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EX PARTE OR LATE FILED

November 7, 2002

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BY HAND DELIVERY

Ms. Marlene Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: **Ex** Parte Presentation **in IB Docket No. 02-10**

Dear Ms. Dortch:

On November 6, 2002, representatives of Maritime Telecommunications Network, Inc. ("MTN") met with members of the International Bureau in connection with the above-referenced proceeding. During the meeting, MTN described suggested coordination procedures that could be used at various port operating areas to protect terrestrial services operating in the **C-band** from the co-frequency operations of satellite earth stations on board vessels ("ESVs"). MTN also distributed copies of a letter from the Chief Technical Officer of Pinnacle Telecom Group, LLC, attesting to the feasibility of these procedures. A summary of the suggested coordination procedures that **was** distributed during the meeting and a copy of the letter from Pinnacle Telecom Group are enclosed.

MTN also discussed how the Commission's existing earth station authorization application form (FCC Fonn 312, Schedule B) could be revised *to* accommodate ESV licensing, using the port of Miami, Florida as an example. MTN distributed sample copies of a revised Form 312, Schedule B to demonstrate one means of modifying the form. A copy of that revised form, with revisions **to** the existing form marked in red, is enclosed.

No. of Copies rec'd 0+1
List ABCDE

The original and one copy of this letter are provided for inclusion in the above-referenced proceeding. Please address any questions concerning this matter to the undersigned.

Respectfully submitted,

for

Raul R. Rodriguez
Counsel to Maritime Telecommunications Network, Inc.

Enclosure

cc w/ enclosure (by e-mail): Claudia Fox
Belinda Nixon
Ed Jacob
Lisa Cacciatore

Phase II – Prior Coordination of Port Operating Area

1. Using the database of licensed stations in the fixed service operating in the frequency bands of interest, identify all of the potential victim receivers that are within the composite coordination area and the frequencies they are assigned.
2. If there are any frequencies within the band of interest that are not used by any of the potential victim receivers identified in Step 11.1, these frequencies may be identified for use by the ESV within the port operating area without further analysis.
3. The potential for interference must be determined where there are potential conflicts with existing users in **the** band. To perform this analysis, the worst-case position of the ship within the port operating area for causing interference to each victim must be identified. This point is called the critical contour point (CCP). The procedure for choosing the CCP for each potential victim receiver and assessing the potential for interference is described in ITU-R Rec. SF-[ESV-C].
4. An interference analysis is performed at each CCP for the associated victim receiver using industry-standard procedures for assessing the potential for interference from a fixed-satellite service earth station into a fixed service receiver (see NSMA Recommendation WG3-90.25). This analysis may be a simple free-space loss calculation or it may include OH-loss and knowledge of the topography. The results of this analysis indicate whether the interfering signal is likely to exceed the interference objective and if so, by how much.
5. Frequencies that exceed the interference objective generally would not be assigned for ESV use in that port operating area. However, there might be some mitigating circumstances or limitations that could be negotiated between the coordinator for the fixed service station and the coordinator for the ESVs (see Step II. 7).
6. All coordinators for the potential victim receivers would receive a letter with details of the analysis and the results so that they can assess the situation themselves and either verify or contest the conclusions reached by the coordinator for the **ESVs.** The details sent to coordinators for each victim receiver should include:
   - **a.** The operational parameters of the type(s) of ESV including the azimuth and elevation angles;
   - b. A map of the port operating area and the composite coordination area;

c. The coordinates of the CCP identified as the point within the port operating area that could potentially cause the worst-case interference;

d. The distance from the CCP to the victim receiver; and

e. The discrimination angle and the gain at that angle for both the type(s) of ESV and the victim receiver that have been used in the analysis.

7. To the extent that the coordinators representing the potential victims have some objections to the results of the analysis and/or that there may be mitigating circumstances for some frequencies that the frequency coordinator for the potential victim can accept in order to clear a frequency for use, ad-hoc negotiations could occur. This type of negotiation is a commonly accepted procedure for coordination between fixed-satellite stations and **fixed** service stations.

8. Create the list of frequencies for which the analysis shows there is no potential to cause interference. This list may also include the cases negotiated in Step 11.7 where the frequency coordinator for the fixed service station has agreed to allow operation.

Phase III – Preparation of FCC Form 312 Schedule B

1. Schedule B of tlie FCC Form **312** license application should give the technical description of the hub and associated type(s) of ESV tenninals in the network as well **as** the results for prior frequency coordination in each port operating area.

2. The frequency coordination information provided *to* support the application should include:

   a. **A** map of the port area indicating the berths, channels and sea-lanes **making** up the operating area and the break points and the resulting composite coordination area;

   b. **A** list of the break points and their coordinates used in performing the analysis;

   c. **A** list of the frequencies that have been cleared for use in the port operating area; and

   d. The letter of certification from the coordinator who performed the analysis.

PINNACLE TELECOM GROUP, LLC
Consulting and Engineering Services
www.pinnacletelecomgroup.com
Telecom Consulting

November 5, 2002

Donald Abelson
Chief, International Bureau
Federal communications Commission
445 12th Street, SW
Washington, DC 20554

SUBJECT: Written *Ex Parte* Comments in IB Docket 02-10 – Interference Analysis and Frequency Coordination for C-Band Earth Stations Operated Aboard Vessels (ESVs)

Dear Mr. Abelson,

At the request of Dr. Robert Hanson of Maritime Telecommunications Network, Inc,. (MTN), I have reviewed material on procedures for analyzing potential RF interference, performing frequency coordination, and submitting license applications for ESVs operating in frequency bands shared with point-to-point microwave systems.

My staff and I have been involved in ESV coordination since early 1997, when many of us were working for Edwards and Kelcey, and we have continued that work since forming Pinnacle Telecom Group in early 2000. We have also been continuously involved in ESV coordination discussions in the National Spectrum Managers Association (which I currently serve as president), as well as in periodic discussions with the FCC staff.

All of the material we reviewed is fundamentally consistent with the approach we have used in all ESV coordination to date. involving multiple clients (including MTN). Once the ESV operating contour has been defined and critical contour points identified, the analysis methodology relies on exactly the same mathematical analysis as has been used for earth station coordination since the early 1970s.

We are firm believers in the spectrum management principle that if some new sharing proposal can be demonstrated to work from an interference point of view, then it should be allowed by the FCC. With the described interference analysis and coordination procedure, C-band ESV operations match that criteria.

14 Ridgedale Avenue – Suite 262 Cedar Knolls, NJ 07927 973-451-1630

Moreover, given the Significant geographic limitations of ESV operations (i.e., the limited number of deep-draft ports along the coastline), there is no real impact on the other services using the bands already shared on a primary co-equal basis by microwave and satellite operations.

We believe the interference analysis 'methodology and frequency coordination procedures described in the material we reviewed (and also under development within the ITU radiocommunications sector) are not only workable, they have been specifically demonstrated in US industry practice over some time now to work, and *work* effectively. Except for the minor fine-tuning of certain parameters, the described procedure has been used by my staff in coordinating ESV operations *in* nearly two dozen US ports and the Gulf of Mexico.

I am available for further discussion or to answer questions on this topic, and I can be reached via phone at 973-451-1630 on extension 102, or via email at dancollins @ pinnacletelecomgrouP.COm.

Regards,

Daniel J. Collins
Chief Technical Officer

FCC 312
Schedule B

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE EARTH STATION AUTHORIZATIONS
(Technical and Operational Description)

(Place an "X" in one of the blocks below)

ESV Hub

☐ License of New Station ☐ Registration of New Domestic Receive-Only Station ☐ Amendment to a Pending Application ☐ Modification of License/Registration ☐ Notification of Minor Modifications

B1a. Station Call Sign	B1b. Site Identifier (HUB, REMOTE 1, etc.)	B1c. Telephone Number	B1j. Geographic Coordinates NIS. Deg. - Min. - Sec E/W	B1k. Lat./Lon. Coordinates are:
KA434	HUB	732-739-2874	Lat. 40 23 42.2 N	☐ NAD-27
B1d. Street Address of Station or Area of Operation	B1e. Name of Contact Person		Lor. 74 10 25.1 W	☐ NAD83
Telegraph Hill Rd ndel. N.I 07733	Mark Desantis			

B1f. City	B1g. County	B1h. State	B1i. Zip Code	B1l. Site Elevation (AMSL)
Holmdel	Monmouth	NJ	07733	103.6 meters

Satellite Name and Orbit Location	Satellite Name and Orbit Location	Satellite Name and Orbit Location
ALLSAT	TDRS-6 @ 47.0 W. L.	
INTELSAT 805 in AOR @ 304.5 E. L.	PANAMSAT-2R @ 43.0 W. L.	
INTLESAT AOR @ 328.5 E. L.	PANAMSAT 1 @ 45.0 W. L.	
COLUMBIA 515 @ 37.7 W. L.	PANAMSAT 9 @ 58.0 W. L.	

Satellite Name	List of Destination Points

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE EARTH STATION AUTHORIZATIONS
FCC Form 312 – Schedule B: (Technical and Operational Description)

B4. Earth Station Antenna Facilities: Use additional pages as needed.

(a) Site ID*	(b) Antenna ID/Terminal **	(c) Quantity	(d) Manufacturer	(e) Model	(f) Antenna/ Terminal Size (meters)	(g) Antenna/Terminal Gain Transmit and/or Receive (dBi at GHz)
Hub	16.4M	1	VERTEX	16.4THC	16.4	(T) 58.6 dBi at 6.175 GHz

B5. Antenna Heights and Maximum Power Limits: (The corresponding antenna ID in tables B4 and B5 applies to the same antenna)

(a) Antenna/Terminal ID**	(b) Antenna Structure Registration No.	Maximum Antenna Height (c) Above Ground (meters)	Maximum Antenna Height (d) Above Mean Sea Level (meters)	(e) Building Height Above Ground Level (meters) ***	(f) Maximum Antenna Height Above Rooftop (meters) ***	(g) Total Input Power at Antenna Flange (Watts)	(h) Total EIRP for all carriers (dBW)
16.4M		17.4	121.0	N/R	N/R	500 W	85.6

Notes: * If this is an application for a VSAT or ESV network, identify the site (Item B1b, Schedule B, Page 1) where each antenna is located or where each terminal will operate. Also include this Site-ID on Schedule B, Page 5.
** Identify each antenna in VSAT/ESV network or multi-antenna station with a unique identifier, such as HUB, REMOTE1, A1, A2, 10M, 12M, 7M, etc. Use this same antenna ID throughout tabels B4, B5, B6, and B7 when referring to the same antenna.
*** Attach sketch of site or exemption, See 47 CFR Part 17.

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE EARTH STATION AUTHORIZATIONS
FCC FORM 312 – Schedule B: (Technical and Operational Description)

B6. Frequency Coordination Limits: Use additional pages as needed.

Hub Station

(a) Antenna/Terminal ID*	(b) Frequency Limits (MHz)	(c) Range of Satellite Arc Eastern Limit**	(d) Range of Satellite Arc Western Limit**	(e) Antenna Elevation Angle Eastern Limit	(f) Antenna Elevation Angle Western Limit	(g) Earth Station Azimuth angle Eastern Limit	(h) Earth Station Azimuth Angle Western Limit	(i)Maximum EIRP Density toward the Horizon (dBW/4kHz)
16.4M	5925-6425	31.5	143	26.3	255.9	125.1	7.4	-2.71

Notes: * Provide the ANTENNA/Terminal-ID from table B4 to identify the antenna to which each frequency band and orbital arc range is associated.

** If operating with geostationary satellites, give the orbital arc limits and the associated elevation and azimuth angles. If operating with non-geostationary satellites, give the notation "NON-GEO" for the satellite arc and give the minimum operational elevation angle and the maximum azimuth angle range.

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE EARTH STATION AUTHORIZATIONS
FCC FORM 312 – Schedule B: (Technical and Operational Description)

Hub

B7. Particulars of Operation (Full particulars are required for each r.f. carrier): Use Additional pages as needed.

(a) Antenna/ Terminal ID*	(b) Frequency Bands (MHz)	(c) T/R Mode **	(d) Antenna Polarization (H,V,I,R)	(e) Emission Designator	(f) Maximum EIRP per Carrier (dBW)	(g) Maximum EIRP Density Per Carrier (dBW/4kHz)	(h) Description of Modulation and Services
16.4M	5925-6425	T	A	36M0G7W	85.6	46.06	QPSK – DIGITAL, VOICE & DATA

Notes: * Provide the ANTENNA/Terminal-ID from table B4 to identify the antenna to which each frequency band and emission is associated. For VSAT or ESV networks, include frequencies and emissions for all HUB and REMOTE units

** Indicate whether the earth station transmits or receives in each frequency band.

FCC 312
Schedule B

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE EARTH STATION AUTHORIZATIONS
(Technical and Operational Description)

(Place an "X" in one of the blocks below)

Remote

B1a. Station Call Sign	B1b. Site Identifier (HUB, REMOTE 1, etc.)	B1c. Telephone Number	B1j. Geographic Coordinates N/S, Deg. – Min. – Sec WW	B1k. Lat./Lon. Coordinates are:
	Remote 1	732-739-2874	Lat. 25 46 29.0 N	☐ NAD-27

B1d Street Address of Station or Area of Operation	B1e. Name of Contact Person

B1f City	B1g County	B1h State	B1i Zip Code	B1l Site Elevation (AMSL)
				meters

B2. Points **of Communications:** List the names and orbit locations of all satellites with which this earth station will communicate. The entry "ALSAT" is sufficient to

Satellite Name and Orbit Location	Satellite Name and Orbit Location	Satellite Name and Orbit Location
INTELSAT 805 in AOR @ 304.5 E. L.		

Satellite Name	List of Destination Points

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE EARTH STATION AUTHORIZATIONS
FCC Form 312 – Schedule B: (Technical and Operational Description)

114. Earth Station Antenna/Terminal Facilities: Use additional pages as needed,

(a) Site ID*	(b) Antenna ID/Terminal **	(c) Quantity	(d) Manufacturer	(e) Model	(f) Antenna/ Terminal Size (meters)	(g) Antenna/Terminal Gain Transmit and/or Receive (dBi at GHz)
Remote 1	Rem 1 MTN-1	25	Sea Tel, Inc.	9697	2.4	(T) 40.8 dBi at 6.175 GHz

B5. Antenna ights and Maximum Power Limits: (The corresponding antenna ID in tables 04 and 05 applies to the same antenna)

(a) Antenna/Terminal ID*	(b) Antenna Structure Registration No.	Maximum Antenna Heigh (c) Above Ground Leve. (meters	Maximum Antenna Heigh (d) Above Mean Sea Level	(e) Building Height Above Ground Level (meters) ***	(f) Maximum Antenna Height Above Rooftop (meters) ***	(g) Total Inpu Power at Antenna Flange (Watts)	(h) Total EIRP for all carriers (dBW)
Rem 1 MTN-1	—	25.6	25.6	NIA	N/A	100	57.8

Notes: * If this is an application for a VSAT or ESV network, identify the site (Item B1b, Schedule B, Page 1) where each antenna is located or where each terminal will operate. Also include this Site-ID on Schedule B, Page 5
** Identify each antenna in VSAT/ESV network or multi-antenna station with a unique identifier, such as HUB, REMOTE1, A1, A2, 10M, 12M, 7M, etc. Use this same antenna ID throughout tabels B4, B5, B6, and B7 when referring to the same antenna
*** Attach sketch of site or exemption, See 47 CFR Part 17.

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE EARTH STATION AUTHORIZATIONS
FCC FORM 312 – Schedule B: (Technical and Operational Description)

Remote

B6. Frequency Coordination Limits: Use additional pages as needed.

(a) Antenna/Terminal ID*	(b) Frequency Limits (MHz)	(c) Range of Satellite Arc Eastern Limit**	(d) Range of Satellite Arc Western Limit**	(e) Antenna Elevation Angle Eastern Limit	(f) Antenna Elevation Angle Western Limit	(g) Earth Station Azimuth angle Eastern Limit	(h) Earth Station Azimuth Angle Western Limit	(i)Maximum EIRP Density toward the Horizon (dBW/4kHz)
Rem 1 MTN-1	6172-6206	41.0	103.0	37.4	50.6	118.1	224.1	-13.61

Notes: * Provide the ANTENNA/Terminal-ID from table B4 to identify the antenna to which each frequency band and orbital arc range is associated.

** If operating with geostationary satellites, give the orbital arc limits and the associated elevation and azimuth angles. If operating with non-geostationary satellites, give the notation "NON-GEO" for the satellite arc and give the minimum operational elevation angle and the maximum azimuth angle range.

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE EARTH STATION AUTHORIZATIONS
FCC FORM 312 – Schedule B: (Technical and Operational Description)

Remote

B7. Particulars of Operation (Full particulars are required for each r.f. carrier): Use Additional pages as needed.

(a) Antenna/ Terminal ID*	(b) Frequency Bands (MHz)	(c) T/R Mode **	(d) Antenna Polarization (H,V,L,R)	(e) Emission Designator	(f) Maximum EIRP per Carrier (dBW)	(g) Maximum EIRP Denmsity Per Carrier (dBW/4kHz)	(h) Description of Modulation and Services
Rem 1 MTN-1	6172-6206	T	A	36M0F8W	57.80	33.80	QPSK – Video, data, voice

Notes: * Provide the ANTENNA/Terminal-ID from table B4 to identify the antenna to which each frequency band and emission is associated. For VSAT or ESV networks, include frequencies and emissions for all HUB and REMOTE units

** Indicate whether the earth station transmits or receives in each frequency band.

SAMPLE REPORT

FREQUENCY COORDINATION AND INTERFERENCE
ANALYSIS REPORT

PREPARED FOR
MARITIME TELECOMMUNICATIONS NETWORK

MIAMI, FL
SATELLITE EARTH STATION ONBOARD VESSEL (ESV)

PREPARED BY
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, Virginia 20147
November 4, 2002

SAMPLE REPORT

TABLE OF CONTENTS

SAMPLE REPORT

1. CONCLUSIONS

AN INTERFERENCE STUDY CONSIDERING ALL EXISTING, PROPOSED AND PRIOR COORDINATED MICROWAVE FACILITIES WITHIN THE COORDINATION CONTOURS OF THE PROPOSED EARTH STATION ONBOARD VESSEL (ESV) DEMONSTRATES THAT THIS SITE WILL OPERATE SATISFACTORILY WITH THE COMMON CARRIER MICROWAVE ENVIRONMENT BASED UPON THE RESTRICTIONS NOTED IN THE SUMMARY OF RESULTS (SECTION 2).

SAMPLE REPORT

2. SUMMARY OF RESULTS

A NUMBER OF GREAT CIRCLE INTERFERENCE CASES WERE IDENTIFIED DURING THE INTERFERENCE STUDY OF THE PROPOSED EARTH STATION ONBOARD VESSEL. EACH OF THE CASES WHICH EXCEEDED THE INTERFERENCE OBJECTIVE ON A LINE-OF-SIGHT BASIS WAS ANALYZED AND RESOLVED USING PROFILES AND THE PROPAGATION LOSSES ESTIMATED USING NBS TN101 (REVISED) TECHNIQUES OR FREQUENCY OFFSET. THE LOSSES AND/OR FREQUECNY OFFSET WERE FOUND TO BE SUFFICIENT TO REDUCE THE SIGNAL LEVELS TO ACCEPTABLE MAGNITUDES IN EVERY CASE. **THE MIAMI** ESV WILL ONLY OPERATE WITHIN THE FOLLOWING FREQUENCY BAND TO ENSURE THAT NO INTERFERENCE WILL OCCUR: **6172-6206** MHZ.

THE FOLLOWING COMPANIES REPORTED POTENTIAL GREAT **CIRCLE** INTERFERENCE CONFLICTS WHICH DID NOT MEET THE OBJECTIVES ON A LINE-OF-SIGHT **BASIS.** WHEN OVER-THE-HORIZON LOSSES AND FREQUENCY OFFSET ARE CONSIDERED ON THE INTERFERING PATHS, SUFFICIENT BLOCKAGE EXISTS TO **NEGATE** HARMFUL INTERFERENCE FROM OCCURRING WITH THE PROPOSED TRANSMIT AND RECEIVE EARTH STATION.

COMPANY

PALM BEACH COUNTY FAC **DEV** & OP
VERIZON PERSONAL COMMUNICATIONS, L.P. (FL)
SOUTH FLORIDA WATER MANAGEMENT DISTRICT
PALM BEACH COUNTY FAC **DEV** & OP
FLORIDA POWER AND LIGHT COMPANY
CINGULAR WIRELESS, LLC - FL RGN
AT&T WIRELESS SERVICES OF FL INC - FL

NO OTHER CARRIERS REPORTED POTENTIAL INTERFERENCE CASES.

SAMPLE REPORT

3. SUPPLEMENTAL SHOWING
RE: PART 25.203(C)

PURSUANT TO PART 25.203(C) OF TI **FCC RULES** *AND* REGULATIONS, THE SATELLITE EARTH STATION PROPOSED IN THIS APPLICATION WAS COORDINATED BY COMSEARCH USING COMPUTER TECHNIQUES *AND* IN ACCORDANCE WITH PART 25 OF THE FCC RULES AND REGULATIONS.

COORDINATION DATA FOR THIS EARTH STATION WAS SENT TO THE BELOW LISTED CARRIERS WITH A LETTER DATED NOVEMBER **4, 2002.**

AT&T WIRELESS SERVICES OF FL INC - FL
CENTRAL FLORIDA CELLULAR TELEPHONE CO
CINGULAR WIRELESS, LLC - FL RGN
FLORIDA CELLULAR SERVICE, LLC
FLORIDA POWER AND LIGHT COMPANY
M/A COM PRIVATE RADIO SYSTEMS, INC.
PALM BEACH *COUNTY* FAC DEV & OP
SOUTH FLORIDA WATER MANAGEMENT DISTRICT
SPRINT FLORIDA, INC.
VERIZON PERSONAL COMMUNICATIONS, L.P.(FL)
WIRELESS ONE HLD CO DBA CELLONE OF SWFLA

SAMPLE REPORT

4. EARTH STATION COORDINATION DATA

THIS SECTION PRESENTS THE DATA PERTINENT TO FREQUENCY COORDINATION OF THE PROPOSED EARTH STATION, WHICH WAS CIRCULATED TO ALL COMMON CARRIERS WITHIN ITS COOR **DINATICN** CONTOURS.

SAMPLE REPORT

SATELLITE EARTH STATION
FREQUENCY COORDINATION DATA
10/31/2002

Company	MTN
Earth Station Name, State	MIAMI, FL
Latitude (DMS) (NAD83)	25 46 29.0 N
Longitude (DMS) (NAD83)	80 9 55.0 W
Ground Elevation AMSL (Ft/m)	0.00 / 0.00
Antenna Centerline AGL (Ft/m)	79.99 / 24.38
Transmit Antenna Type: FCC32	FCC Reference
	32-25LOG (THETA)
6.0 GHz Gain (dBi) / Diameter (m)	40.8 / 2.4
3 dB / 15 dB Half Beamwidth	0.50 / 1.40
Operating Mode	TRANSMIT ONLY
Modulation	ANALOG
Emission / Transmit Band (MHz)	36M0F8W / 6172-6206 MHZ
Max. Available RF Power (dBW)/4 kHz	-7.00
(dBW)/MHz)	17.00
Max. EIRP (dBW)/4 kHz	33.80
(dBW)/MHz)	57.80
(dBW)	0.00
Max permissible Interference Power	
6.0 GHz, 20% (dBW/4 kHz)	-154.0
6.0 GHz, 0.0025% (dBW/4 kHz)	-131.0
Range of Satellite Arc (Geostationary)	
Azimuth Range (Min/Max) Longitude	41.0 W / 103.0 W
Corresponding Elevation Angles	118.1 / 224.1
	37.4 / 50.6
Radio climate	B
Rain zone	2
Max Great circle Coordination Distance (Mi/Km)	
6.0 GHZ	118.9 / 191.3
Precipitation Scatter Contour Radius (Mi/Km)	
6.0 GHz	62.1 / 100.0

Note: Horizon is less than 0.2 degrees at all azimuths

SAMPLE REPORT

Table of Earth Station Coordination Values
10/31/2002

Earth station Name MIAMI FL
Owner MTN
Latitude (DMS) (NAD83) 25 46 29.0 N
Longitude (DMS) (NAD83) 80 9 55.0 W
Ground Elevation (Ft/m) 0.00 / 0.00 AMSL
Antenna Centerline (Ft/m) 79.99 / 24.38 AGL
Antenna Model FCC Reference 32-25LOG(THETA)
Objectives: Transmit -154.0 (dBW /4 kHz) TX Power -7.0 (dBW/4 kHz)

Azimuth (Deg)	Horizon Elevation Angle (Deg)	Antenna Disc. Angle (Deg)	6.0 GHz Antenna Gain (dBi)	6.0 GHz Coordination Distance (Km)
0	0.00	111.98	-10.00	177.2
5	0.00	108.16	-10.00	111.2
10	0.00	104.29	-10.00	111.2
15	0.00	100.31	-10.00	171.2
20	0.00	96.43	-10.00	111.2
25	0.00	92.46	-10.00	171.2
30	0.00	88.49	-10.00	111.2
35	0.00	84.52	-10.00	177.2
40	0.00	80.51	-10.00	111.2
45	0.00	76.64	-10.00	177.2
50	0.00	72.76	-10.00	171.2
55	0.00	68.93	-10.00	117.2
60	0.00	65.11	-10.00	111.2
65	0.00	61.50	-10.00	111.2
70	0.00	51.95	-10.00	117.2
75	0.00	54.53	-10.00	177.2
80	0.00	51.29	-10.00	117.2
85	0.00	48.26	-10.00	171.2
90	0.00	45.49	-9.45	180.0
95	0.00	43.04	-8.85	383.1
100	0.00	40.95	-8.31	186.0
105	0.00	39.29	-7.86	188.4
110	0.00	38.12	-7.53	190.2
115	0.00	31.49	-7.35	191.1
120	0.00	31.42	-7.33	191.3
125	0.00	37.92	-1.47	190.5
130	0.00	38.96	-7.77	188.9
135	0.00	40.51	-8.19	186.6
140	0.00	42.50	-8.71	183.9
145	0.00	44.88	-9.30	180.8
150	0.00	41.58	-9.94	177.6
155	0.00	50.55	-10.00	171.2
160	0.00	53.58	-10.00	177.2
165	0.00	56.11	-10.00	111.2
170	0.00	58.17	-10.00	171.2
175	0.00	59.44	-10.00	111.2
180	0.00	59.87	-10.00	117.2

SAMPLE REPORT

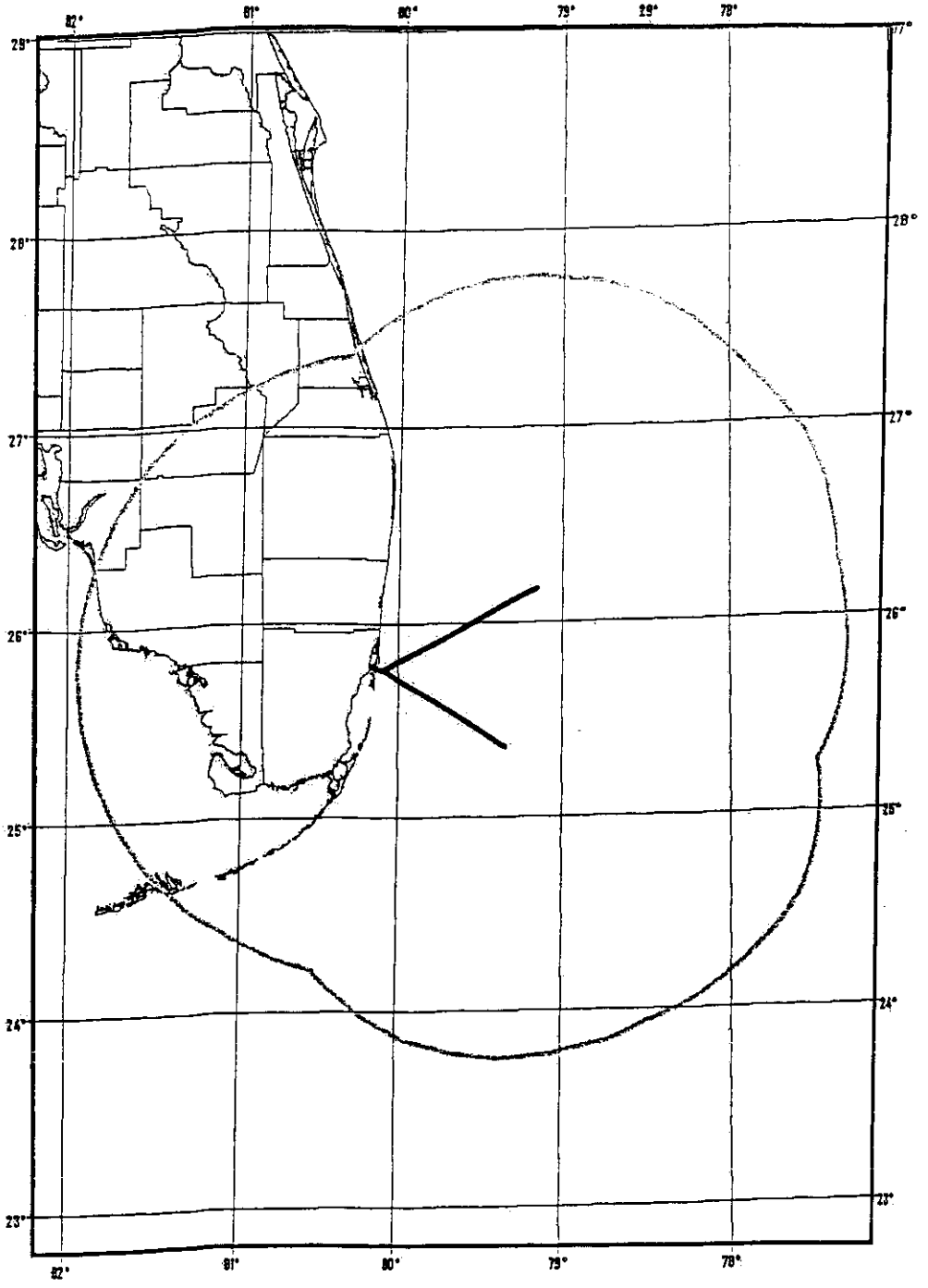
Table of Earth Station Coordination Values
10/31/2002

Earth Station Name **MIAMI** FL
owner MTN
Latitude (DMS) (NAD83) 25 46 29.0 N
Longitude (DMS) (NAD83) 80 9 55.0 W
Ground Elevation (Ft/m) 0.00 / 0.00 AMSL
Antenna Centerline (Ft/m) **79.99 / 24.38 AGL**
Antenna Model FCC Reference 32-25LOG(THETA)
Objectives: Transmit **-154.0** (dBW /4 kHz) TX Power *-7.0* (dBW/4 kHz)

Azimuth (Deg)	Horizon Elevation Angle (Deg)	Antenna Disc. Angle (Deg)	6.0 GHz Antenna Gain (dBi)	6.0 GHz Coordination Distance (Km)
185	0.00	**59.44**	**-10.00**	**177.2**
190	0.00	**58.17**	**-10.00**	**177.2**
195	0.00	**56.29**	-10.00	**177.2**
200	0.00	**54.57**	-10.00	**177.2**
205	0.00	**53.12**	**-10.00**	**177.2**
210	0.00	**51.98**	-10.00	**177.2**
215	0.00	**51.17**	**-10.00**	**177.2**
220	**0.00**	**50.70**	**-10.00**	**177.2**
225	0.00	**50.59**	-10.00	**177.2**
230	0.00	**50.83**	-10.00	**177.2**
235	**0.00**	**51.43**	**-10.00**	**177.2**
240	**0.00**	**52.37**	**-10.00**	**177.2**
245	**0.00**	**53.62**	**-10.00**	**177.2**
250	**0.00**	**55.18**	**-10.00**	**177.2**
255	0.00	**57.00**	**-10.00**	**177.2**
260	**0.00**	**59.06**	**-10.00**	**177.2**
265	**0.00**	**61.33**	**-10.00**	**177.2**
270	0.00	**63.79**	**-10.00**	**177.2**
275	0.00	**66.41**	**-10.00**	**177.2**
260	***0.00***	**69.16**	**-10.00**	**177.2**
285	**0.00**	**72.03**	-10.00	**177.2**
290	0.00	**74.99**	**-10.00**	**177.2**
295	**0.00**	**78.02**	**-10.00**	**177.2**
300	0.00	**81.12**	**-10.00**	**177.2**
305	**0.00**	**84.25**	**-10.00**	**177.2**
310	**0.00**	**87.41**	-10.00	**177.2**
315	**0.00**	**90.59**	**-10.00**	**177.2**
320	0.00	**93.76**	**-10.00**	**177.2**
325	0.00	**96.91**	**-10.00**	**177.2**
330	**0.00**	**100.03**	-10.00	**177.2**
335	0.00	**103.11**	-10.00	**177.2**
340	0.00	**106.12**	-10.00	**177.2**
345	0.00	**109.04**	-10.00	**177.2**
350	**0.00**	**111.87**	***-10.00***	**177.2**
355	0.00	**114.58**	**-10.00**	**177.2**

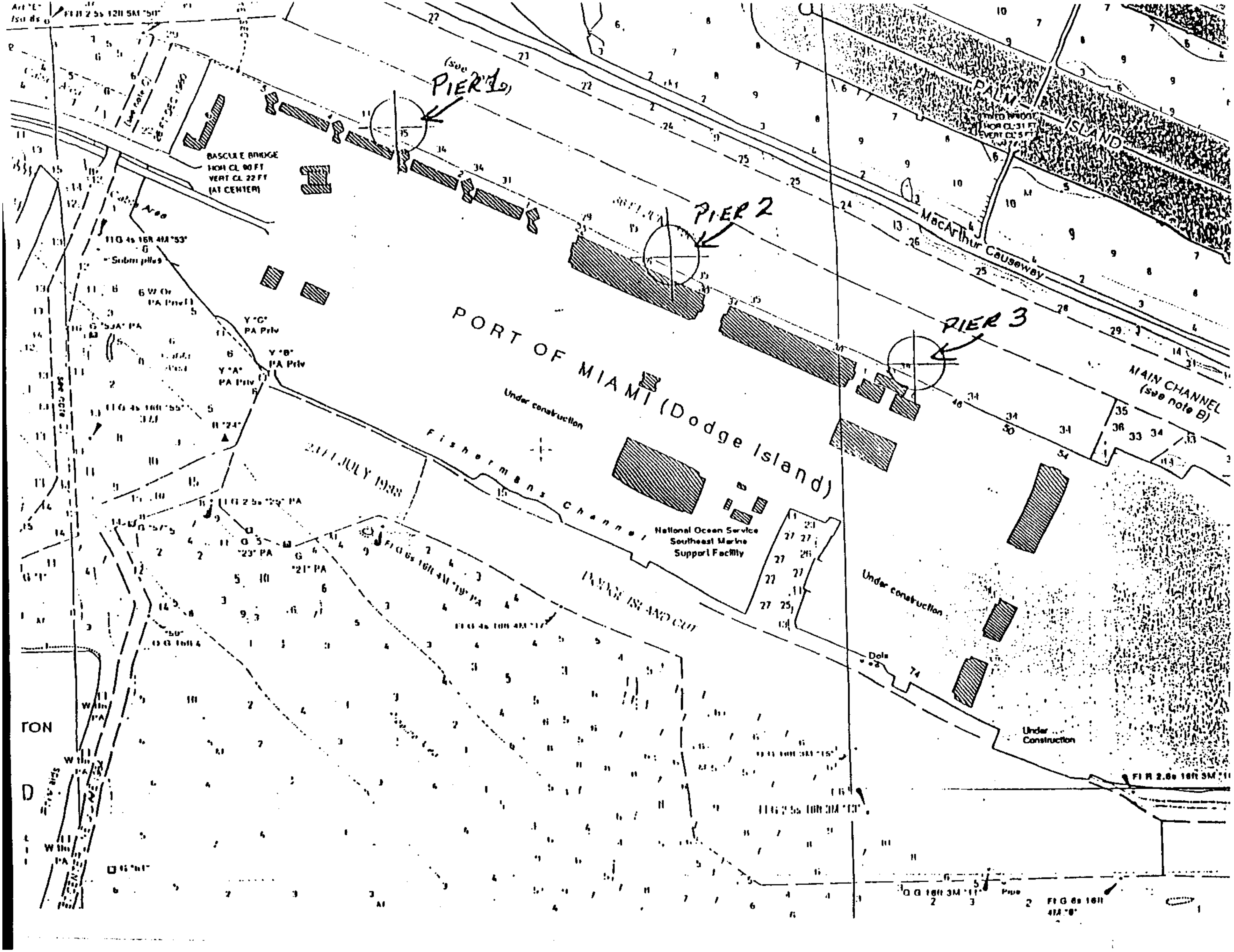
SAMPLE REPORT

MIAMI ESV GREAT CIRCLE **COORDINATION** CONTOUR



COMSEARCH

MIAMI Coordination Contour w/ Entensions


PIER 1 (see
PIER 2
PIER 3
PORT OF MIAMI (Dodge Island)
MacArthur Causeway
PALM ISLAND
MAIN CHANNEL (see note B)
Fishermans Channel
Under construction
Under construction
Under Construction
National Ocean Service Southeast Marine Support Facility
BASCULE BRIDGE HOR CL 90 FT VERT CL 22 FT (AT CENTER)
Y "C" PA Priv
Y "B" PA Priv
Y "A" PA Priv
"23" PA
"21" PA
Dols
TON
D

SAMPLE REPORT

Miami ESV Route Break Points

ID	SITE1	Latitude (deg)	(min)	(sec)	Longitude (deg)	(min)	(sec)
1	BrkPnt 1	25	46	47.35	80	10	53.40
2	BrkPnt 2	25	46	37.35	80	10	9.16
3	BrkPnt 3	25	46	26.35	80	9	48.16
4	BrkPnt 4	25	46	11.35	80	8	56.16
5	BrkPnt 5	25	46	1.35	80	8	22.16
6	BrkPnt 6	25	46	41.35	80	7	35.16
7	BrkPnt 7	25	45	21.35	80	6	54.16
8	BrkPnt 8	25	45	32.35	80	5	54.15
9	BrkPnt 9	26	10	13.30	79	9	10.96
10	BrkPnt 10	25	21	25.40	79	20	4.97

SAMPLE REPORT

5. CERTIFICATION

I HEREBY CERTIFY THAT I AM THE TECHNICALLY QUALIFIED PERSON RESPONSIBLE FOR THE PREPARATION OF THE FREQUENCY COORDINATION DATA CONTAINED IN THIS APPLICATION, THAT I AM FAMILIAR WITH PARTS 101 AND 25 OF THE FCC RULES AND REGULATIONS, THAT I HAVE EITHER PREPARED OR REVIEWED THE FREQUENCY COORDINATION DATA SUBMITTED WITH THIS APPLICATION, AND THAT IT IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

BY: _____

JEFFREY E. COWLES
SENIOR FREQUENCY COORDINATOR
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, Virginia 20147

DATED: November 4, 2002