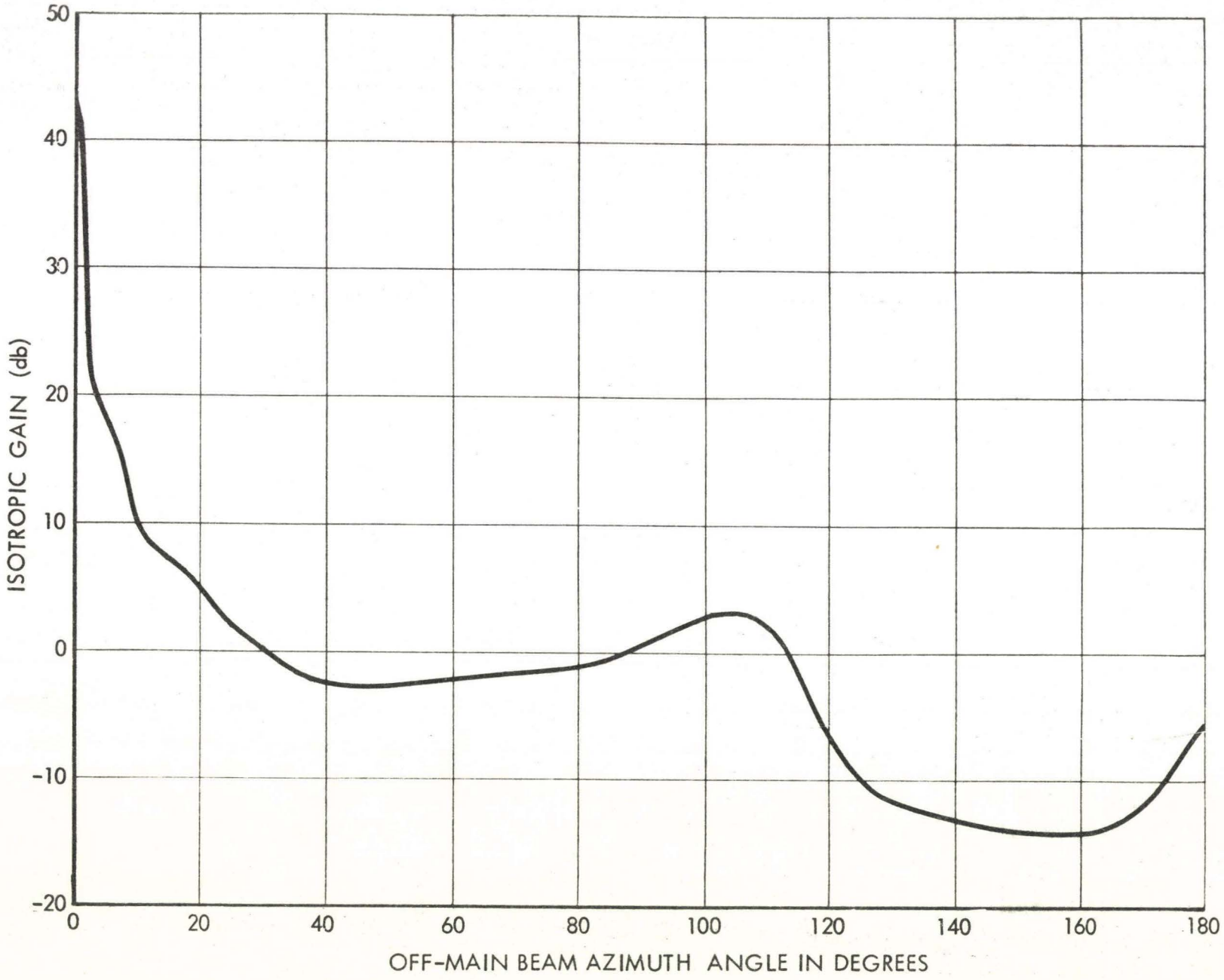

FIGURE B-3 SYNTHESIZED ANTENNA SIDE LOBE PATTERN

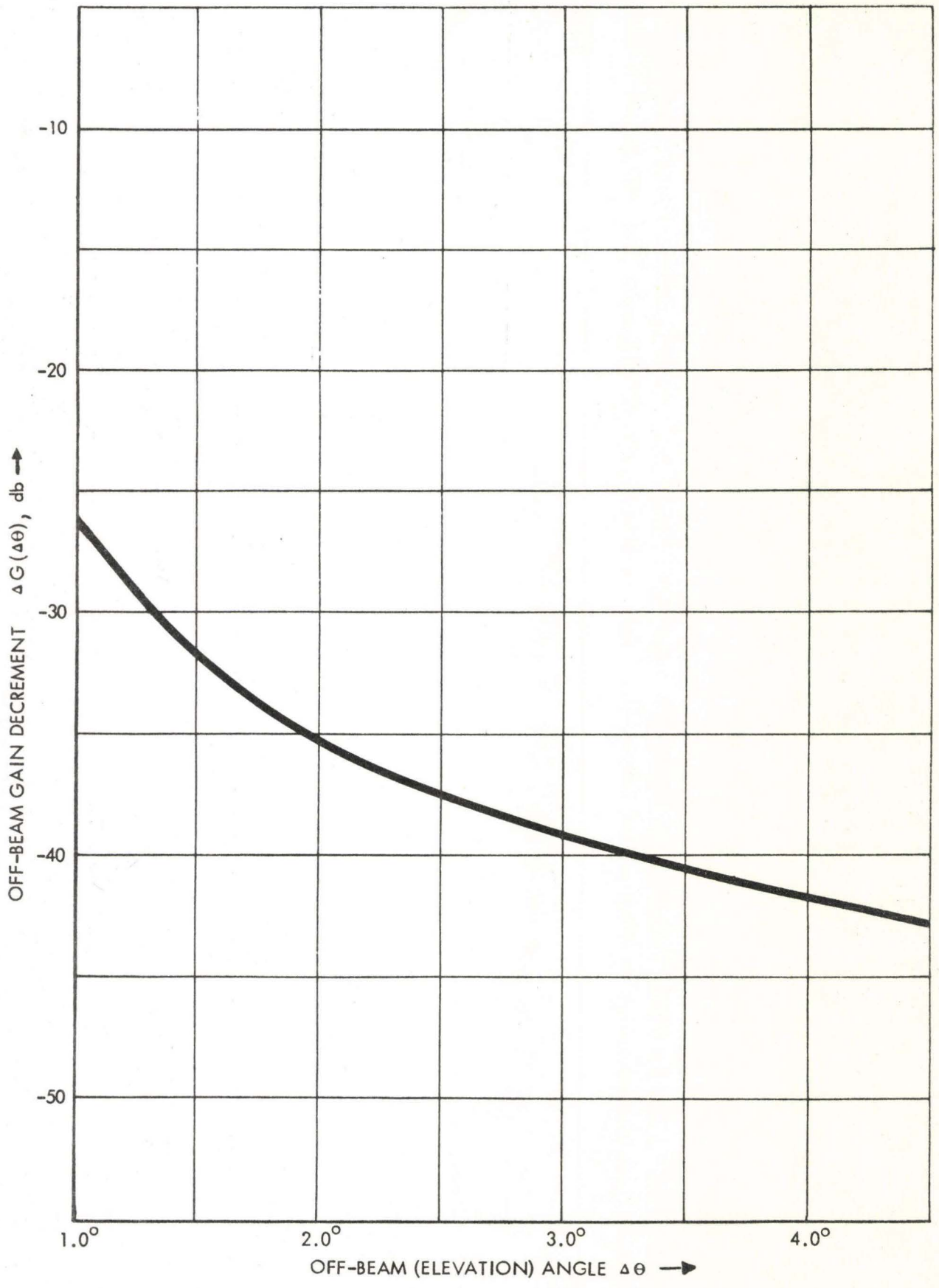

FIGURE B-4
VERTICAL PLANE OFF-BEAM GAIN DECREMENT OF 85' DIA EQUIVALENT APERTURE (WORST-CASE SIDELOBE ENVELOPE)
f=4 Gc/s

TABLE B-1

1	2	3	4	5	6	7
Receiver Site	Receiving From	Path Loss (0.1%) db	Shielding Factor db	Antenna Gain permitted db	Antenna Gain not exceeded db	Safety Margin db
Hawaii						
Huehue	KUS 20	218.5	11	30.5	-13	+43.5
Huehue	KUS 23	218.5	11	30.5	0	+30.5
Huehue	PR(KUS 21-22)	218.5	11	30.5	-14	+44.5
Holualoa	PR(KUS 21-22)	224.6	11	36.6	- 2	+38.6
Holualoa PR	KUS 21	> 216.3	11	>28.3	+ 4	> +24.3
Huehue PR	KUS 22	> 216.3	11	>28.3	- 5	> +33.3
Kamuela	KUS 21	236.0	11	48.0	- 0	+48.0
Humuula	KUS 21	245.5	11	57.5	- 1	+58.5
Humuula	KUR 99	245.5	11	57.5	- 7	+64.5
Leleiwi Pt.	KUS 20	252.2	11	64.2	- 2	+66.2
Leleiwi Pt.	KUR 98	252.2	11	64.2	- 2	+66.2
Leleiwi Pt.	Nonola	252.2	11	64.2	+ 7.5	+56.7
Honokaa	Ookala	238.1	11	50.1	-11	+61.1
Ookala	Honokaa	238.8	11	50.8	+15.0	+35.8
Ookala	Ninola	236.8	11	48.8	-12.5	+61.3
Nonola	Ookala	237.1	11	49.1	+10	+39.1
Hilo	KUR 99	254.3	11	66.3	-13	+79.3
Hilo	PR(KUR 98-61)	254.3	11	66.3	-14	+80.3
Hilo PR	KUR 61	> 254.3	11	>66.3	- 1	> +67.3
Kulani Cone PR	KUR 98	> 254.3	11	>66.3	-14	> +80.3
Kulani Cone	PR(KUR 61-62)	238.5	11	50.5	+ 3	+47.5
Kulani Cone	PR(KUR 98-61)	238.5	11	50.5	+ 2	+48.5
Naalehu PR	KUR 61	> 255.5	11	>67.5	- 1	> +68.5
Kulani C. PR	KUR 62	> 255.5	11	>67.5	+16	> +51.5
Naalehu	PR(KUR 62-61)	255.5	11	67.5	-10	+77.5

TABLE B-1 CONT'D

1	2	3	4	5	6	7
Receiver Site	Receiving From	Path Loss (0.1%) db	Shielding Factor db	Antenna Gain permitted db	Antenna Gain not exceeded db	Safety Margin db
Kauai						
(1) Hanapepe	KUQ 83	195.1	0	18.1	- 9	+27.1
(1) Puu Kapele	KUQ 82	197.1	0	20.1	- 3	+23.1
(2) Puu Kapele	KUQ 84	197.1	0	20.1	-13	+33.1
(2) Bonham AFB	KUQ 83	208.7	0	31.7	- 2	+33.7
* ⊛ Wahiawa	Kaala	163.3	0	-13.7	+16	-29.7
Oahu						
Wahiawa	KUQ 76	223.4	8	38.4	-13	+51.4
* Wahiawa	Kaala	223.4	8	38.4	0	+38.4
Wahiawa	PR/Wai-Hon	223.4	8	38.4	- 2	+40.4
Wahiawa PR	KUQ 75	278.3***	8	93.3	- 4	+97.3
Honolulu PR	KUR 96	291.5***	8	106.5	- 3	+109.5
Laie	PR/Puu Papaa-Laie	234.9	11	46.9	-12	+58.9
Tantalus	KUQ 76	205.7	8	20.7	+ 1	+21.7
Tantalus	KUV 81	205.7	8	20.7	- 2	+22.7
Mauna Kapu	KUR 96	230.7	8	45.7	+ 3	+42.7
Mauna Kapu	KUQ 80	230.7	8	45.7	-13	+58.7
Mauna Kapu	KUQ 75	230.7	8	45.7	+ 3	+42.7
Honolulu	KUQ 76	212.0	8	27.0	-2.5	+29.5
Honolulu	KUV 80	212.0	8	27.0	- 1	+28.0
Koko Head	KUQ 98	215.7	8	30.7	-13	+43.7
Nanakuli	KUQ 76	228.0	5	46.0	-0.5	+46.5

(1) Via 10' x 8' PR Located 319' from Hanapepe and 343' from Puu Kapele
(2) Via 8' x 6' PR Located 343' from Puu Kapele
(1) & (2) - (Coordinates and azimuths not given in FCC records)

* Not shown in FCC Files as of 5/10/65
⊛ Interfering Station
*** Effective loss into the actual receivers at Honolulu and Wahiawa, respectively.

TABLE B-1 CONT'D

	1	2	3	4	5	6	7
	Receiver Site	Receiving From	Path Loss (0.1%) db	Shielding Factor db	Antenna Gain permitted db	Antenna Gain not exceeded db	Safety Margin db
	Laie PR	KUV 81	> 211.1	11	> 23.1	- 1.5	> +24.6
	Puu Papaa PR	KUV 82	> 211.1	11	> 23.1	+ 9	> +14.1
	Puu Papaa	PR/Puu-Papaa-Laie	211.6	11	23.6	+ 3	+20.6
	Puu Papaa	KUV 80	211.6	11	23.6	+ 3	+20.6
* ⊛	Kaala	KUR 96	129.0		-48.0	- 2	-46.0
* ⊛	Kaala	Kauai	129.0		-48.0	+ 3.5	-51.5
	Molokai						
	Puu Nana	KUQ 97	210.9	11	22.9	+ 5.5	+17.4
	Puu Nana	KUQ 99	210.9	11	22.9	+ 3	+19.9
	Hoolehua	KUQ 98	203.0	11	15.0	- 1.5	+16.5
	Maui						
	Lahaina	KUP 40	212.8	11	24.8	-10	+34.8
	Puu Mahoe	KUP 41	218.7	11	30.7	- 1	+31.7
	Puu Mahoe	KUV 76	218.7	11	30.7	+16	+14.7
	Wailuki	KUP 40	239.1	11	51.1	-13	+ 4.1
	Wailuki	Haleakala	239.1	11	51.1	-11	+ 2.1
	Haleakala	KUE 41	223.2	11	35.2	+14	+21.2
	Haleakala	KUQ 98	223.2	11	35.2	+19.5	+15.7

* Not shown in FCC Files as of 5/10/65
⊛ Interfering Station

TABLE B-II

1	2	3	4	5	6	7
Receiving Site	Transmitter	L_{bs} (db)	L_{bd} (db)	$V(p,d_e)$ (db)	θ (degrees)	$\Delta\alpha$ (degrees)
Hawaii						
Huehue	KUS 20	243.4		24.9	3.34	140
Huehue	KUS 23	243.4		24.9	3.34	89
Huehue	PR(KUS 21-22)	243.4		24.9	3.34	157
Holualoa	PR(KUS 21-22)	247.4		22.8	3.51	60
Holualoa PR	KUS 21	> 242.3		26.0	3.47	22
Huehue PR	KUS 22	> 242.3		26.0	3.47	119
Kamuela	KUS 21	260.9		24.9	3.32	83.5
Humuula	KUS 21	264.1		18.6	3.32	34
Humuula	KUR 99	264.1		18.6	3.32	120
Leleiwi Pt.	KUS 20	270.5		18.3	3.68	36
Leleiwi Pt.	KUR 98	270.5		18.3	3.68	40.5
Leleiwi Pt.	Ninola	270.5		18.3	3.68	14
Honokaa	Ookala	258.0		19.9	3.72	171
Ookala	Honokaa	258.0		19.2	3.72	8
Ookala	Ninola	256.0		19.2	3.57	168.5
Nonola	Ookala	256.0		18.9	3.57	10.5
Hilo	KUR 99	272.8		18.5	3.19	138.5
Hilo	PR(KUR 98-61)	272.8		18.5	3.19	155
Hilo PR	KUR 61	> 272.8		18.5	3.19	81
Kulani Cone PR	KUR 98	> 272.8		18.5	3.19	155
Kulani Cone	PR(KUR 61-62)	257.0		18.5	3.48	100.5
Kulani Cone	PR(KUR 98-61)	257.0		18.5	3.48	94.5
Naalehu PR	KUR 61	> 278.6		23.1	3.22	72
Kulani PR	KUR 62	> 278.6		23.1	3.22	7
Naalehu	PR(KUR 62-61)	278.6		23.1	3.22	173

TABLE B-II Cont'd

1	2	3	4	5	6	7
Receiving Site	Transmitter	L_{bs} (db)	L_{bd} (db)	$V(p,d_e)$ (db)	θ (degrees)	$\Delta\alpha$ (degrees)
Kauai						
(1) Hanapepe	KUR 83	224.1		29.0	-0.322	124
(1) Puu Kapele	KUQ 82	226.1		29.0	-0.148	50
(2) Puu Kapele	KUQ 84	226.1		29.0	-0.148	139
(2) Bonham AFB	KUQ 83	236.3		27.6	-0.275	38
* ⊛ Wahiawa	Kaala	193.9		30.3	-0.332	7
Oahu						
Wahiawa	KUQ 76	229.0		5.6	2.52	141
* Wahiawa	Kaala	229.0		5.6	2.52	85
Wahiawa	PR/Wai-Hon.	229.0		5.6	2.52	58
Wahiawa PR	KUQ 75		284.3***	(6)	2.46	117
Honolulu PR	KUR 96		297.5***	(6)	2.46	45
Laie	P.R./Puu Papaa-Laie	236.3		1.4	3.60	136
Tantalus	KUQ 76	226.7		21.0	2.40	90
Tantalus	KUV 81	226.7		21.0	2.40	62
Mauna Kapu	KUR 96	243.3		12.6	2.23	24
Mauna Kapu	KUQ 80	243.3		12.6	2.23	141
Mauna Kapu	KUQ 75	243.3		12.6	2.23	100
Honolulu	KUQ 76	233.4		21.4	2.42	43
Honolulu	KUV 80	233.4		21.4	2.42	82
Koko Head	KUQ 98	242.3		26.6	2.70	142
Nanakuli	KUQ 76	243.1		15.1	1.45	32

(1) Via 10' x 8' PR Located 319' from Hanapepe and 343' from Puu Kapele
(Coordinates and azimuths not given in FCC records)

(2) Via 8' x 6' PR Located 343' from Puu Kapele
(Coordinates and azimuths not given in FCC records)

* Not shown in FCC Files as of 5/10/65

⊛ Interfering Station

*** Effective loss into the actual receivers at Honolulu and Wahiawa, respectively.

TABLE B-II Cont'd

1	2	3	4	5	6	7
Receiving Site	Transmitter	L_{bs} (db)	L_{bd} (db)	$V(p,d_e)$ (db)	θ (degrees)	$\Delta\alpha$ (degrees)
Laie PR	KUV 81	>232.0		20.9	3.31	70
Puu Papaa PR	KUV 82	>232.0		20.9	3.31	11
Puu Papaa	P.R./Puu Papaa-Laie	232.5		20.9	3.30	109
Puu Papaa	KUV 80	232.5		20.9	3.30	103
⊛ * Kaala	KUR 96	135.0		(6) (LOS)		60
⊛ * Kaala	Wahiawa, Kauai	135.0		(6) (LOS)		106
Molokai						
Puu Nana	KUQ 97	233.3		22.4	3.22	19
Puu Nana	KUQ 99	233.3		22.4	3.22	107
Hoolehua	KUQ 98	232.6		29.6	3.67	69
Maui						
Lahaina	KUP 40	239.6		26.8	3.72	173
Puu Mahoe	KUP 41	243.0		24.3	3.68	33
Puu Mahoe	KUV 76	243.0		24.3	3.68	7
Wailuki	KUP 40	264.8		25.7	3.68	142
Wailuki	Haleaka	264.8		25.7	3.68	172
Haleakala	KUP 41	235.3		12.1	3.60	8
Haleakala	KUQ 98	235.3		12.1	3.6	3.5°

* Not shown in FCC Files as of 5/10/65
⊛ Interfering Station

Appendix 1 to Annex B

Detailed Computer Printouts of Path Loss Calculations

The following pages serve to substantiate the path loss values used in Annex B.

They constitute printouts from a computer program developed by Page Communications Engineers, Inc., for the Bendix G-15 computer with magnetic tape storage.

The computation method of path loss is that of Reference 2 of Annex B.

A glossary of the symbols used for the input and output parameters is added for reference purposes:

Input Parameters:

d =	Path length (st. mi.),
f =	Radio Frequency (Mc/s)
Hte, Hre =	Antenna heights above surrounding terrain (feet),
dlt, dlr =	Site-to-horizon distances (st. miles),
Hlt, Hlr =	Horizon elevations above mean sea level (feet),
No =	Equivalent sea level refractivity,
Hts, Hrs =	Antenna elevations above mean sea level (feet).

Output Parameters:

Ns =	Mean path surface refractivity,
θ =	Scatter Angle (milliradians),
Lbms, Lbd =	Median basic transmission loss (db),
θet, θer =	Radio horizon elevation angle from sites (milliradians)

All other parameters are derived auxiliary terms required in the computation process.

Computer Printouts of Path Loss Calculations between Earth Station Transmitter and Terrestrial Receiving Facility at 6 Gc/sec.

Hue Hue, Hawaii

1600	Ns	338.4900000
1601	dθ	23.3910000
1602	d	189.5000000
1603	f	6000.0000000
1608	Fo	.0579780
1609	ro	189.4800000
1610	F(dθ)	178.1500000
1611	s	15.2350000
1612	α	71.9740000
1613	β	4.7241000
1614	θ	76.6980000
1615	ho	1.3520000
1616	ηs	.6895200
1617	Hte	55.0000000
1618	Hre	3275.0000000
1619	Ho	.0000000
1623	Ho	.0000000
1624	log f	113.3400000
1629	Aa	1.6248000
1634	Lbms	243.3700000
1639	θet	58.1770000
1640	θer -	14.7220000
1641	dlt	3.9000000
1642	dlr	84.2620000
1643	Hlt	1720.0000000
1644	Hlr	.0000000
1645	No	348.0000000
1647	Ds	101.3400000
1648	a	5723.4000000
1649	log d	49.6850000
1650	log r/d -	.0008210
1651	Hts	515.0000000
1652	Hrs	3275.0000000

Holualoa, Hawaii

1600	Ns	340.4600000
1601	dθ	27.2170000
1602	d	195.5000000
1603	f	6000.0000000
1608	Fo	.1877200
1609	ro	195.4800000
1610	F(dθ)	182.5300000
1611	s	8.6744000
1612	α	77.5600000
1613	β	8.9412000
1614	θ	86.5010000
1615	ho	2.5225000
1616	ηs	1.2909000
1617	Hte	55.0000000
1618	Hre	1425.0000000
1619	Ho	.0000000
1623	Ho	.0000000
1624	log f	113.3400000
1629	Aa	1.6976000
1634	Lbms	247.4200000
1639	θet	61.3270000
1640	θer -	9.6874000
1641	dlt	2.6000000
1642	dlr	55.7190000
1643	Hlt	1360.0000000
1644	Hlr	.0000000
1645	No	348.0000000
1647	Ds	137.1800000
1648	a	5751.7000000
1649	log d	49.9560000
1650	log r/d -	.0008612
1651	Hts	515.0000000
1652	Hrs	1425.0000000

Passive Reflector

Hue Hue-Holualoa, Hawaii

1600	Ns	338.9300000
1601	dθ	23.1460000
1602	d	191.5000000
1603	f	6000.0000000
1608	Fo	- .0223730
1609	ro	191.4800000
1610	F(dθ)	177.0900000
1611	s	27.3570000
1612	α	72.4510000
1613	β	2.6483000
1614	θ	75.1000000
1615	ho	.7874300
1616	ηs	.4018800
1617	Hte	55.0000000
1618	Hre	5400.0000000
1619	Ho	.0000000
1623	Ho	.0000000
1624	log f	113.3400000
1629	Aa	1.6492000
1634	Lbms	242.3300000
1639	θet	60.5710000
1640	θer	- 18.8940000
1641	dlt	3.5000000
1642	dlr	108.2600000
1643	Hlt	1640.0000000
1644	Hlr	.0000000
1645	No	348.0000000
1647	Ds	79.7420000
1648	a	5729.6000000
1649	log d	49.7760000
1650	log r/d	- .0008382
1651	Hts	515.0000000
1652	Hrs	5400.0000000

Kamuela, Hawaii

1600	Ns	312.9000000
1601	dθ	31.7260000
1602	d	123.5000000
1603	f	6000.0000000
1608	Fo	- .8512400
1609	ro	123.5000000
1610	F(dθ)	191.8500000
1611	s	.7337700
1612	α	67.5530000
1613	β	92.0630000
1614	θ	159.6200000
1615	ho	7.7444000
1616	ηs	4.1395000
1617	Hte	55.0000000
1618	Hre	80.0000000
1619	Ho	.0009416
1623	Ho	.0009416
1624	log f	113.3400000
1629	Aa	.8178400
1634	Lbms	260.9000000
1639	θet	58.0020000
1640	θer	75.9370000
1641	dlt	3.2000000
1642	dlr	5.5000000
1643	Hlt	1500.0000000
1644	Hlr	5100.0000000
1645	No	348.0000000
1647	Ds	114.8000000
1648	a	5403.4000000
1649	log d	45.9660000
1650	log r/d	- .0003387
1651	Hts	515.0000000
1652	Hrs	2880.0000000

Humuula, Hawaii

1600	Ns	297.3700000
1601	dθ	40.4190000
1602	d	214.0000000
1603	f	6000.0000000
1608	Fo -	1.5135000
1609	ro	213.9700000
1610	F(dθ)	198.0900000
1611	s	1.6973000
1612	α	73.8470000
1613	β	43.5100000
1614	θ	117.3600000
1615	ho	9.4295000
1616	ηs	5.3125000
1617	Hte	55.0000000
1618	Hre	50.0000000
1619	Ho	.0103550
1623	Ho	.0103550
1624	log f	113.3400000
1629	Aa	1.9157000
1634	Lbms	264.1400000
1639	θet	57.8870000
1640	θer	14.6260000
1641	dlt	3.4000000
1642	dlr	8.0000000
1643	Hlt	1560.0000000
1644	Hlr	8200.0000000
1645	No	348.0000000
1647	Ds	202.6000000
1648	a	5244.8000000
1649	log d	50.7410000
1650	log r/d	- .0010450
1651	Hts	515.0000000
1652	Hrs	7550.0000000

Leleiwi Pt., Hawaii

1600	Ns	315.4300000
1601	dθ	55.2730000
1602	d	237.0000000
1603	f	6000.0000000
1608	Fo -	.1742100
1609	ro	236.9600000
1610	F(dθ)	206.4300000
1611	s	1.5971000
1612	α	89.1140000
1613	β	55.7970000
1614	θ	144.9100000
1615	ho	13.0880000
1616	ηs	7.4548000
1617	Hte	55.0000000
1618	Hre	50.0000000
1619	Ho	.0097666
1623	Ho	.0097666
1624	log f	113.3400000
1629	Aa	2.1693000
1634	Lbms	270.5000000
1639	θet	64.2270000
1640	θer	30.7290000
1641	dlt	2.6000000
1642	dlr	26.0000000
1643	Hlt	1400.0000000
1644	Hlr	4700.0000000
1645	No	348.0000000
1647	Ds	208.4000000
1648	a	5431.5000000
1649	log d	51.6280000
1650	log r/d	- .0012919
1651	Hts	515.0000000
1652	Hrs	153.0000000

Honokaa, Hawaii

1600	Ns	18.2100000
1601	dθ	35.5240000
1602	d	198.0000000
1603	f	6000.0000000
1608	Fo	- .0013968
1609	ro	197.9800000
1610	F(dθ)	193.0300000
1611	s	2.9814000
1612	α	83.4790000
1613	β	28.0000000
1614	θ	111.4800000
1615	ho	6.6815000
1616	ηs	3.4445000
1617	Hte	55.0000000
1618	Hre	50.0000000
1619	Ho	.0000000
1623	Ho	.0000000
1624	log f	113.3400000
1629	Aa	1.7276000
1634	Lbms	258.0400000
1639	θet	64.9990000
1640	θer	7.5243000
1641	dlt	2.5000000
1642	dlr	46.0000000
1643	Hlt	1376.0000000
1644	Hlr	4000.0000000
1645	No	347.0000000
1647	Ds	149.5000000
1648	a	5463.3000000
1649	log d	50.0660000
1650	log r/d	- .0008957
1651	Hts	515.0000000
1652	Hrs	1150.0000000

Ookala, Hawaii

1600	Ns	313.3100000
1601	dθ	35.4940000
1602	d	211.0000000
1603	f	6000.0000000
1608	Fo	.2693800
1609	ro	210.9800000
1610	F(dθ)	192.5900000
1611	s	3.6549000
1612	α	82.0680000
1613	β	22.4540000
1614	θ	104.5200000
1615	ho	5.9870000
1616	ηs	3.0114000
1617	Hte	55.0000000
1618	Hre	50.0000000
1619	Ho	.0000000
1623	Ho	.0000000
1624	log f	113.3400000
1629	Aa	1.8811000
1634	Lbms	256.9300000
1639	θet	62.2690000
1640	θer	1.3394000
1641	dlt	2.5000000
1642	dlr	83.0000000
1643	Hlt	1340.0000000
1644	Hlr	5000.0000000
1645	No	347.0000000
1647	Ds	125.5000000
1648	a	5407.9000000
1649	log d	50.6190000
1650	log r/d	- .0010163
1651	Hts	515.0000000
1652	Hrs	1050.0000000

Nonola, Hawaii

1600	Ns	328.1000000
1601	dθ	46.9690000
1602	d	221.0000000
1603	f	6000.0000000
1608	Fo	- .3880700
1609	ro	220.9700000
1610	F(dθ)	201.3900000
1611	s	1.8857000
1612	α	86.2940000
1613	β	45.7620000
1614	θ	132.0600000
1615	ho	10.6360000
1616	ηs	6.0553000
1617	Hte	55.0000000
1618	Hre	50.0000000
1619	Ho	.0153820
1623	Ho	.0153820
1624	log f	113.3400000
1629	Aa	1.9952000
1634	Lbms	266.1100000
1639	θet	65.0030000
1640	θer	21.2710000
1641	dlt	2.5000000
1642	dlr	6.5000000
1643	Hlt	1376.0000000
1644	Hlr	2100.0000000
1645	No	347.0000000
1647	Ds	212.0000000
1648	a	5583.5000000
1649	log d	51.0210000
1650	log r/d	- .0011081
1651	Hts	515.0000000
1652	Hrs	1350.0000000

Wahiawa, Kauai

1600	Ns	345.0000000
1601	dθ	.5465500
1602	d	97.5000000
1603	f	6000.0000000
1608	Fo	.0600030
1609	ro	97.4970000
1610	F(dθ)	124.0000000
1611	s	1.2247000
1612	α	1.9174000
1613	β	1.5656000
1614	θ	3.4830000
1615	ho	.1352400
1616	ηs	.0697520
1617	Hte	515.0000000
1618	Hre	860.0000000
1619	Ho	.0000000
1623	Ho	.0000000
1624	log f	113.3400000
1629	Aa	.5344800
1634	Lbms	193.9000000
1639	θet	- 5.7899000
1640	θer	- 7.4820000
1641	dlt	33.6930000
1642	dlr	43.5390000
1643	Hlt	.0000000
1644	Hlr	.0000000
1645	No	345.0000000
1647	Ds	20.2680000
1648	a	5819.2000000
1649	log d	43.9130000
1650	log r/d	- .0002181
1651	Hts	515.0000000
1652	Hrs	860.0000000

Hilo, Hawaii

1600	Ns	307.7100000
1601	dθ	57.9520000
1602	d	233.0000000
1603	f	6000.0000000
1608	Fo -	.4409300
1609	ro	232.9700000
1610	F(dθ)	208.3100000
1611	s	1.1075000
1612	α	81.2120000
1613	β	73.3310000
1614	θ	154.5400000
1615	ho	14.4500000
1616	ηs	8.2309000
1617	Hte	55.0000000
1618	Hre	40.0000000
1619	Ho	.0047857
1623	Ho	.0047857
1624	log f	113.3400000
1629	Aa	2.1269000
1634	Lbms	272.7500000
1639	θet	55.6310000
1640	θer	48.9070000
1641	dlt	3.2000000
1642	dlr	22.0000000
1643	Hlt	1460.0000000
1644	Hlr	6000.0000000
1645	No	347.0000000
1647	Ds	207.8000000
1648	a	5347.8000000
1649	log d	51.4800000
1650	log r/d -	.0012402
1651	Hts	515.0000000
1652	Hrs	80.0000000

Kulani Cone, Hawaii

1600	Ns	314.0100000
1601	dθ	35.8020000
1602	d	231.0000000
1603	f	6000.0000000
1608	Fo -	.7493400
1609	ro	230.9700000
1610	F(dθ)	192.2100000
1611	s	4.4296000
1612	α	78.5650000
1613	β	17.7360000
1614	θ	96.3010000
1615	ho	5.3794000
1616	ηs	2.6773000
1617	Hte	55.0000000
1618	Hre	25.0000000
1619	Ho	.0000000
1623	Ho	.0000000
1624	log f	113.3400000
1629	Aa	2.1053000
1634	Lbms	257.0000000
1639	θet	60.6450000
1640	θer -	7.7108000
1641	dlt	3.0000000
1642	dlr	21.0000000
1643	Hlt	1480.0000000
1644	Hlr	4900.0000000
1645	No	348.0000000
1647	Ds	207.0000000
1648	a	5415.7000000
1649	log d	51.4050000
1650	log r/d -	.0012172
1651	Hts	515.0000000
1652	Hrs	5540.0000000

Naalehu, Hawaii

1600	Ns	302.4500000
1601	dθ	70.3660000
1602	d	240.5000000
1603	f	6000.0000000
1608	Fo	- .7383700
1609	ro	240.4600000
1610	F(dθ)	214.0500000
1611	s	.8434100
1612	α	83.1760000
1613	β	98.6190000
1614	θ	181.7900000
1615	ho	17.4640000
1616	ηs	9.9477000
1617	Hte	55.0000000
1618	Hre	30.0000000
1619	Ho	.0000000
1623	Ho	.0000000
1624	log f	113.3400000
1629	Aa	2.2059000
1634	Lbms	278.5800000
1639	θet	56.2190000
1640	θer	72.7080000
1641	dlt	3.4000000
1642	dlr	16.0000000
1643	Hlt	1530.0000000
1644	Hlr	7000.0000000
1645	No	347.0000000
1647	Ds	221.1000000
1648	a	5294.1000000
1649	log d	51.7550000
1650	log r/d	- .0013263
1651	Hts	515.0000000
1652	Hrs	730.0000000

Hanapepe, Kauai

1600	Ns	342.2300000
1601	dθ	5.1363000
1602	d	102.0000000
1603	f	6000.0000000
1608	Fo	.0241060
1609	ro	102.0000000
1610	F(dθ)	154.5300000
1611	s	.1350000
1612	α	3.7220000
1613	β	27.5700000
1614	θ	31.2920000
1615	ho	.5383300
1616	ηs	.2763100
1617	Hte	515.0000000
1618	Hre	35.0000000
1619	Ho	.0000000
1623	Ho	.0000000
1624	log f	113.3400000
1629	Aa	.5806700
1634	Lbms	224.1300000
1639	θet	- 5.8107000
1640	θer	19.4480000
1641	dlt	33.5720000
1642	dlr	3.5000000
1643	Hlt	.0000000
1644	Hlr	500.0000000
1645	No	345.0000000
1647	Ds	64.9280000
1648	a	5777.6000000
1649	log d	44.3050000
1650	log r/d	- .0002296
1651	Hts	515.0000000
1652	Hrs	135.0000000

Puu Kapele, Kauai

1600	Ns	303.7700000
1601	dθ	4.3753000
1602	d	108.0000000
1603	f	6000.0000000
1608	Fo -	1.0987000
1609	ro	108.0000000
1610	F(dθ)	155.8400000
1611	s	.0892770
1612	α	2.0631000
1613	β	23.1090000
1614	θ	25.1720000
1615	ho	.3292100
1616	ηs	.1592900
1617	Hte	515.0000000
1618	Hre	70.0000000
1619	Ho	.0000000
1623	Ho	.0000000
1624	log f	113.3400000
1629	Aa	.6442900
1634	Lbms	226.1300000
1639	θet -	2.5786000
1640	θer	7.4020000
1641	dlt	98.5000000
1642	dlr	5.5000000
1643	Hlt	4000.0000000
1644	Hlr	3900.0000000
1645	No	345.0000000
1647	Ds	4.0000000
1648	a	5307.4000000
1649	log d	44.8020000
1650	log r/d -	.0002756
1651	Hts	515.0000000
1652	Hrs	3670.0000000

Bonham AFB, Kauai

1600	Ns	323.7300000
1601	dθ	11.7910000
1602	d	115.0000000
1603	f	6000.0000000
1608	Fo -	.1437700
1609	ro	115.0000000
1610	F(dθ)	167.4000000
1611	s	.1109200
1612	α	6.3609000
1613	β	57.3460000
1614	θ	63.7070000
1615	ho	1.0597000
1616	ηs	.5276700
1617	Hte	515.0000000
1618	Hre	40.0000000
1619	Ho	.0000000
1623	Ho	.0000000
1624	log f	113.3400000
1629	Aa	.7211500
1634	Lbms	236.2600000
1639	θet -	4.8049000
1640	θer	47.7120000
1641	dlt	96.3000000
1642	dlr	5.5000000
1643	Hlt	2500.0000000
1644	Hlr	1450.0000000
1645	No	345.0000000
1647	Ds	13.2000000
1648	a	5528.9000000
1649	log d	45.3470000
1650	log r/d -	.0002928
1651	Hts	515.0000000
1652	Hrs	50.0000000

Wahiawa, Oahu

1600	Ns	300.9000000
1601	dθ	1.0291000
1602	d	11.5000000
1603	f	6000.0000000
1608	Fo -	.2696400
1609	ro	11.5000000
1610	F(dθ)	136.3400000
1611	s	2.1106000
1612	α	37.7280000
1613	β	17.8750000
1614	θ	55.6030000
1615	ho	.2244800
1616	ηs	.1082100
1617	Hte	55.0000000
1618	Hre	50.0000000
1619	Ho	4.4086000
1623	Ho	4.4086000
1624	log f	113.3400000
1629	Aa	.0079465
1634	Lbms	229.0200000
1639	θet	44.0500000
1640	θer	9.3750000
1641	dlt	1.5000000
1642	dlr	1.0000000
1643	Hlt	850.0000000
1644	Hlr	1000.0000000
1645	Ho	310.0000000
1647	Ds	9.0000000
1648	a	5278.8000000
1649	log d	25.3470000
1650	log r/d -	.0000516
1651	Hts	500.0000000
1652	Hrs	950.0000000

Passive Reflector
Wahiawa-Honolulu, Oahu

Scf.1 S337. S55. S1230. S720. S.9 S
400. S1230. SScf.1 S337. S55. S515. S720. S.9 S
400. S1230. S740. S12.5 S
13.9 S6000. S15. S.005 S1. S
36.978 1.279 .1449 ....6..50..51....

1.495 S 1.279 .0337 ....6..52..00....

61.76 S 1.279 .0113 ....6..52..00....

61.77 S 7.8004 .0337 1.279 ....6..54..00....

-8.5 S 52..19410 .0113 1.279 ....6..54..00....

-9.5 S

337.000
34.537
2.440
36.978
165.900

Laie, Oahu

1600	Ns	299.6900000
1601	dθ	1.1166000
1602	d	6.9000000
1603	f	6000.0000000
1608	Fo	- .2274800
1609	ro	6.9001000
1610	F(dθ)	137.5100000
1611	s	2.6830000
1612	α	73.2510000
1613	β	27.3020000
1614	θ	100.5500000
1615	ho	.2208700
1616	ηs	.1063000
1617	Hte	55.0000000
1618	Hre	50.0000000
1619	Ho	6.1458000
1623	Ho	6.1458000
1624	log f	113.3400000
1629	Aa	.0028590
1634	Lbms	236.3200000
1639	θet	62.9890000
1640	θer	36.2540000
1641	dlt	1.5000000
1642	dlr	4.9000000
1643	Hlt	1000.0000000
1644	Hlr	1100.0000000
1645	No	310.0000000
1647	Ds	.5000000
1648	a	5267.0000000
1649	log d	20.9100000
1650	log r/d	.0000861
1651	Hts	500.0000000
1652	Hrs	150.0000000

Tantalus, Oahu

1600	Ns	294.7800000
1601	dθ	1.9812000
1602	d	26.6000000
1603	f	6000.0000000
1608	Fo	- .4082800
1609	ro	26.6000000
1610	F(dθ)	145.5600000
1611	s	2.7309000
1612	α	33.8750000
1613	β	12.4040000
1614	θ	46.2790000
1615	ho	.3886900
1616	ηs	.1859300
1617	Hte	55.0000000
1618	Hre	50.0000000
1619	Ho	.0000000
1623	Ho	.0000000
1624	log f	113.3400000
1629	Aa	.0424630
1634	Lbms	226.7300000
1639	θet	42.0070000
1640	θer	- .8236800
1641	dlt	2.8000000
1642	dlr	8.6000000
1643	Hlt	1125.0000000
1644	Hlr	2000.0000000
1645	No	310.0000000
1647	Ds	15.2000000
1648	a	5220.5000000
1649	log d	32.6310000
1650	log r/d	- .0000344
1651	Hts	500.0000000
1652	Hrs	2000.0000000

Muana Kapu, Oahu

1600	Ns	326.8800000
1601	dθ	6.3253000
1602	d	18.9000000
1603	f	6000.0000000
1608	Fo -	.5367700
1609	ro	18.9000000
1610	F(dθ)	159.1500000
1611	s	.1117900
1612	α	20.9090000
1613	β	187.0400000
1614	θ	207.9500000
1615	ho	.5720500
1616	ηs	.2862400
1617	Hte	55.0000000
1618	Hre	35.0000000
1619	Ho	.0000000
1623	Ho	.0000000
1624	log f	113.3400000
1629	Aa	.0214610
1634	Lbms	243.3900000
1639	θet	38.8500000
1640	θer	165.7000000
1641	dlt	.9000000
1642	dlr	.2000000
1643	Hlt	700.0000000
1644	Hlr	2650.0000000
1645	No	345.0000000
1647	Ds	17.8000000
1648	a	5567.9000000
1649	log d	29.6620000
1650	log r/d -	.0000057
1651	Hts	515.0000000
1652	Hrs	2475.0000000

Honolulu, Oahu

1600	Ns	332.2900000
1601	dθ	3.2533000
1602	d	27.1000000
1603	f	6000.0000000
1608	Fo -	.2324600
1609	ro	27.1000000
1610	F(dθ)	148.9200000
1611	s	1.7505000
1612	α	47.4730000
1613	β	27.1190000
1614	θ	74.5920000
1615	ho	.7527700
1616	ηs	.3799600
1617	Hte	55.0000000
1618	Hre	50.0000000
1619	Ho	3.6639000
1623	Ho	3.6639000
1624	log f	113.3400000
1629	Aa	.0440660
1634	Lbms	233.4200000
1639	θet	42.2040000
1640	θer	27.5810000
1641	dlt	2.3000000
1642	dlr	8.0000000
1643	Hlt	1030.0000000
1644	Hlr	1300.0000000
1645	No	345.0000000
1647	Ds	16.8000000
1648	a	5638.1000000
1649	log d	32.7920000
1650	log r/d	.0000172
1651	Hts	515.0000000
1652	Hrs	105.0000000

Koko Head, Oahu

1600	Ns	301.8700000
1601	dθ	6.5236000
1602	d	34.7000000
1603	f	6000.0000000
1608	Fo -	.1759800
1609	ro	34.7000000
1610	F(dθ)	161.9600000
1611	s	.8030200
1612	α	52.0260000
1613	β	64.7870000
1614	θ	116.8100000
1615	ho	1.6114000
1616	ηs	.7777600
1617	Hte	55.0000000
1618	Hre	50.0000000
1619	Ho	1.6326000
1623	Ho	1.6326000
1624	log f	113.3400000
1629	Aa	.0720820
1634	Lbms	242.2500000
1639	θet	47.9650000
1640	θer	63.0740000
1641	dlt	3.0000000
1642	dlr	.6000000
1643	Hlt	1250.0000000
1644	Hlr	400.0000000
1645	No	310.0000000
1647	Ds	31.1000000
1648	a	5288.4000000
1649	log d	34.9400000
1650	log r/d -	.0000229
1651	Hts	500.0000000
1652	Hrs	200.0000000

Nanakuli, Oahu

1600	Ns	332.0800000
1601	dθ	6.9165000
1602	d	21.2000000
1603	f	6000.0000000
1608	Fo -	.3192700
1609	ro	21.2000000
1610	F(dθ)	160.0700000
1611	s	.1810500
1612	α	31.0750000
1613	β	171.6400000
1614	θ	202.7200000
1615	ho	.8977300
1616	ηs	.4529700
1617	Hte	55.0000000
1618	Hre	40.0000000
1619	Ho	.0000000
1623	Ho	.0000000
1624	log f	113.3400000
1629	Aa	.0269970
1634	Lbms	243.1000000
1639	θet	25.3080000
1640	θer	173.6500000
1641	dlt	1.6000000
1642	dlr	1.7000000
1643	Hlt	730.0000000
1644	Hlr	1640.0000000
1645	No	345.0000000
1647	Ds	17.9000000
1648	a	5635.2000000
1649	log d	30.6600000
1650	log r/d -	.0000229
1651	Hts	515.0000000
1652	Hrs	80.0000000

Passive Reflector
Puu Papaa-Laie, Oahu

1600	Ns	324.7200000
1601	dθ	3.3815000
1602	d	24.5000000
1603	f	6000.0000000
1608	Fo -	.3526700
1609	ro	24.5000000
1610	F(dθ)	150.1800000
1611	s	2.2390000
1612	α	59.2830000
1613	β	26.4770000
1614	θ	85.7600000
1615	ho	.7216800
1616	ηs	.3599000
1617	Hte	55.0000000
1618	Hre	30.0000000
1619	Ho	.0000000
1623	Ho	.0000000
1624	log f	113.3400000
1629	Aa	.0360360
1634	Lbms	232.0000000
1639	θet	57.7290000
1640	θer	23.6090000
1641	dlt	2.5000000
1642	dlr	14.3000000
1643	Hlt	1280.0000000
1644	Hlr	2480.0000000
1645	No	345.0000000
1647	Ds	7.7000000
1648	a	5541.0000000
1649	log d	31.9160000
1650	log r/d -	.0000229
1651	Hts	515.0000000
1652	Hrs	600.0000000

Puu Papaa, Oahu

1600	Ns	324.6200000
1601	dθ	3.5102000
1602	d	24.6000000
1603	f	6000.0000000
1608	Fo -	.3383500
1609	ro	24.6000000
1610	F(dθ)	150.7200000
1611	s	2.2675000
1612	α	61.5280000
1613	β	27.1340000
1614	θ	88.6620000
1615	ho	.7455100
1616	ηs	.3717200
1617	Hte	55.0000000
1618	Hre	30.0000000
1619	Ho	.0000000
1623	Ho	.0000000
1624	log f	113.3400000
1629	Aa	.0363310
1634	Lbms	232.4800000
1639	θet	57.7290000
1640	θer	26.4920000
1641	dlt	2.5000000
1642	dlr	14.9000000
1643	Hlt	1280.0000000
1644	Hlr	2500.0000000
1645	No	345.0000000
1647	Ds	7.2000000
1648	a	5539.8000000
1649	log d	31.9520000
1650	log r/d	.0000000
1651	Hts	515.0000000
1652	Hrs	310.0000000

Puu Nana, Molokai

1600	Ns	329.5200000
1601	dθ	6.8153000
1602	d	67.5000000
1603	f	6000.0000000
1608	Fo -	.2971900
1609	ro	67.4990000
1610	F(dθ)	160.0700000
1611	s	18.6340000
1612	α	59.5410000
1613	β	3.1953000
1614	θ	62.7360000
1615	ho	.3294400
1616	ηs	.1655400
1617	Hte	55.0000000
1618	Hre	1481.0000000
1619	Ho	.0000000
1623	Ho	.0000000
1624	log f	113.3400000
1629	Aa	.2664600
1634	Lbms	233.2600000
1639	θet	56.2270000
1640	θer -	5.5401000
1641	dlt	2.7000000
1642	dlr	63.7000000
1643	Hlt	1320.0000000
1644	Hlr	1530.0000000
1645	No	345.0000000
1647	Ds	1.1000000
1648	a	5601.7000000
1649	log d	40.7190000
1650	log r/d -	.0000918
1651	Hts	515.0000000
1652	Hrs	1481.0000000

Hoolehua, Molokai

1600	Ns	330.1600000
1601	dθ	8.0851000
1602	d	68.5000000
1603	f	6000.0000000
1608	Fo -	.2925200
1609	ro	68.4990000
1610	F(dθ)	159.5000000
1611	s	25.0590000
1612	α	70.5240000
1613	β	2.8143000
1614	θ	73.3390000
1615	ho	.2983500
1616	ηs	.1500700
1617	Hte	55.0000000
1618	Hre	400.0000000
1619	Ho	.0000000
1623	Ho	.0000000
1624	log f	113.3400000
1629	Aa	.2741300
1634	Lbms	232.5700000
1639	θet	64.1010000
1640	θer -	2.9730000
1641	dlt	2.4000000
1642	dlr	65.7000000
1643	Hlt	1330.0000000
1644	Hlr	1400.0000000
1645	No	345.0000000
1647	Ds	.4000500
1648	a	5610.0000000
1649	log d	40.8470000
1650	log r/d -	.0001148
1651	Hts	515.0000000
1652	Hrs	400.0000000

Haleakala, Maui

1600	Ns	329.6800000
1601	dθ	13.2150000
1602	d	132.2000000
1603	f	6000.0000000
1608	Fo -	.3217900
1609	ro	132.1900000
1610	F(dθ)	167.2200000
1611	s	46.7000000
1612	α	60.8090000
1613	β	1.3021000
1614	θ	62.1110000
1615	ho	.2712300
1616	ηs	.1363300
1617	Hte	55.0000000
1618	Hre	10123.0000000
1619	Ho	.0000000
1623	Ho	.0000000
1624	log f	113.3400000
1629	Aa	.9199700
1634	Lbms	235.2500000
1639	θet	62.7780000
1640	θer -	24.2580000
1641	dlt	2.6000000
1642	dlr	129.0000000
1643	Hlt	1380.0000000
1644	Hlr	1440.0000000
1645	No	345.0000000
1647	Ds	.5999500
1648	a	5603.7000000
1649	log d	46.5580000
1650	log r/d -	.0003961
1651	Hts	515.0000000
1652	Hrs	10123.0000000

Lahaina, Maui

1600	Ns	331.8800000
1601	dθ	14.1980000
1602	d	104.0000000
1603	f	6000.0000000
1608	Fo -	.0916030
1609	ro	104.0000000
1610	F(dθ)	170.0700000
1611	s	7.6349000
1612	α	75.0020000
1613	β	9.8236000
1614	θ	84.8260000
1615	ho	1.4538000
1616	ηs	.7333400
1617	Hte	55.0000000
1618	Hre	95.0000000
1619	Ho	.0000000
1623	Ho	.0000000
1624	log f	113.3400000
1629	Aa	.6016300
1634	Lbms	239.6300000
1639	θet	65.0050000
1640	θer	1.2869000
1641	dlt	2.5000000
1642	dlr	38.0000000
1643	Hlt	1376.0000000
1644	Hlr	1030.0000000
1645	No	345.0000000
1647	Ds	63.5000000
1648	a	5632.7000000
1649	log d	44.4740000
1650	log r/d -	.0002468
1651	Hts	515.0000000
1652	Hrs	95.0000000

Puu Mahoe, Maui

1600	Ns	330.0500000
1601	dθ	15.8610000
1602	d	127.5000000
1603	f	6000.0000000
1608	Fo -	.1947300
1609	ro	127.4900000
1610	F(dθ)	171.3300000
1611	s	14.6150000
1612	α	72.3450000
1613	β	4.9501000
1614	θ	77.2960000
1615	ho	.9507000
1616	ηs	.4781300
1617	Hte	55.0000000
1618	Hre	60.0000000
1619	Ho	3.4568000
1623	Ho	3.4568000
1624	log f	113.3400000
1629	Aa	.8644400
1634	Lbms	242.9500000
1639	θet	64.2350000
1640	θer -	9.6725000
1641	dlt	2.6000000
1642	dlr	62.0000000
1643	Hlt	1400.0000000
1644	Hlr	1350.0000000
1645	No	345.0000000
1647	Ds	62.9000000
1648	a	5608.6000000
1649	log d	46.2430000
1650	log r/d -	.0003732
1651	Hts	515.0000000
1652	Hrs	2707.0000000

Wailuki, Maui

1600	Ns	330.8000000
1601	dθ	37.7680000
1602	d	112.5000000
1603	f	6000.0000000
1608	Fo -	.2978700
1609	ro	112.5000000
1610	F(dθ)	195.6400000
1611	s	.5803500
1612	α	76.6020000
1613	β	131.9900000
1614	θ	208.6000000
1615	ho	8.7761000
1616	ηs	4.8967000
1617	Hte	55.0000000
1618	Hre	50.0000000
1619	Ho	.0008009
1623	Ho	.0008009
1624	log f	113.3400000
1629	Aa	.6933900
1634	Lbms	264.8200000
1639	θet	64.1010000
1640	θer	121.0800000
1641	dlt	2.4000000
1642	dlr	1.5000000
1643	Hlt	1330.0000000
1644	Hlr	1280.0000000
1645	No	345.0000000
1647	Ds	108.6000000
1648	a	5618.3000000
1649	log d	45.1560000
1650	log r/d -	.0002985
1651	Hts	515.0000000
1652	Hrs	320.0000000

ANNEX C

TECHNICAL INFORMATION IN REGARD TO INTERNATIONAL COORDINATION OF FREQUENCY USAGE OF SATELLITE EARTH STATION AT PAUMALU, OAHU, HAWAII

1. INTRODUCTION

The planned use of the Paumalu, Hawaii earth station by the Communications Satellite Corporation for its global communication satellite program is such that coordination of frequency usage is required in accordance with the Partial Revision of the Radio Regulations (Geneva, 1959), contained in the Final Acts of the Extraordinary Administrative Radio Conference on Space Communication, Geneva, 1963. The information presented in this Annex to the Corporation's Application is presented for the purpose of satisfying the coordination requirements set forth in Article 9A, Section I, paragraph 639 AD of the revised Radio Regulations. Such coordination will be required with the Administration of the United Kingdom with regard to the operations of the Paumalu earth station. Technical data is supplied in support of the calculations contained herein, as specified in Appendix 1A of the Final Acts of the Geneva Conference, Reference 1. (List of references attached)

2. COORDINATION REQUIREMENTS

The procedure for the determination of coordination distances is specified by paragraph 639 AD of the Final Acts to be those contained in Reference 1. From this Reference, it is determined that two cases are of interest, viz.,

a) interference from an earth station transmitter to terrestrial station receivers;

b) interference from terrestrial station transmitters to a communication-satellite earth station receiver.

The computations for the Paumalu earth station with regard to these cases are presented in detail in later paragraphs with results plotted on the map shown in Figure C-1. The curves are for 6 Gc/s corresponding to a) above and for 4 Gc/s corresponding to b) above.

3. EARTH-SATELLITE CHARACTERISTICS

The Paumalu earth station will transmit 5925-6425 Mc/s and will receive 3700-4200 Mc/s signals from satellites located in either synchronous orbits or medium altitude orbits. The motion of such satellites relative to the earth station at Paumalu requires that the earth station antenna radiate over all azimuth angles and all elevation angles above 5 degrees.

Polarization of the earth station radiation is approximately vertical in the antenna aperture plane when using synchronous satellites, and circular for other orbits. Received polarization will generally be orthogonal to that transmitted, but can be parallel in the case of linear polarization.

4. ANTENNA RADIATION PATTERNS

The radiation patterns of the antenna are shown in Figures C-2 and C-3 for 4 Gc/s and 6 Gc/s as smoothed curves drawn through the peaks of the secondary lobes for a range of $\pm 40^{\circ}$ and indicate that isotropic level is reached at this point.

These antenna patterns are computed patterns and constitute a design goal rather than a rigid specification, therefore, for purposes of calculation the lobe envelope of Figure C-4 and 4 Gc/s between off-beam angles of 1^{o} and 5^{o} was used. This envelope corresponds to the horn-type antenna.

5. EARTH STATION POWER

The transmitter planned will have a nominal output power of 5 kW with 10 kW maximum. However, for the purposes of the computations use is made of 45 dbW per 4 kc/s bandwidth in any direction from the earth station in the horizontal plane. This value differs from the authorized EARC value, however, present FCC rules require the lower value for stations in the United States. The class of emission is 30,000 F9 initially.

6. EARTH STATION OPERATING FREQUENCIES

The initial frequencies are:

Transmit - 6389.97 Mc/s, 6301.02 Mc/s
Receive - 4081.00 Mc/s, 4160.75 Mc/s

7. DATE OF FREQUENCY USE

Use of the above frequencies is scheduled to start in late 1966 on a continuous basis. It is expected that other frequencies will be used as the global system develops.

8. EARTH STATION LOCATION

The geographical coordinates of the Paumalu earth station

are:

21° 40' 18" North Latitude
158° 02' 09" West Longitude

9. EARTH STATION SITE SHIELDING FACTOR

In Reference 1, a factor for earth station shielding is allowed and determination of this shielding factor requires a site profile. Figure C-5 is the azimuthal profile at Paumalu. The allowable F_s are obtained from the following table.

Elevation Angle degrees	Allowable Shielding Factor (db)
to 1°	0
1° - 2°	5
2° - 3°	8
3° - 4°	11
4° - 5°	13
over 5°	15

10. COORDINATION DISTANCE CALCULATION

Case a)

Following Table I, Reference 1, the minimum permissible basic transmission loss, to be exceeded for 99.9% of the time is given by:

$L_b = P_{earth} + G_{earth} - F_s + 147$ db and, since $P_{earth} + G_{earth} = 45$ dbW + F_s per 4 kc/s, this reduces to:

$L_b = 219$ db.

With the frequency correction term obtained from Figure 1 of Reference 1, path loss values for 6 Gc/s may be converted into equivalent losses at 4 Gc/s by the conversion formula:

$$L_b \text{ (4 Gc/s} = L_b (f_{Gc}) + 13 - 21.6 \log f_{Gc}$$

for purposes of determining coordination distance; i.e., an L_b of 219.0 db at 6 Gc/s is equivalent to 215.2 db at 4 Gc/s.

Using Figure 2 of Reference 1, the Zone C curve indicates the coordination distance which corresponds to the L_b determined from the above, 2000 km at 6 Gc/s.

Case b)

The minimum basic transmission loss for this case is calculated from Table 2 of Reference 1 where the following formula is developed:

$$L_b = P_{earth} + G_{terr} - F_s + G_{earth} + 145$$

Since specific P_{terr} and G_{terr} are not known, the maximum value as permitted by CCIR Recommendation 406 will be used which gives +55 dbW for the sum of these two parameters:

$$L_b = G_{earth} - F_s + 200 \text{ (db)}$$

Gearth is the satellite terminal antenna gain toward the radio horizon on the azimuth to the terrestrial transmit facility, obtainable from Figure C-4.

The determination of values for G_{earth} using Figure C-4 is subject to the restriction of the minimum earth station antenna look angle to 5^o* above the horizontal plane, so that $G_{earth} = 58 - \Delta G\ (\Delta\theta)$ db, where $\Delta\theta = 5^o - \theta$. The value of 58 db is the nominal

* The 5^o value is that permitted by FCC Rules while the present EARC value is 3^o.

gain of the earth station antenna at 4 Gc/s, and θ is obtained from Figure C-[illegible] for the applicable azimuth.

The geographical contours for each case are plotted for the entire range of azimuths in Figure C-1 which is a map of the Hawaiian Islands and the surrounding territory to a distance of several thousand kilometers.

11. CONCLUSION

Since the coordination distance calculations show that portions of United Kingdom owned territories are included within the contours, the need for coordination of the Paumalu earth station with the Administration of the United Kingdom exists. The contours given in Figure C-1 indicate the territories for which coordination with the proper United Kingdom administration is required.

LIST OF REFERENCES

1. FCC Docket No. 15723, Appendix I, paragraph 25.251.

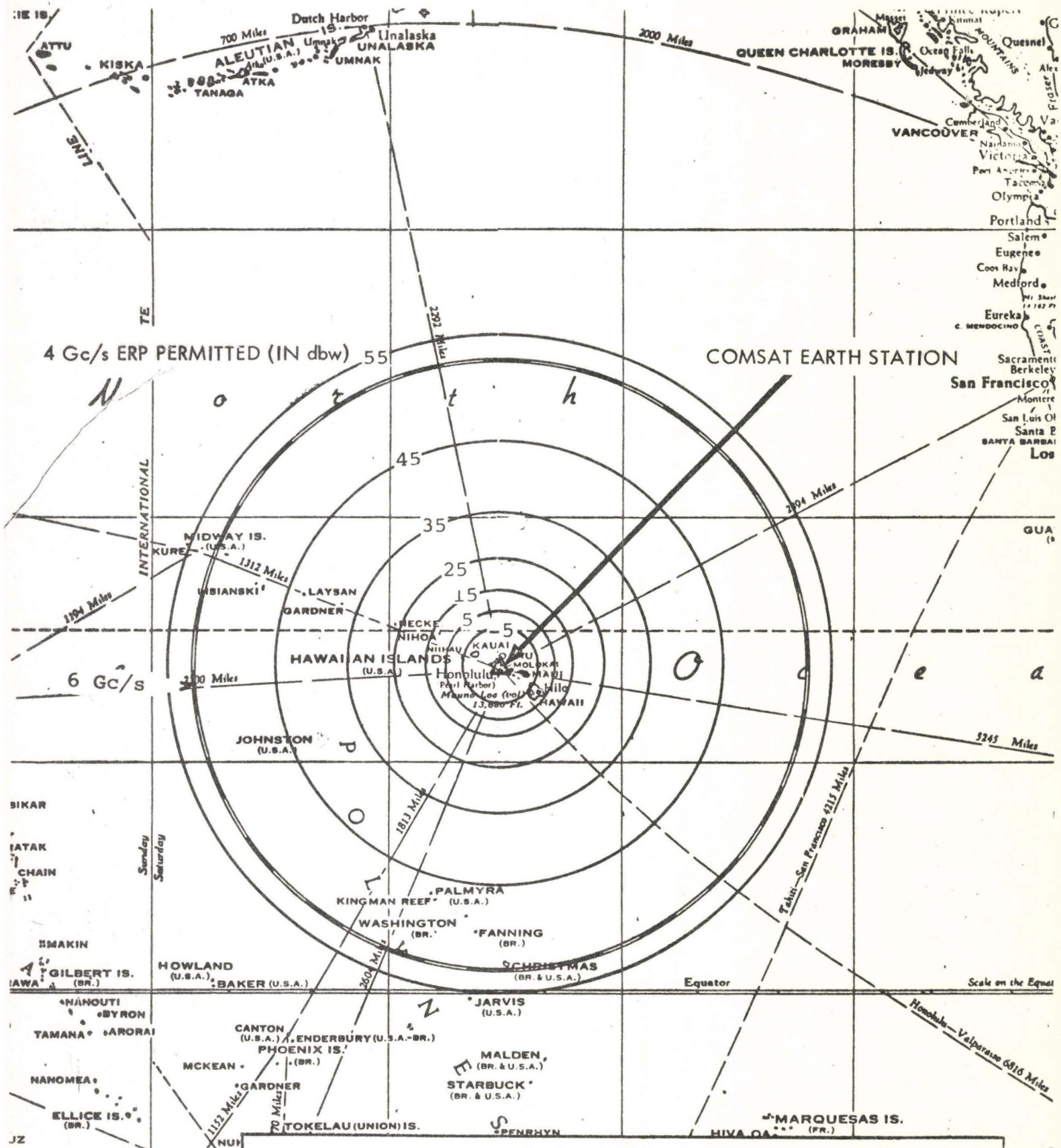

FIGURE C-1

MAP SCALE APPROX: 1" = 840 km

COORDINATION CONTOURS OF ERP AT TERRESTRIAL MICROWAVE TRANSMITTERS IN THE SHARED 4 Gc/s BAND, AND COORDINATION CONTOUR OF TERRESTRIAL MICROWAVE RECEIVERS IN THE SHARED 6 Gc/s BAND (FOREIGN & DOEMESTIC)

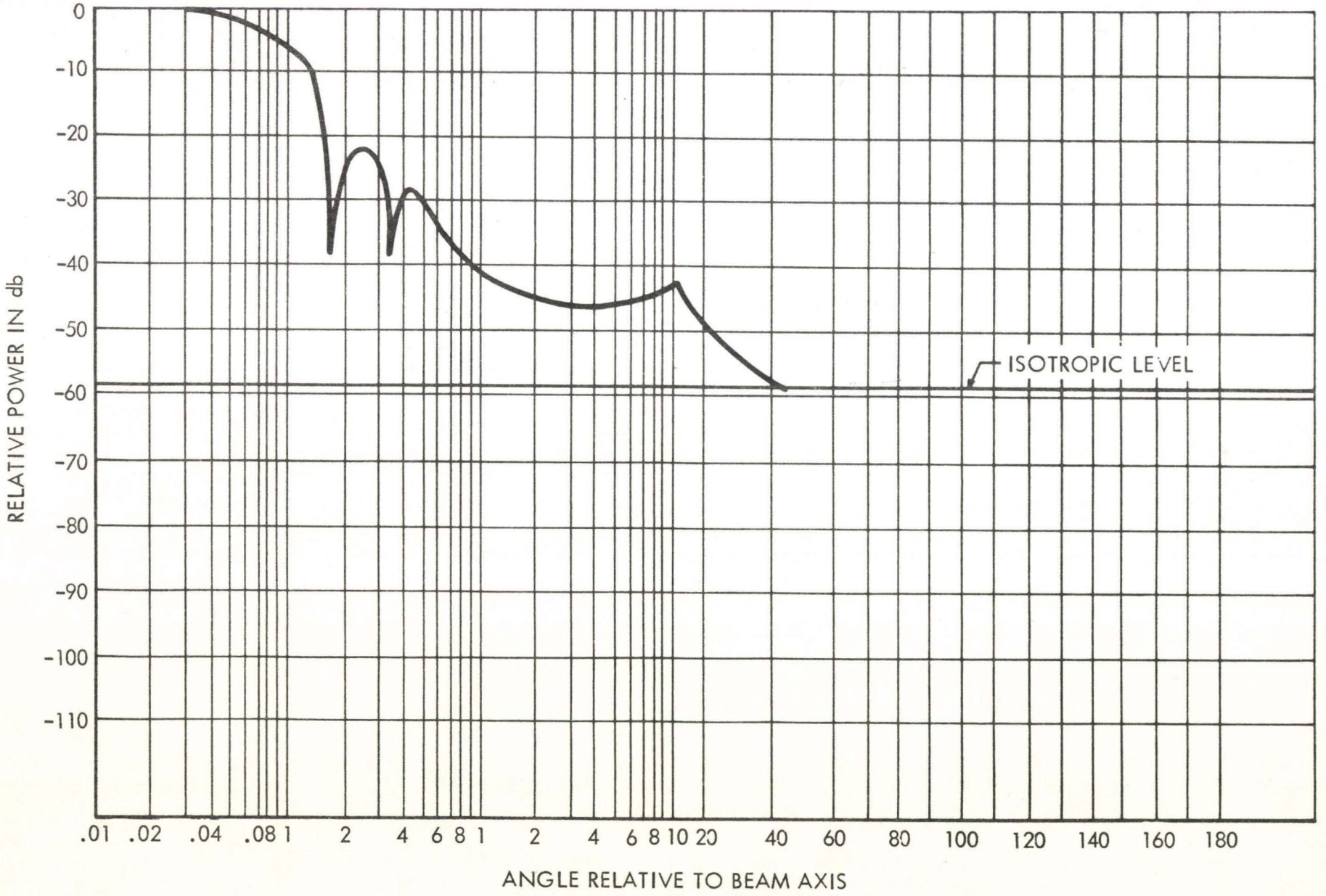

FIGURE C-2 ANTENNA GAIN PATTERN AT 4 GC/S

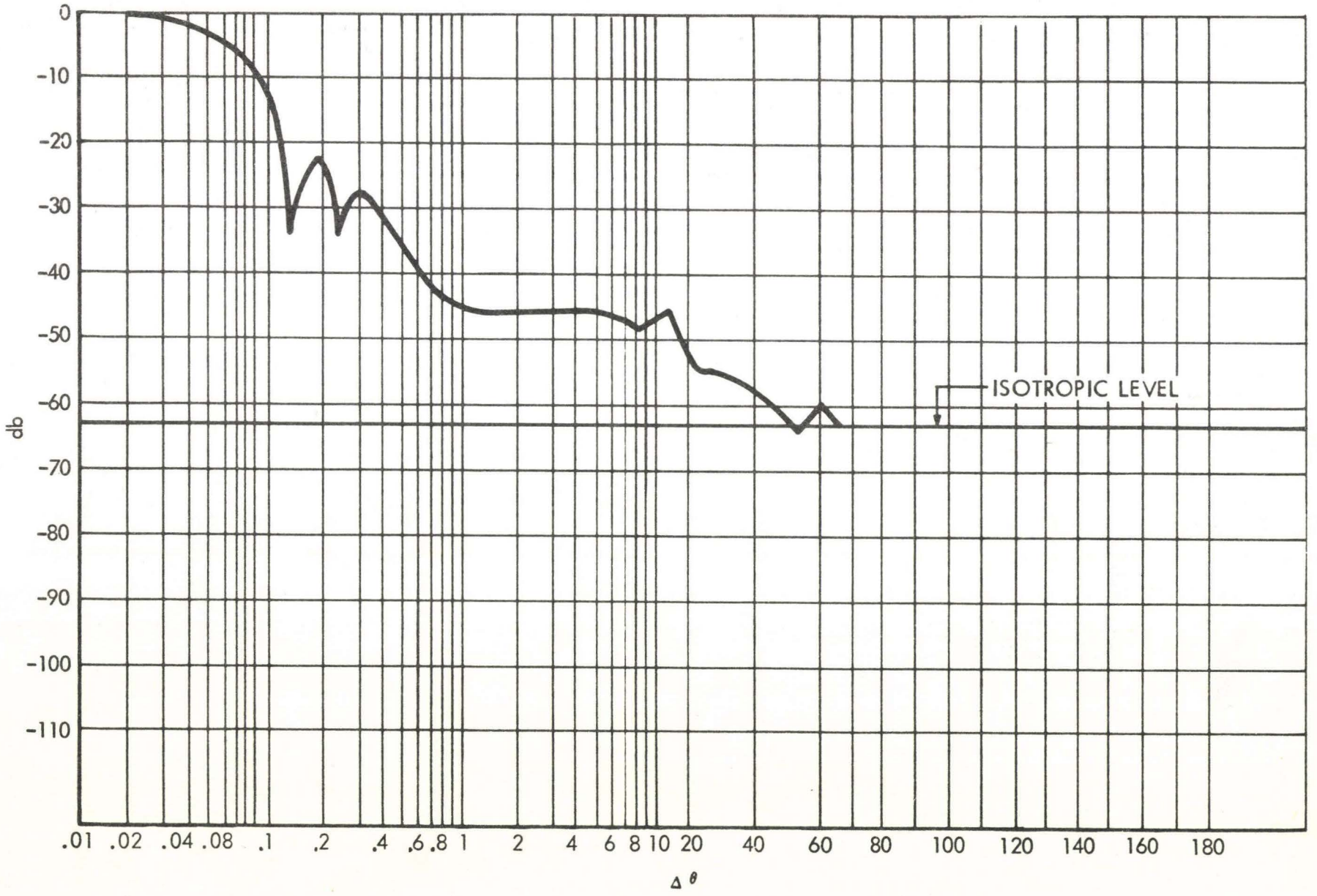

FIGURE C-3 ANTENNA GAIN PATTERN AT 6 GC/S

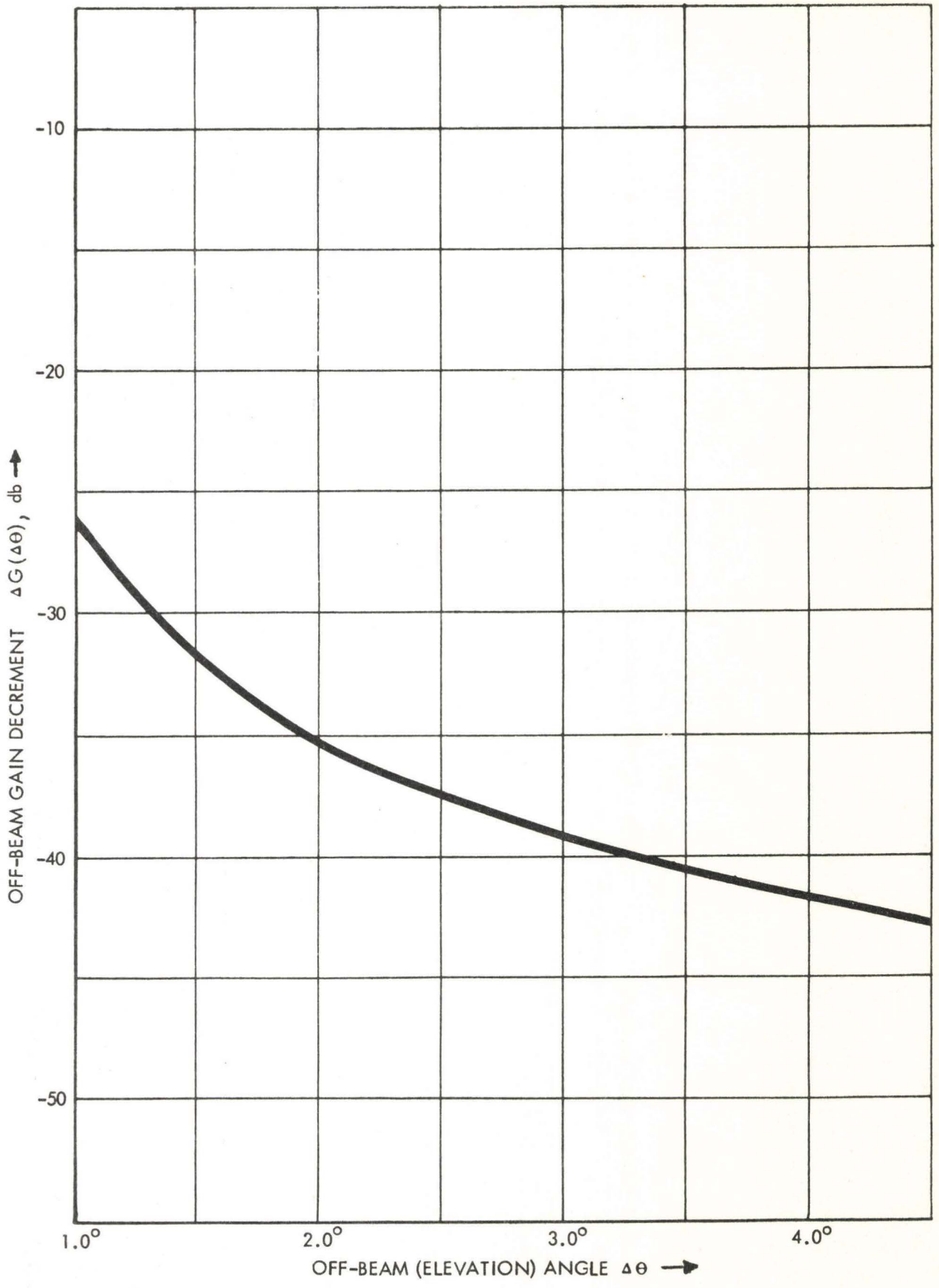

FIGURE C-4
VERTICAL PLANE OFF-BEAM GAIN DECREMENT OF 85' DIA EQUIVALENT APERTURE (WORST-CASE SIDELOBE ENVELOPE)
f=4 Gc/s

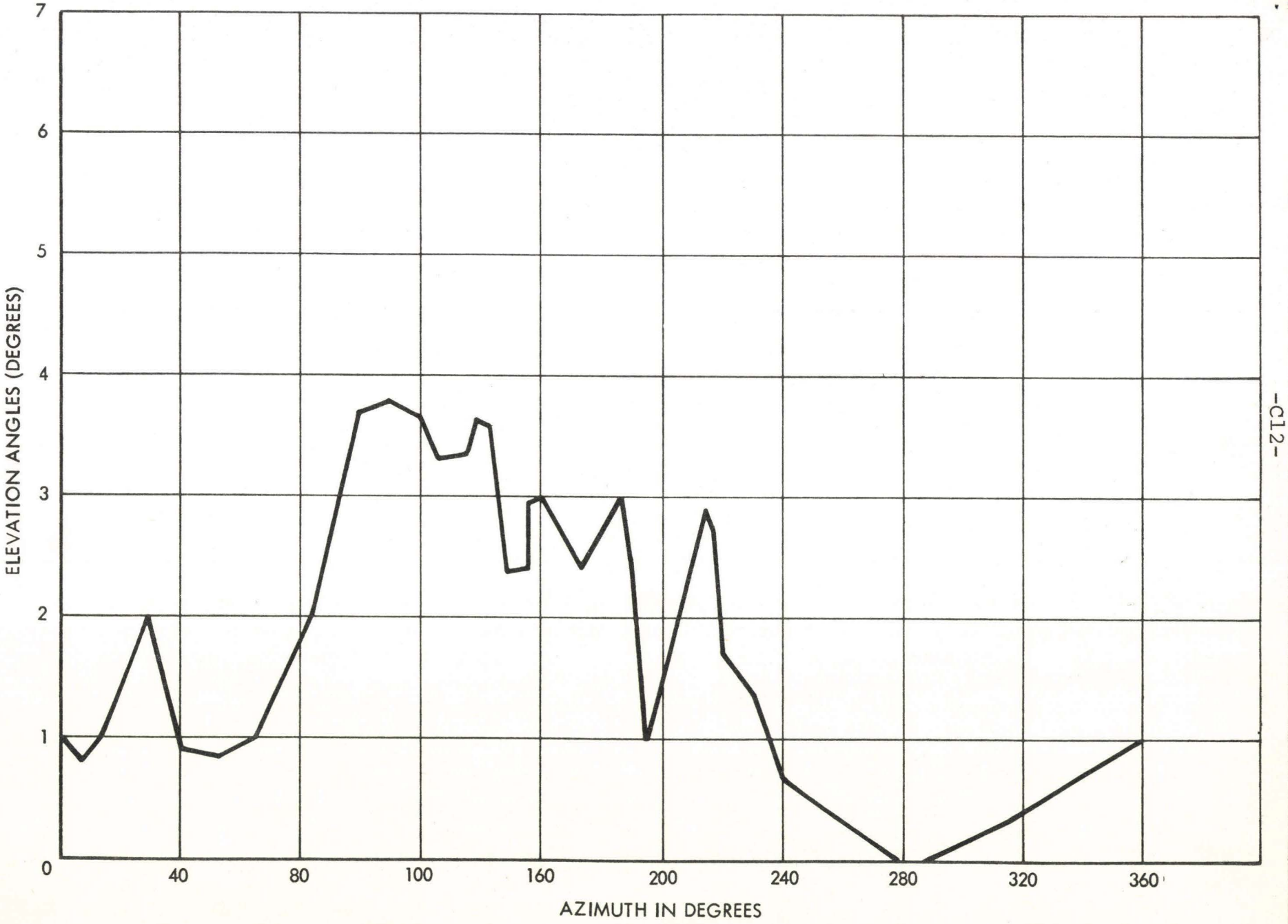

FIGURE C-5 AZIMUTHAL DISTRIBUTION OF ELEVATION ANGLES AT PAUMALU

ANNEX D

DESCRIPTION OF THE SATELLITE TRAFFIC INTERFACE CENTER, COMMUNICATIONS LINKS AND RELATED EARTH STATION EQUIPMENT OF THE HAWAIIAN EARTH STATION COMPLEX

DESCRIPTION OF THE SATELLITE TRAFFIC INTERFACE CENTER, COMMUNICATIONS LINKS AND RELATED EARTH STATION EQUIPMENT OF THE HAWAIIAN EARTH STATION COMPLEX

1.0 INTRODUCTION

This Annex describes the facilities and equipment to be constructed and the services to be leased to provide access to the communications satellite system for authorized users on an equitable and non-discriminatory basis. The major elements consist of a satellite traffic interface center planned for location in the Honolulu area, communications links between the Interface Center and the earth station at Paumalu, Oahu and the related equipment at the earth station.

The function of the Interface Center is to accept outgoing satellite traffic from authorized users and to multiplex the traffic for transmission to the earth station. The Interface Center also receives incoming, multiplexed satellite traffic from the earth station for demultiplexing and delivery to authorized users. The multiplexed satellite traffic is transmitted between the Interface Center and the earth station by a communications link consisting of terrestrial facilities. At the earth station, equipment is used to provide efficient connection between the satellite

and the communications links. In addition monitoring, quality control, and order wire capabilities are provided at the Interface Center and the earth station.

The satellite traffic processing equipment and most of the baseband arranging equipment is located at the Interface Center. The equipment is to be of a modular type. It will have inherent flexibility to meet both changing requirements and future expansion. The equipment is designed for subsequent additions which would permit doppler correction of user traffic at the Interface Center if required. All equipment and services are required to meet or exceed CCIR/CCITT objectives. The equipment for baseband arrangement at the earth station is configured so that, with subsequent augmentation, it can satisfy possible future requirements in regard to multiple access (either by multiple antennas or multiple transmitters on a single antenna) and in regard to access at the earth station by more than one Interface Center.

2.0 INTERFACE CENTER

2.1 General

A satellite traffic Interface Center located in the Honolulu area is to be designed and equipped to provide communications satellite service to the U. S. international

carriers and other authorized users on an equitable and nondiscriminatory basis. It will process traffic transmitted to and received from the earth station to be constructed at Paumalu, Oahu. The Interface Center will be interconnected with the earth station by communications links. At the Interface Center, Applicant will install the necessary multiplex equipment to process outgoing traffic from authorized users into a combined baseband for transmission to the earth station. In this process, the frequency spectrum in the communications links will be conserved. Similarly, demultiplex equipment will be installed for breaking down the incoming baseband received from the earth station for distribution of the traffic to authorized users. Test and monitoring facilities will be available to assure that proper levels and quality of signals are maintained.

2.2 Services to be Provided

The types of service offered to authorized users will include: television (color and monochrome); full duplex 60 channel supergroups, 12-channel groups, and individual voice channels for large and small telephony users; digital data from low to high bit rates; telephoto; facsimile; and teletypewriter. The equipment to be installed will be

capable of providing a wide range of service within the foregoing categories and the actual service to be provided will be in accordance with user requirements and loading restrictions. For illustration purposes, the equipment to be installed initially at the Interface Center will be capable of providing the following services:

1) Service to individual voice users of 35 full duplex channels. Another 35 channels will be available in backup equipment. The same channels will be available to digital data users whose bit rates are commensurate with voice bandwidths, to teletype users with multiple teletype channel requirements, and to facsimile users.

2) Service to individual teletypewriter users of 26 full duplex channels, assuming 4-wire operation and transmission speeds up to 75 wpm. The same channels will be available to digitial data users with bit rates up to 60 bits per second. Another 26 channels will be available through backup equipment. Equipment will also be available to accommodate higher teletypewriter transmission speeds and digital data rates.

3) Service to large telephony users on a 48 kc/s-wide package basis (i.e., 12 voice channel group) or to wideband data users. Two such 48 kc/s duplex packages will be provided

and two more will be available through backup equipment.

4) Service to large telephony users on a supergroup package basis (i.e., 60 voice channels). One such supergroup package will be provided with 1 additional through backup equipment.

5) Service to video users. The capability will be provided to terminate and switch up to 3 video input circuits at the Interface Center and to provide transmission of one two-way TV program. The upper frequency response of the equipment will be sufficient for color television transmission.

6) Service for TV sound. Six voice frequency (4 kc/s) channels will be available on the basis of two 5 kc/s-wide program circuits plus cue circuits or other combination thereof.

7) Service on an emergency basis to users of alternative communications systems (e.g., cable or radio), in the event of outage.

8) Service for voice and teletypewriter order wire channels and for quality test channels.

2.3 Facilities

A modular concept is applied in designing the Interface Center to facilitate expansion as satellite communication demands increase. The initial equipment to be available in the Fall of 1966 will be capable of meeting the traffic requirements for operations with the advanced satellites in late 1967 and early 1968 and can be expanded, as needed, to meet projected traffic requirements through 1972.

2.3.1 Floor Space

The Applicant plans to lease or own space to house the Interface Center in the vicinity of the processing centers of the international carriers in the Honolulu area. A survey of the area has revealed that buildings now under construction or planned will be available in which the Applicant may lease or own the necessary space. Floor space needs of 8,000 square feet are projected on the basis of anticipated requirements to operate with the advanced satellites. Figure 1 reflects the general equipment layout.

2.3.2 Equipment

The equipment to be installed in the Center will be readily available, standard commercial equipment. The major equipment groups will include a modular 600 channel master group configuration of multiplex-demultiplex equipment (only

4 supergroups will be installed initially); video termination, distribution, equalization and monitoring equipment; test and control equipment; and traffic termination, and distribution equipment. The equipment will be of a design wherein, after subsequent augmentation, doppler correction of the satellite traffic is possible if this should be required in the future. The equipment will be designed for easy, subsequent expansion and will include sufficient redundancy to ensure continuity of service.

A typical functional grouping of the equipment is shown in the left portion of Figure 2 for illustration. Additional detail on a typical multiplex-demultiplex arrangement is shown in the left portions of Figures 3 and 4 for illustration.* Omitted from these figures for clarity are various elements such as pilot alarms, switching arrangements, etc. The equipment will meet the standards and recommendations of CCITT for application to multiplex operation and channelizing plans.

The Applicant plans to purchase the equipment for the Interface Center. Vendors of such equipment have indicated that provision and installation of the equipment desired can be accomplished by the Fall of 1966.

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* Exact layout will be modified to meet customer and transmission requirements.

3.0 COMMUNICATIONS LINKS

3.1 General

To carry the baseband outputs between the Interface Center and the earth station, broadband communications services will be obtained. In the case of multichannel traffic, the composite signal from the Interface Center will be carried over communications links through the earth station to the satellite without any breakout of customer channels at the earth station. Equipment is provided at the earth station to convert between the deviation levels used in the terrestrial and the satellite communications links and to combine the multiple basebands received from the satellite at the earth station for efficient transmission over the broadband channel to the Interface Center.

3.2 Services Required

Service will be required during the Fall of 1966 for one duplex channel capable of carrying color television and a narrower duplex channel capable of carrying the equivalent of two supergroups. As demand increases, the narrow band channel will be broadened and baseband channels may be required. A description of the types of broadband channels required is as follows:

3.2.1 Broadband Channel One

A full duplex broadband channel is required over which any one of the following baseband transmissions may be passed:

a. NTSC color composite video

b. Monochrome and other television video whose baseband upper frequency is 4.5 Mc/s or less

c. Multiplex baseband (backup mode to channel 2)

3.2.2 Broadband Channel Two

A full duplex broadband channel is required over which any one of the following baseband transmissions may be passed:

a. Multiplex baseband of approximately 12-552 kc/s

b. Multiplex baseband of approximately 12-804 kc/s

c. Multiplex baseband of approximately 12-1052 kc/s

The initial requirement, as indicated in a. above, is for the Fall of 1966 with a build-up anticipated by early 1968 to the levels in c. above.

3.2.3 Baseband Characteristics

The actual baseband to be transmitted over the communications links will have characteristics which allow for efficient transmission by, and are compatible with, the use of such links. The specific characteristics will

be determined taking into account technical factors such as loading, levels, impedances and pilot tones.

3.2.4 Continuity

Complete continuity of service is planned by use of automatic standby channels. Upon failure of a baseband channel or degradation of channel quality, service will immediately switch to an alternate baseband channel of equivalent pre-failure performance.

3.2.5 Quality

The quality of the service desired will meet or exceed CCIR/CCITT objectives. Significant parameters are noise level, delay and crosstalk. It is desired that transmission over these broadband channels not increase the total noise in a voice channel by more than two picowatts per kilometer.

3.2.6 Expansion

Based on future growth, the following may be required subsequently:

a. Expansion of broadband channel two in 1968 to pass any one of the following baseband transmissions:

(1) The baseband transmission noted in paragraph 3.2.2.c

(2) Multiplex baseband of approximately 12-1300 kc/s

(3) Multiplex baseband of approximately 12-1548 kc/s

b. Provision of broadband channels three and four to provide services identical to those of broadband channel one and of expanded broadband channel two (paragraph 3.2.6.a) including automatic standby.

3.2.7 Radio Frequency Interference

Since the earth station will operate in the 4 and 6 Gc/s bands, the method of providing the service will be such that radio-frequency interference problems are precluded.

3.3 Implementation

As stated in the Application, the Applicant has requested the Hawaiian Telephone Co. to provide broadband communications links interconnecting the Interface Center in Honolulu and the earth station at Paumalu. The Applicant will maintain the direction and control desired by the Commission through appropriate provisions in the lease agreement and through independent quality monitoring by the Applicant at both the Interface Center and earth station.

4.0 RELATED EQUIPMENT AT THE EARTH STATION

4.1 General

Certain equipment is necessary at the earth station to provide an efficient connection between the satellite and the communications links. The amount of equipment required initially consists of distribution, switching, monitoring,

alarm, translation and order wire equipment. Part of this equipment is required to combine the multiple basebands received from the satellite at the earth station for efficient transmission over communications links to the Interface Center. Limited amounts of additional multiplex and demultiplex equipment for baseband arrangement will be required to meet multiple access needs. Such needs will arise in cases where two or more antennas are at the earth station and are communicating through either the same or different satellites and in cases where multiple access is provided by more than one transmitter on a single antenna.

4.2 Facilities

1) The floor space for the equipment is to be in the control facility to be constructed at Paumalu, Oahu (see Figure A-3 of Annex A).

2) The design characteristics of the equipment in the earth station and the implementation plan are identical to those described in paragraph 2.3.2 of this Annex. The right-hand portions of Figures 2, 3 and 4 of this Annex show a typical functional grouping of equipment and a typical multiplex/demultiplex arrangement. Dotted lines indicate future additions which may be required. The initial equipment configuration is based on having one Interface Center

serving the earth station which, on the basis of presently available information, appears to be a logical arrangement for this earth station.

3) The equipment expansion capability provided can, in conjunction with the initial equipment, permit additional satellite traffic interface centers to serve the earth station if future traffic demand patterns make this desirable.

5.0 OTHER ACCESS

5.1 National Communications System

Special access to the satellite system will also be available, when required, to meet the needs of national survivable communications.

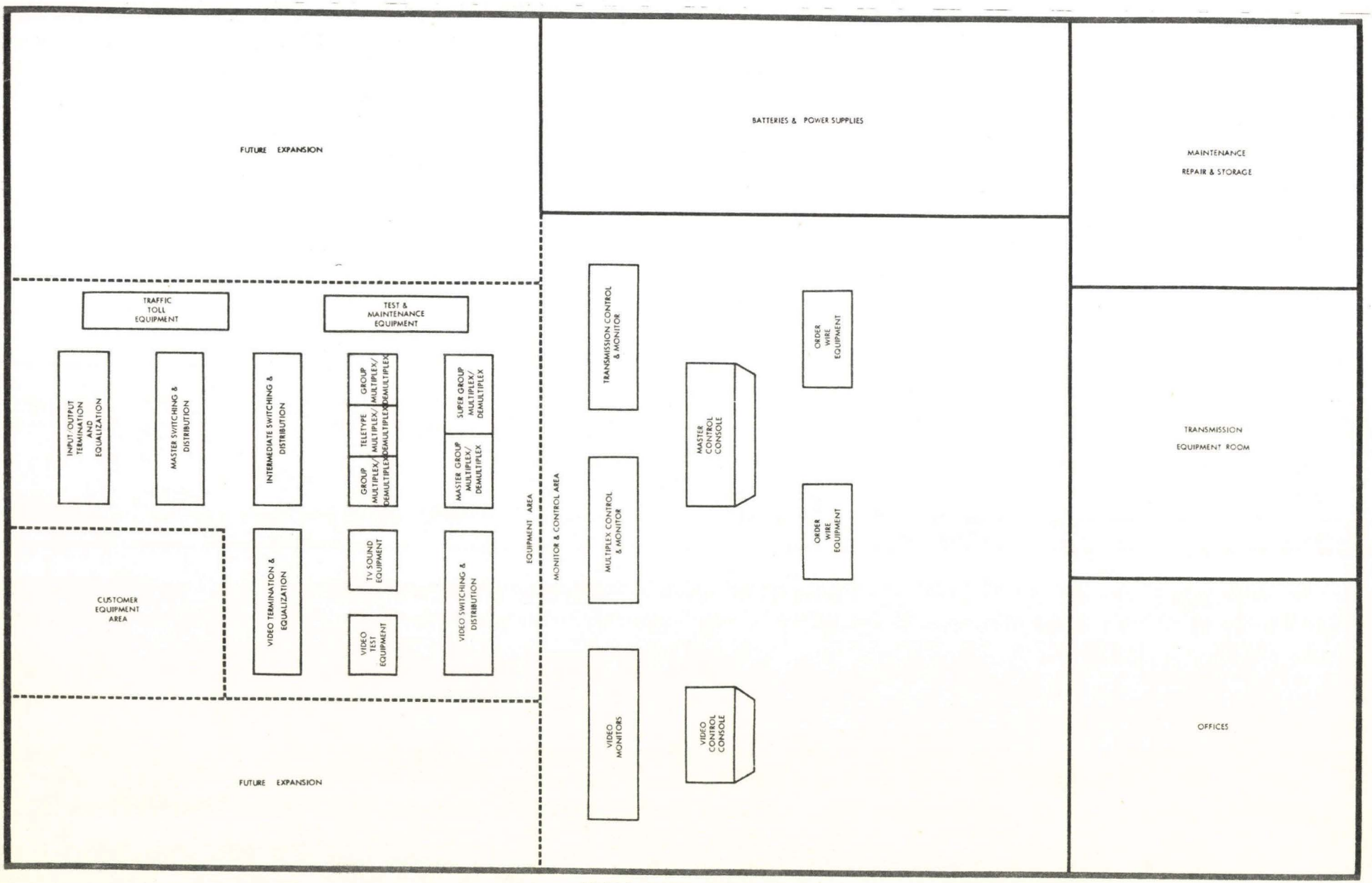


FIGURE D-1 FLOOR PLAN - INTERFACE CENTER

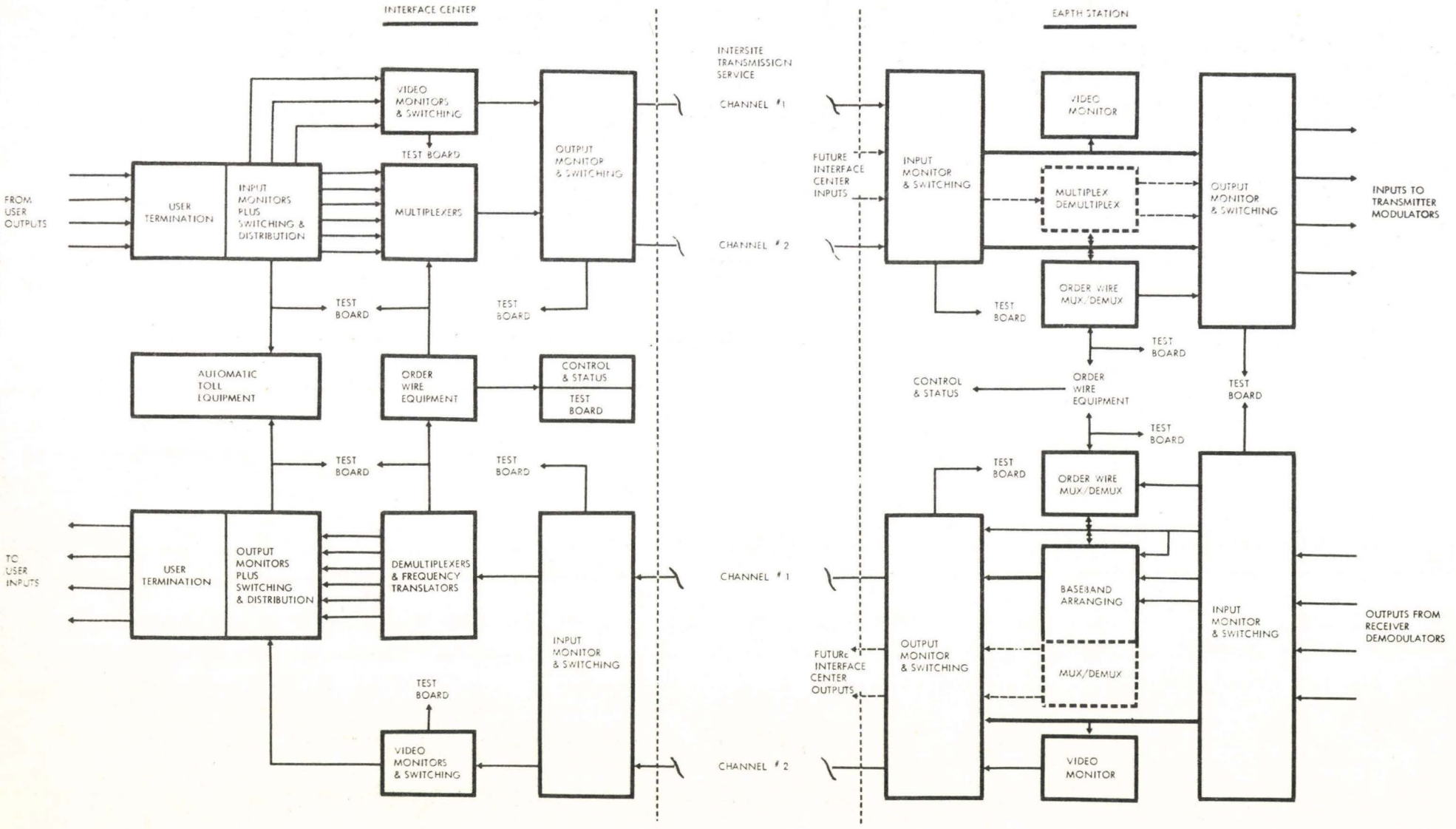


FIGURE D-2 INTERFACE CENTER-EARTH STATION
TYPICAL FUNCTIONAL EQUIPMENT DIAGRAM

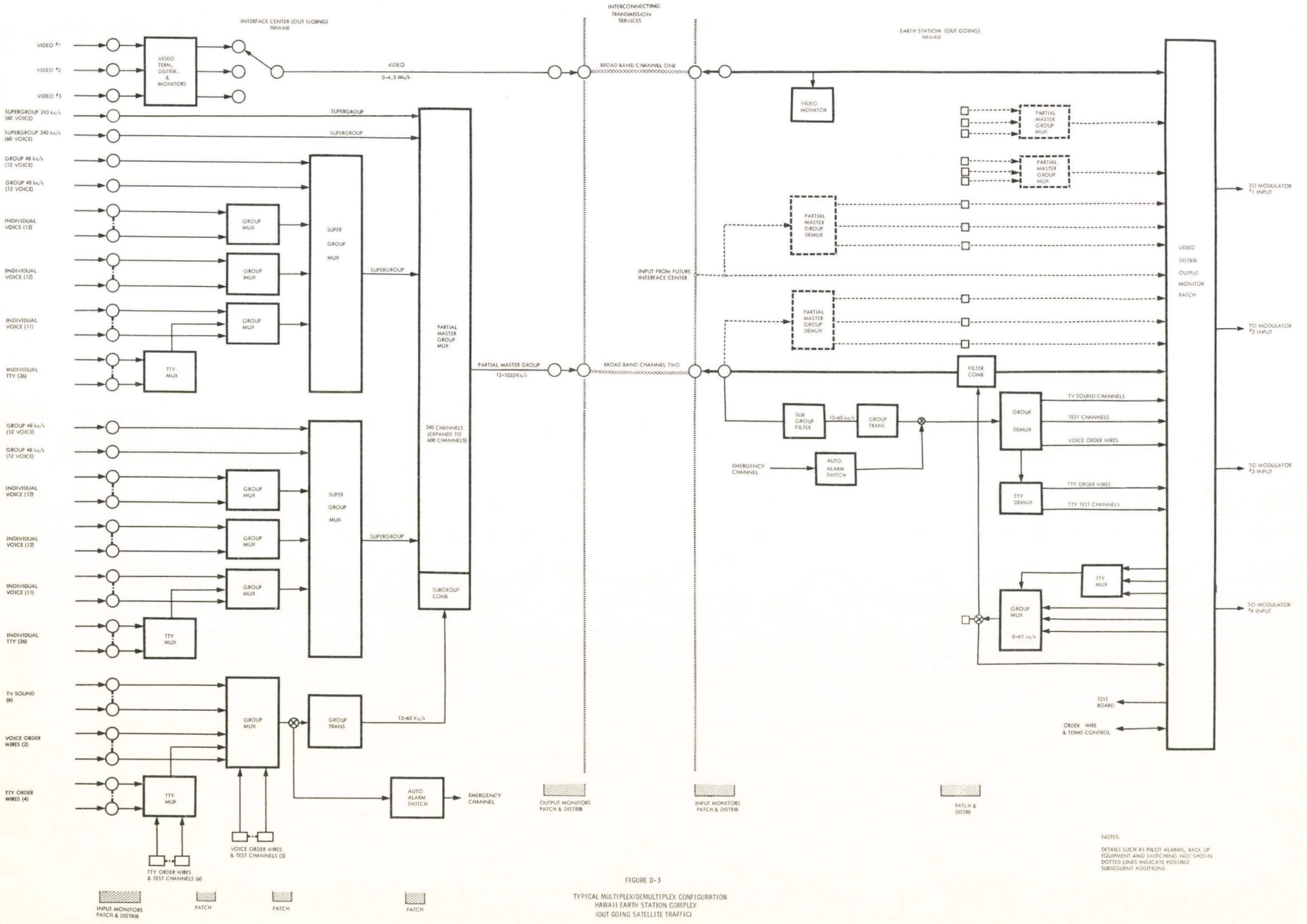


FIGURE D-3

TYPICAL MULTIPLEX/DEMULTIPLEX CONFIGURATION
HAWAII EARTH STATION COMPLEX
(OUT GOING SATELLITE TRAFFIC)

NOTES:

DETAILS SUCH AS PILOT ALARMS, BACK UP EQUIPMENT AND SWITCHING NOT SHOWN
DOTTED LINES INDICATE POSSIBLE SUBSEQUENT ADDITIONS

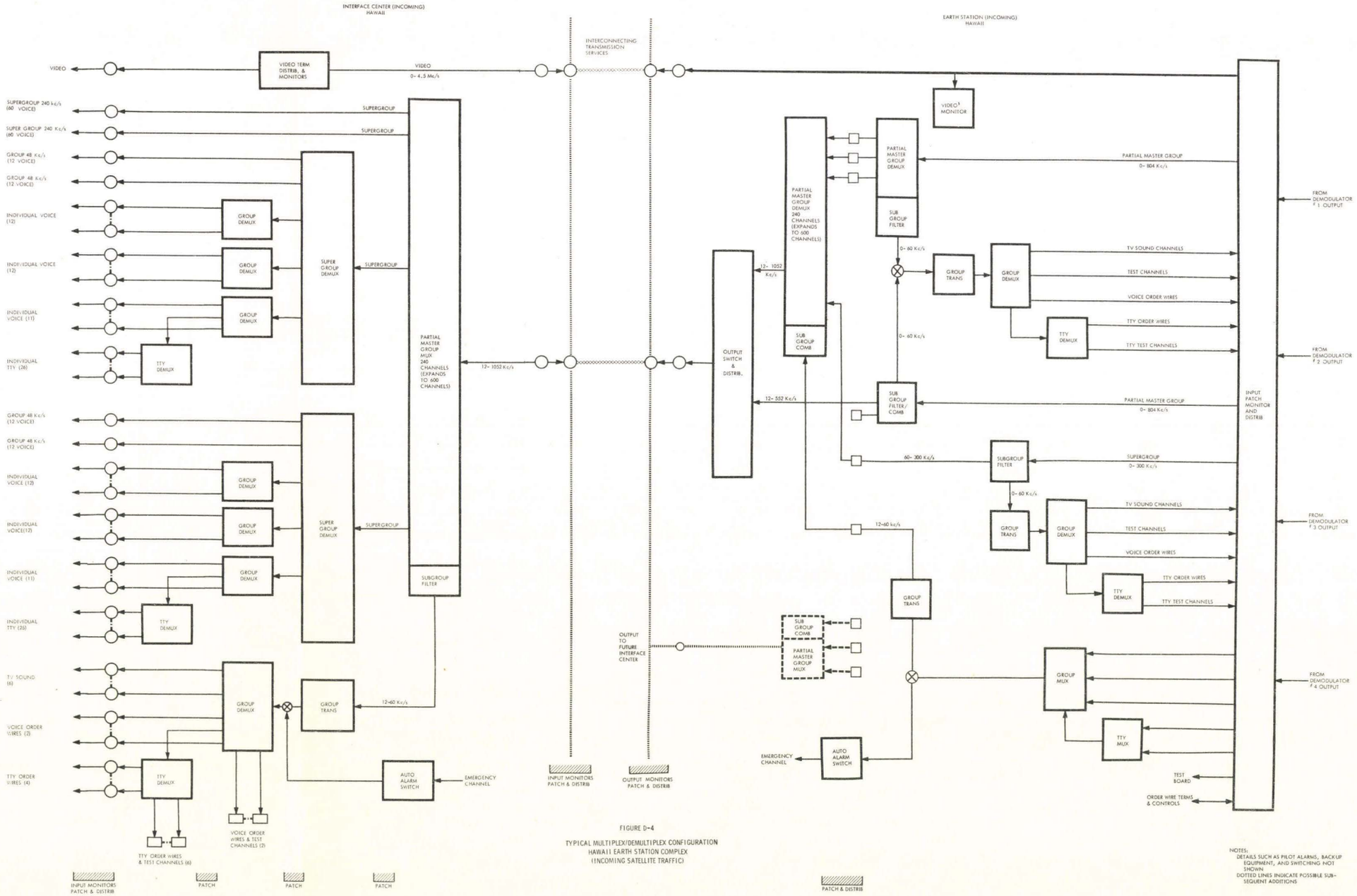


FIGURE D-4

TYPICAL MULTIPLEX/DEMULTIPLEX CONFIGURATION
HAWAII EARTH STATION COMPLEX
(INCOMING SATELLITE TRAFFIC)

NOTES:
DETAILS SUCH AS PILOT ALARMS, BACKUP EQUIPMENT, AND SWITCHING NOT SHOWN
DOTTED LINES INDICATE POSSIBLE SUBSEQUENT ADDITIONS

COMMUNICATIONS SATELLITE CORPORATION
1900 L Street, N.W.
Washington, D.C. 20036

Joseph V. Charyk
President

June 28, 1965

Mr. Douglas S. Guild
President
Hawaiian Telephone Company
P.O. Box 2200
Honolulu, Hawaii 96805

Dear Mr. Guild:

As you know, the Federal Communications Commission, in its Report and Order establishing an interim policy for the ownership and operation of the three U.S. earth stations, authorized the Corporation to establish interface centers as part of its Earth Station Complexes, and to process satellite traffic for transmission to the earth station via terrestrial links. The Corporation was also directed to exercise direction and control of such links.

The Corporation therefore proposes to establish an interface center in the Honolulu area to process satellite traffic for the Hawaiian earth station. The multiplexed basebands must then be transmitted between the interface center and the earth station.

After giving the most careful consideration to the variety of arrangements by which such transmission services could be provided, for the present and with respect to the initial earth stations, we have concluded that if Hawaiian can fully meet the Corporation's requirements for such services between the interface center and the earth station, it would be preferable to obtain such services from Hawaiian rather than to establish completely new transmission facilities.

Annex D
Attachment 1

Accordingly, the Corporation requests that Hawaiian agree to provide Comsat with broadband facilities from its interface center in the Honolulu area to its earth station, which we presently anticipate will be located in Paumalu, Oahu. Under this arrangement, the Corporation would deliver to Hawaiian, at the interface center, a multiplexed baseband, the characteristics of which would be described to Hawaiian, which Hawaiian would then transmit to the earth station, delivering it there in the same form in which it was received from the Corporation at the interface center. Traffic in the reverse direction, from the earth station to the interface center, would be handled in the same manner.

In regard to the quantity of such broadband services, the Corporation presently plans to have an HS-303 type satellite in orbit over the Pacific Ocean in 1966. Accordingly, the capacity of the broadband facilities requested for the Earth Station Complex would have to be sufficient to handle the total number of circuits which such satellite is capable of transmitting. In the future, as the satellite system expands, we would expect to have increased requirements for baseband capacity between the interface center and the earth station, and we may request Hawaiian to meet such requirements on the same basis.

We believe that this arrangement appropriately implements the Commission's Report and Order. If the Corporation is to have the "undivided responsibility for the proper handling of all satellite traffic" called for by that Report, it must have sole direction and control of all multiplexing of satellite traffic from the interface center to the earth station. The proposed arrangement would assure us such control, and would, at the same time, provide a diversity of routing.

If Hawaiian is unable to provide the type of service herein requested at rates which reasonably reflect the limited services provided, the Corporation will find it

necessary to consider alternative arrangements by which its essential requirements for a broadband facility between the interface center and the earth station could be met.

In view of the fact that we must file with the Commission construction permit applications for the Hawaiian earth station complex by July 12, and that we need to indicate therein our proposed arrangements for the terrestrial links, we would like to meet with you as soon as possible to further discuss this proposal. I would greatly appreciate receiving your reply to this letter by July 2, 1965.

Very truly yours,

/signed/

Joseph V. Charyk
President

Annex D
Attachment 1

HAWAIIAN TELEPHONE COMPANY

P. O. BOX 2200 • HONOLULU, HAWAII 96805 • TELEPHONE 577-111 • CABLE: TELHAWAII

D. S. GUILD
PRESIDENT

July 2, 1965

Dr. Joseph V. Charyk, President
Communications Satellite Corporation
1900 L Street, N. W.
Washington, D. C. 20036

Dear Dr. Charyk:

This will acknowledge receipt of your letter of June 28, 1965, concerning terrestrial facilities between the proposed satellite earth station site at Paumalu, Oahu, and an interface center in the Honolulu area.

On June 11, 1965, Hawaiian Telephone Company filed a petition for rehearing and reconsideration in FCC Docket 15735 in which it took the position that the interface should be located at the earth station site. The statements in our petition concerning the location of the interface and the provision of the terrestrial facilities represent the carefully considered position of this Company on these issues and we do not propose to do anything which would be inconsistent with or prejudicial to this position, which we still believe to be the best solution to the problem. With these reservations we advise you as follows:

If it is the ultimate decision of the Commission that the interface must be in close proximity to the message center and that, in the case of Oahu, this "close proximity" is elsewhere than at the earth station site itself, Hawaiian Telephone Company will provide ComSat, at reasonable rates, with the transmission facilities required by ComSat from the interface to the earth station site.

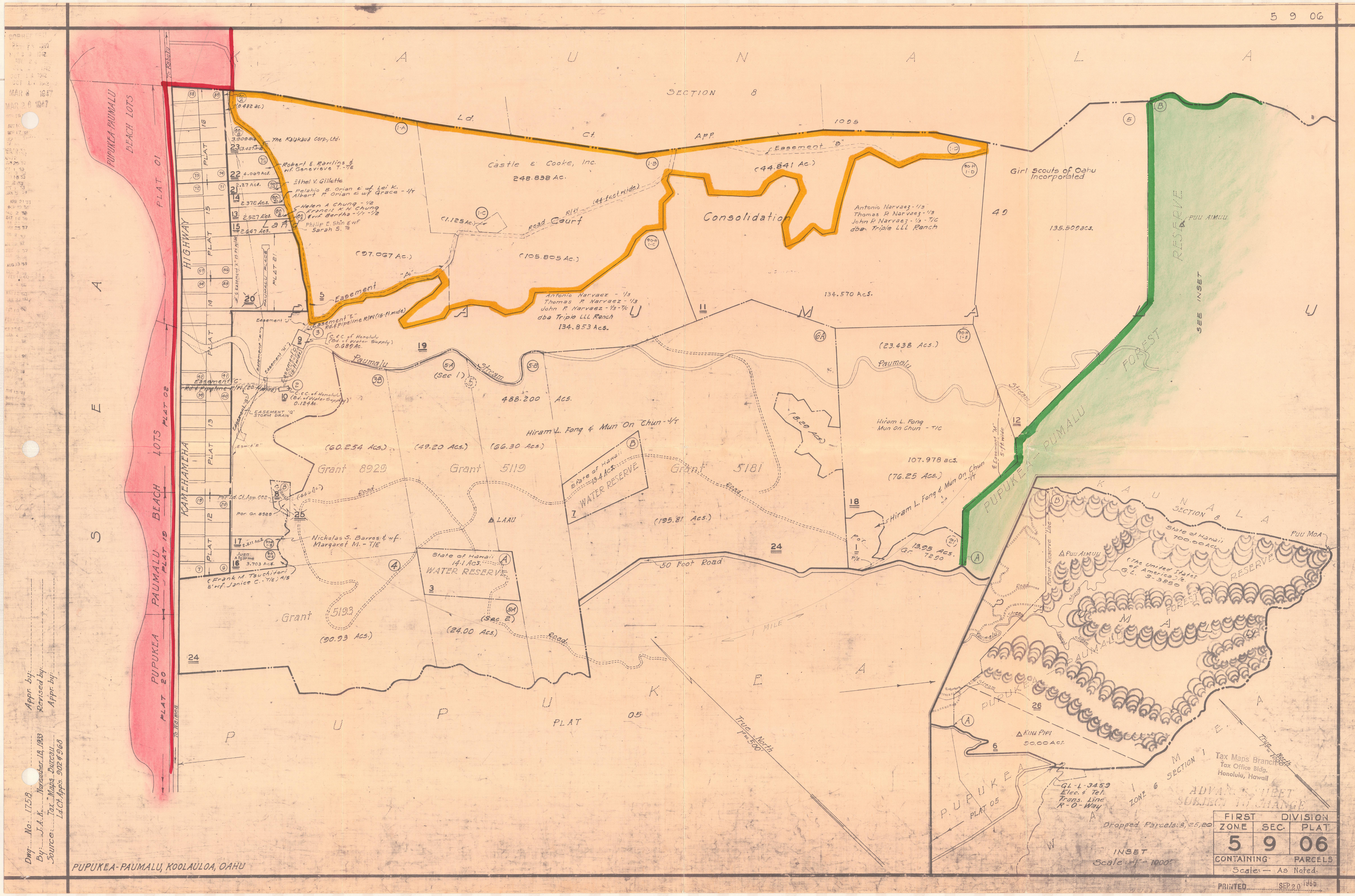
Hawaiian's agreement to furnish these facilities is subject to Hawaiian obtaining necessary radio authorizations for providing them. Hawaiian is planning a microwave station at Mt. Kaala which would be used in connection with its Oahu-Kauai interisland traffic. This same station would be used to provide the radio link between Honolulu and Paumalu. Hawaiian will file with the FCC in the near future, an application to provide the Mt. Kaala facilities and the facilities requested in your letter and in accordance with recent discussions between Mr. Kenneth Neifert of Hawaiian Telephone Company and members of your technical staff.

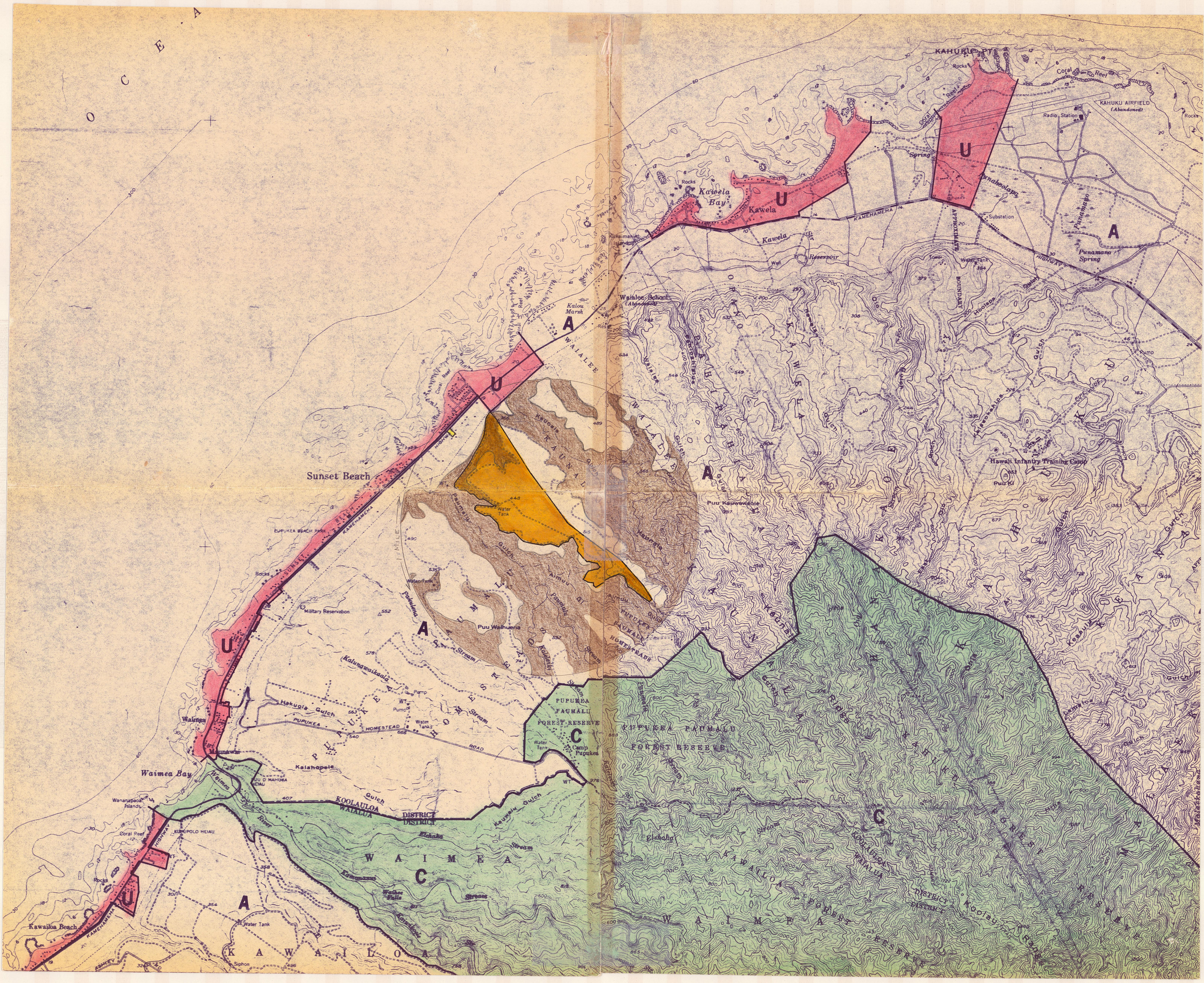
Very truly yours,

D. S. Guild

Annex D
Attachment 2

Fredrick W. Huszagh
Communications Satellite Corporation
1900 L. Street N.W.
Washington, D.C.


5 9 06
K A U N A L A
SECTION 8
Ld. Ct. App. 1095
Castle & Cooke, Inc.
248.838 Ac.
Easement "B"
(44.841 Ac.)
Consolidation
Girl Scouts of Oahu Incorporated
Antonio Narvaez - 1/3
Thomas P. Narvaez - 1/3
John P. Narvaez - 1/3 - T/C
dba Triple LLL Ranch
135.509 acs.
PUU AIMUU
RESERVE
SEE INSET
PUPUKEA - PAUMALU FOREST
Road Court
(97.067 Ac.)
(105.805 Ac.)
Easement "A"
134.853 Acs.
134.570 Acs.
The Kaiakaua Corp. Ltd.
Robert E. Rawlins & wf. Genevieve T-T/E
Ethel V. Gillette
Helen A. Chung - 1/2
Philip E. Shin & wf Sarah S.
PUPUKEA-PAUMALU BEACH LOTS
PLAT 01
KAMEHAMEHA HIGHWAY
PLAT 02
PLAT 19
PLAT 20
S E A
Paumalu Stream
(23.438 Acs.)
488.200 Acs.
Hiram L. Fong & Mun On Chun - 1/4
Hiram L. Fong
Mun On Chun - T/C
107.978 acs.
(76.25 Acs.)
(60.254 Acs.)
(49.29 Acs.)
(66.30 Acs.)
Grant 8929
Grant 5119
Grant 5181
State of Hawaii
13.4 Acs.
WATER RESERVE
(195.81 Acs.)
LAAU
Nicholas S. Barros & wf. Margaret M. - T/E
State of Hawaii
14.1 Acs.
WATER RESERVE
50 Foot Road
Grant 5193
(90.93 Acs.)
(24.00 Acs.)
(Sec. 2)
Road
18.95 Acs.
Gr. 7290
P U P U K E A
PLAT 05
True North
1" = 500'
Puu Moa
State of Hawaii
700.00 Acs.
The United States of America
Puu Aimuu
Kinu Pipi
50.00 Ac.
GL-L-3459 Elec. & Tel. Trans. Line R-O-Way
Tax Maps Branch
Tax Office Bldg.
Honolulu, Hawaii
ADVANCE SHEET SUBJECT TO CHANGE
Dropped Parcels: 8, 25, 29
INSET
Scale 1" = 1000'
FIRST DIVISION
ZONE 5
SEC. 9
PLAT 06
CONTAINING PARCELS
Scale: As Noted.
PRINTED SEP 20 1966
PUPUKEA-PAUMALU, KOOLAULOA, OAHU
Dwg. No. 1752 Appr. by
By J.A.K. November 18, 1933 Revised by
Source: Tax Maps Division Ld. Ct. Apps. 902 & 963 Appr. by



O C E A
KAHUKU PT.
Rocks
Coral Reef
KAHUKU AIRFIELD (Abandoned)
Radio Station
U
U
U
U
U
A
A
A
A
A
C
C
C
Kawela Bay
Kawela
Kukaimanini Islands
Spring
Punahoolapa
Substation
KAMEHAMEHA HIGHWAY
APPROXIMATE BOUNDARY
Punamano
Punamano Spring
Reservoir
Well
Tower
Water Tank
Waialee School (Abandoned)
Kalou Marsh
WAIALEE
OPANA
KAWELA
Hoolapa Gulch
PIPE LINE
KAUNALA
Kaunala Gulch
Hawaii Infantry Training Camp
Puu Ki
Puu Kainapuaa
Sunset Beach
SUNSET BEACH
PUPUKEA BEACH PARK
Military Reservation
1 MILE
Water Tank
Paumalu Gulch
Aimuu Gulch
Paumalu Stream
Puu Waihuena
Pakulena Stream
PAUMALU
PUPUKEA PAUMALU HOMESTEADS
Kalunawaikaala
Hakuola Gulch
PUPUKEA HOMESTEAD ROAD
PUPUKEA HOMESTEAD
Pump
Water Tanks
PUPUKEA PAUMALU FOREST RESERVE
Camp Pupukea
Waimea
Waimea Bay
PUU O MAHUKA HEIAU
Kalahopele
Wananapaoa Islands
Waimea River
KOOLAULOA DISTRICT
WAIALUA DISTRICT
Kauwalu Gulch
Elehaha
Elehaha Stream
WAIMEA
Kamananui Stream
Waihee Falls
KUPOPOLO HEIAU
Coral Reef
Rocks
Kawailoa Beach
KAMEHAMEHA HIGHWAY
KAWAILOA
Water Tank
Siphon
KAWAILOA
WAIMEA FOREST RESERVE
KAHUKU FOREST RESERVE
Koolau Range
KAWAILOA