

NOAA VSAT Implementation

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Office of Marine and Aviation
Operations

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Project Goals

- Provide secure 24/7 WAN connection between deployed ship networks & NOAA Trusted Campus Network
- Enhance safety, operational efficiency and crew morale
- Leverage new construction & conversion funding sources, PAC funds, etc. to fund initial outlays
- Utilize phased approach to spread acquisition costs over several fiscal years. Initial goal: 2 systems in year one

VSAT Service Notes

- T1 WAN connection from the Earth-station/Gateway to NOAA Network Operations Center, Silver Spring
- Each ship operates within the NOAA Trusted Campus Network via iDirect network and is protected by the NOAA Firewall
- Dedicated bandwidth and shared segments with minimum 128 kbps up/down connections for each vessel
- Voice over IP phone service to be provided for

Cost / Benefit

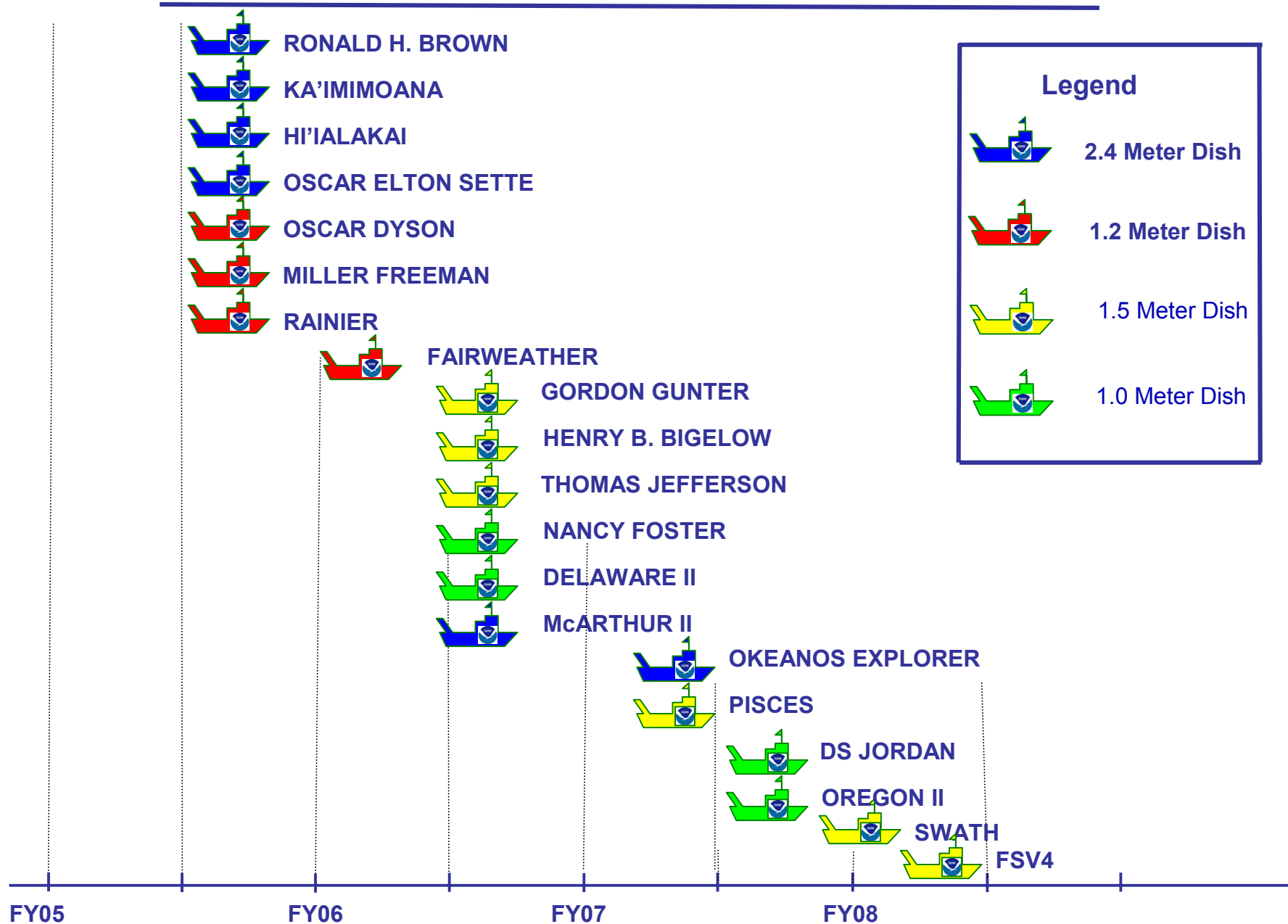
- Costs:
 - FY04 Fleetwide Inmarsat: \$330K
 - VSAT Acquisition/Implementation: \$80K - \$250K per vessel
 - VSAT Bandwidth: \$4K/vessel/month
 - Ongoing maintenance & support: TBD
- Benefits:
 - “Always connected” ships at sea
 - Safer & more effective ops; improved morale
 - Better value

Cost Estimate* FY05-08

Year	FY 2005	FY 2006	FY 2007	FY 2008
Equipment	\$988,000	\$830,000	\$370,000	\$250,000
Bandwidth	\$0	\$125,000	\$400,000	\$600,000
Year Total	\$988,000	\$955,000	\$770,000	\$850,000

* Funding assumed from all sources: NMAO, MOC, Programs

NMAO VSAT Acquisition Plan FY 2005 – FY 2008



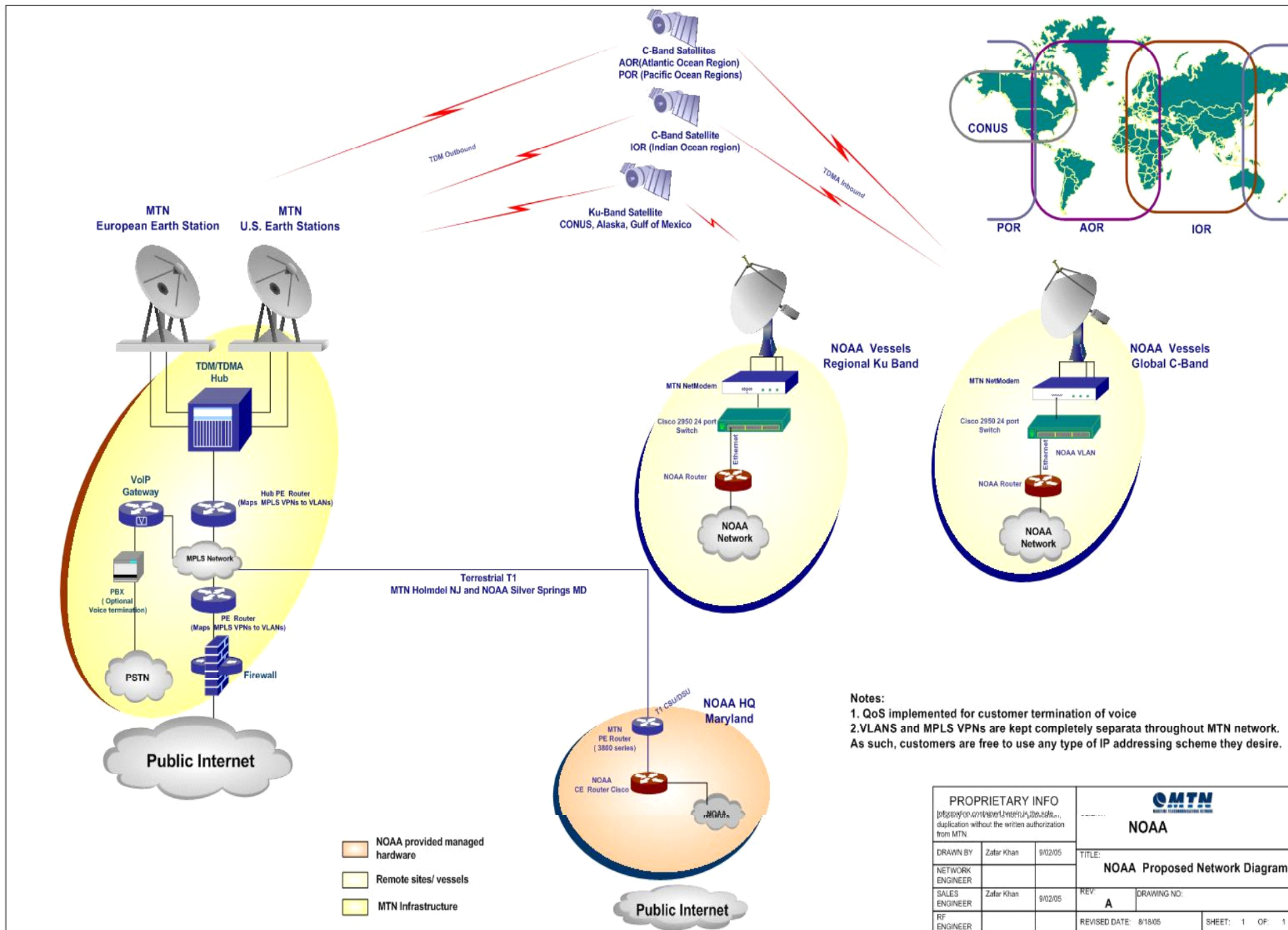
Project Timeline

Activity Name	Start Date	Finish Date	2005				2006												2007			
			S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A
AGS VSAT Award	9/12/05		◆																			
RB Install	2/15/06							◆														
RA Install	3/16/06								◆													
OD Install	3/20/06								◆													
MF Install	4/10/06									◆												
TAGOS Mast Design	5/15/06	9/22/06																				
MTN Spares Award	7/6/06												◆									
Marshall Ku Award	9/14/06														◆							
Bandwidth & services Award	1/15/07																			◆		
Installations	12/4/06	4/30/07																				
			S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A

Fleet Configuration



- Coastal ships in the Ku-band footprint utilize 1.0, 1.2 & 1.5 meter dish
- Global & Deep ocean ships utilize 2.4 meter C-band dish
- *Okeanos Explorer* will utilize 3.7 meter dish for live television broadcast



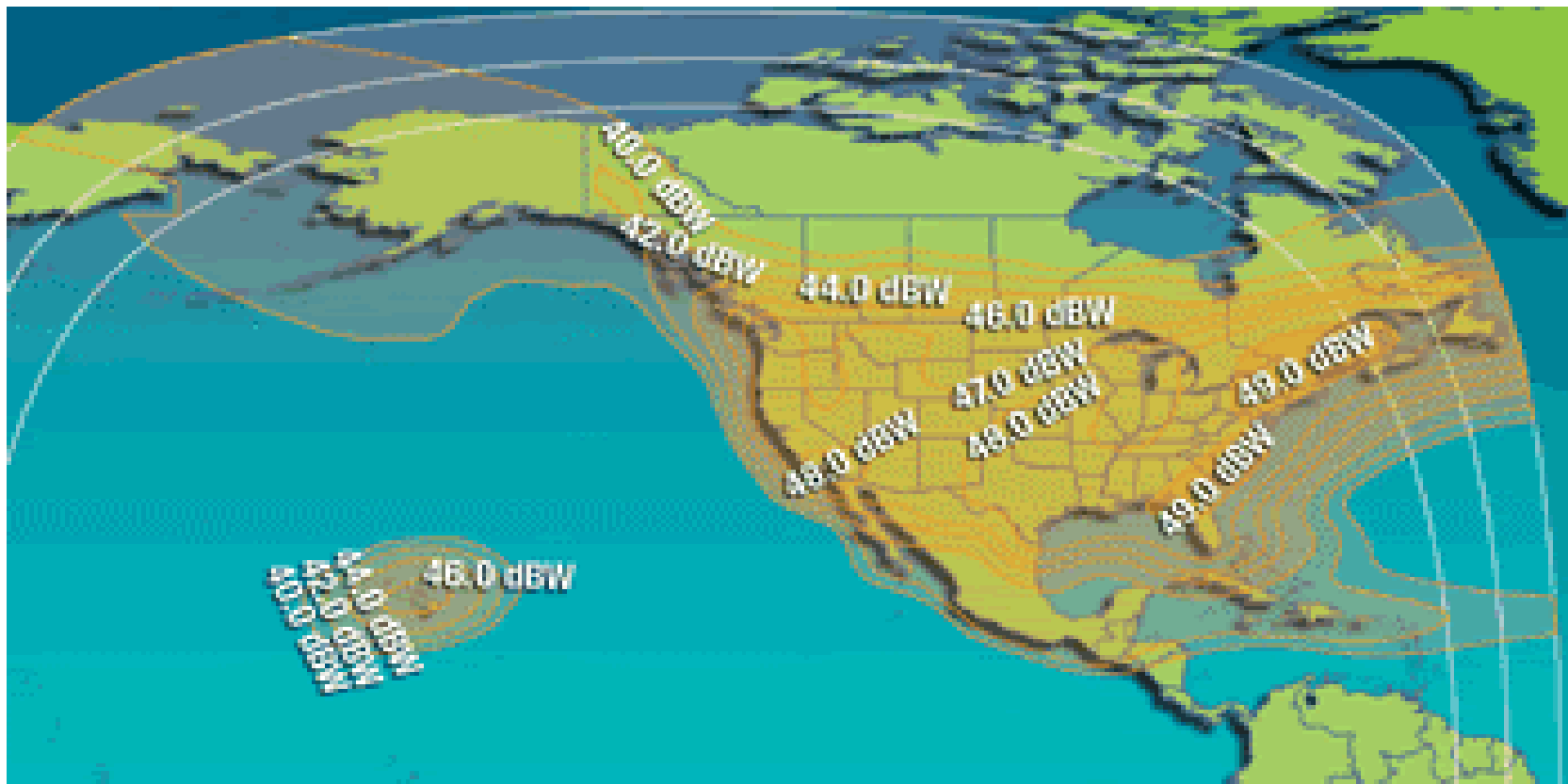
PROPRIETARY INFO <small>Information contained herein is the property of MTN and is not to be distributed, copied, or used in any manner without the written authorization of MTN.</small>			 NOAA	
DRAWN BY	Zafar Khan	9/02/05	TITLE:	
NETWORK ENGINEER			NOAA Proposed Network Diagram	
SALES ENGINEER	Zafar Khan	9/02/05	REV: A	DRAWING NO:
RF ENGINEER			REVISED DATE: 8/18/05	SHEET: 1 OF 1

Ku-Band System Selection

- Orbit AL-7104 or SeaTel 4996 1.2 m antenna
- Considerations: Size, weight, performance, support, cost
- Orbit AL-7104 1.2 m antenna w/ Codan 8W BUC selected



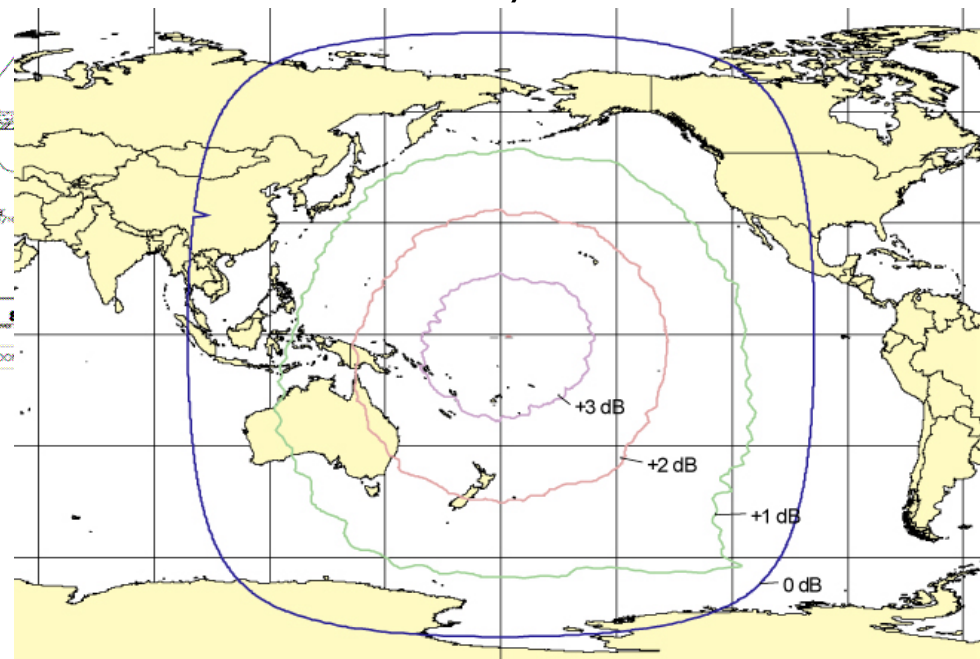
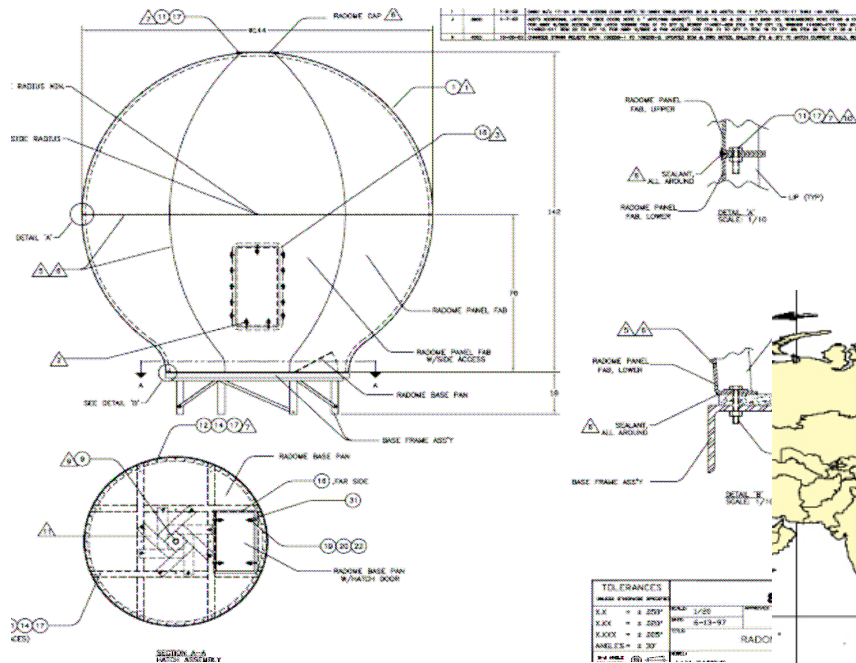
FOOTPRINT: LA-7 Ku-Band Coverage



C-band System Selection

SeaTel 9797, 2.4 m
Antenna

Intelsat 701 Satellite



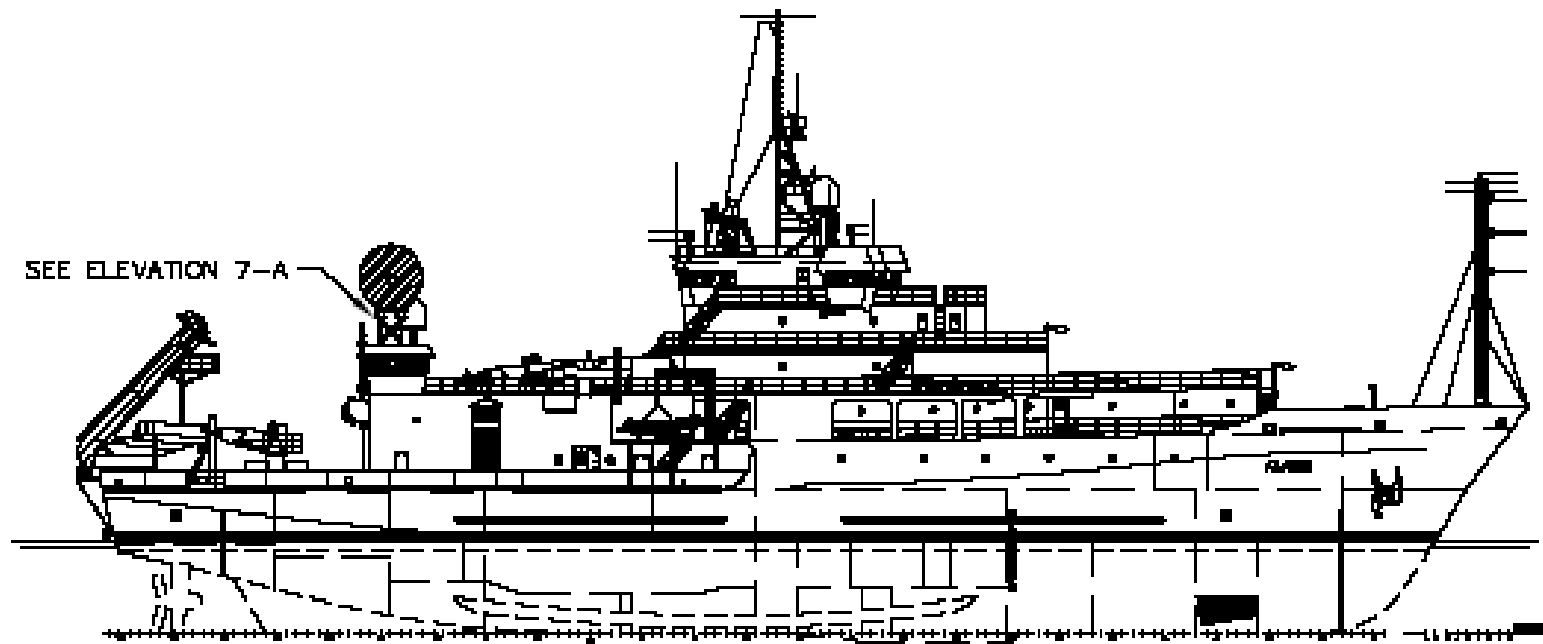
VSAT Systems

- C-Band:
 - SeaTel 9797 2.4 m dish w/Advantech 20W BUC
- Ku-Band:
 - SeaTel 6006 1.5 m dish w/ Codan 16 W BUC
 - Orbit AL-7104 1.2 m dish w/ Codan 8W BUC
 - SeaTel 4006 1.0 m dish w/ Codan 8 W BUC
- BDE:
 - iDirect Netmodem, laptop PC, spectrum

Implementation

- VSAT Acquisition
- Shipcheck
- Weight & Stability study
- Ship modification design
- Bandwidth acquisition
- VSAT installation by vendor
- Onboard training & testing
- Service Level Agreement or in house support

Ron Brown Installation



OUTBOARD PROFILE 3-B

R/V ATLANTIS

$1/32" = 1'$

Rainier Installation



Operational Notes

- Orbit reliability:
 - 2 of 3 failed out of the box or soon after installation
 - Six field service trips to *Miller Freeman & Oscar Dyson* in five months
 - Spares availability an issue
- SeaTel 9797: rock solid
- Bandwidth usage:
 - Adequate for ship use