17th COAST GUARD DISTRICT ENFORCEMENT REPORT

01 DEC 00 - 31 MAR 01

Prepared By:

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Seventeenth Coast Guard District
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Report Available at NPFMC Web Site:
http://www.fakr.noaa.gov/npfmc/Coast%20Guard%20Reports/uscgrpt.htm

Table of Contents

Figures

Tables

List of Abbreviations

CFVS – Commercial Fishing Vessel Safety
EEZ- Economic Exclusive Zone
HC-130 – USCG Fixed-Wing Aircraft
WHEC/WMEC – High/Medium Endurance Cutters
HH65/60 – CG helicopter
IPHC- International Pacific Halibut Commission
MBL – US/Russian Maritime Boundary
CA- Canada
WPB- Coast Guard patrol boat
POB - Person On Board
SAR – Search and Rescue
CGC- Coast Guard Cutter
F/V- Fishing vessel
M/V- Motor vessel
HSDN – High Seas Drift Net
RS- Russia
C/P- Catcher/Processor

I. High Seas Drift Net Enforcement

A North Pacific Anadromous Fish Commission (NPAFC) planning meeting took place this reporting period in Vancouver Island, B.C. Canada (CA) committed to 200-plus hours with a CP-140 Aurora deployed from Shemya in April. The CG committed to host a joint operations planning group in Juneau during the same time period. Russia (RS) will participate in the joint planning group. RS also committed to host an enforcement evaluation and coordination meeting in Petropavlosk-Kamchatsky in May of this year.

An CG HC-130 conducted the first HSDN patrol of the season on 14 March 2001 with no sightings. Subsequent CG patrols are scheduled to begin in May following CA deployment. 2 CA Aurora 140's are scheduled to begin patrolling on 5 April 2001.

II. US/Russian Maritime Boundary Enforcement

Since late January, no activity has been detected on the MBL despite the fact that the ice edge did not advance far enough south to preclude fishing.

- Coast Guard HC-130's flew 25 sorties totaling 156.9 hours (16 sorties in Dec, 8 sorties in Jan and 1 in Feb)
- Coast Guard WHEC/WMECs patrolled the MBL for 8 days
- On 28 December 2000, Coast Guard aircraft detected 30 vessels fishing within 20 NM of the MBL in the RS EEZ, the busiest day of the month
- On 21 January 2001, 19 vessels were detected by a Coast Guard HC-130 flight fishing within 20 NM of the MBL in the RS EEZ

Figure 1. 28 Dec 2000 MBL Scatter Plot of Aircraft Sightings

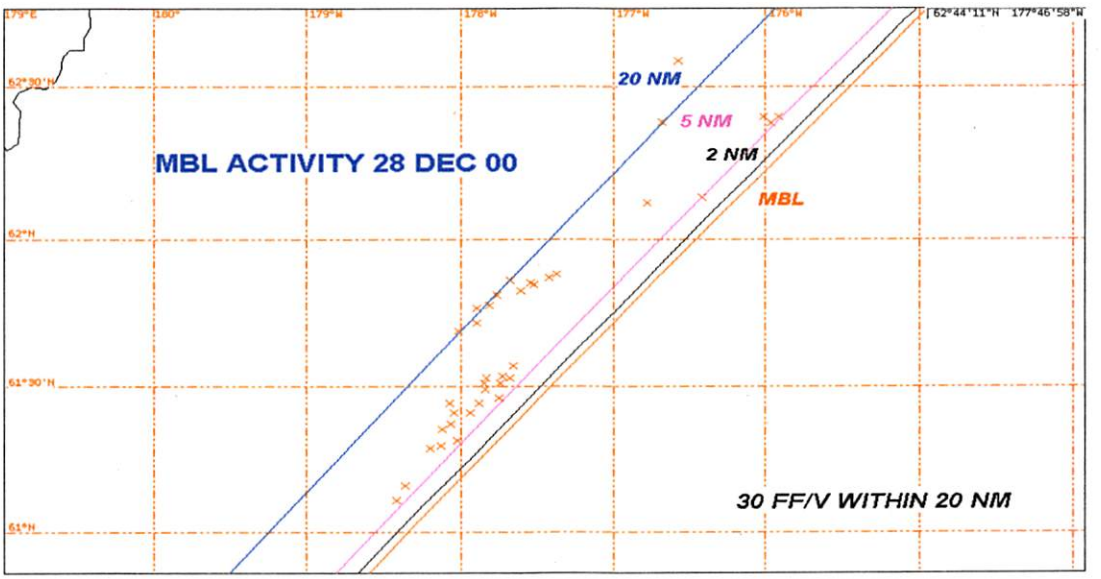
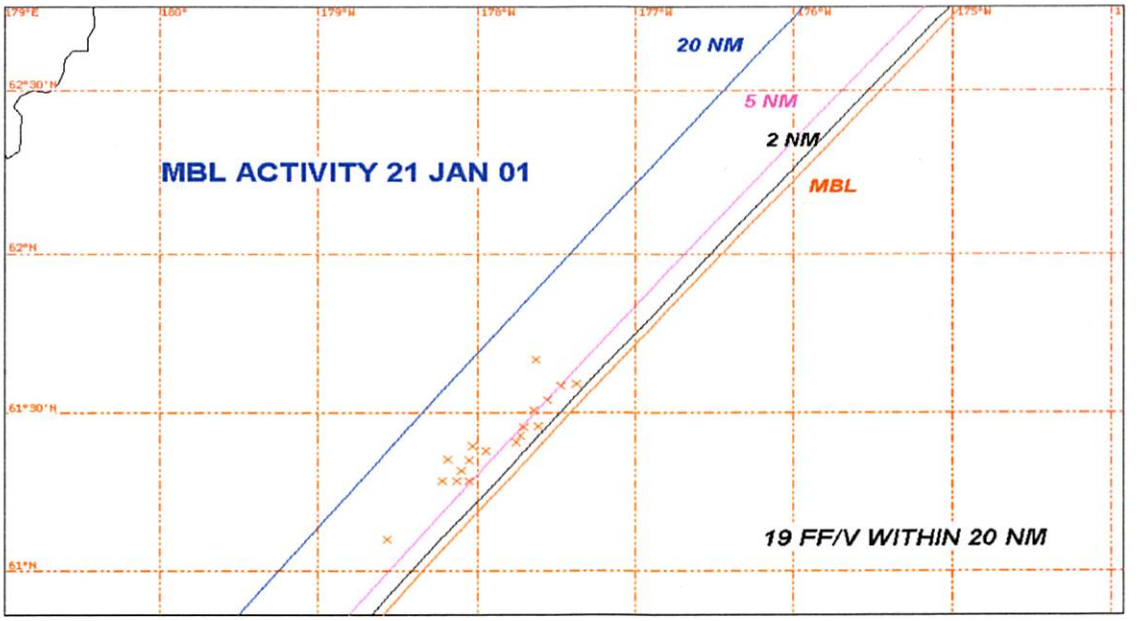


Figure 2. 21 Jan 2001 MBL Scatter Plot of Aircraft Sightings



III. Donut Hole

There were no fishing vessels scheduled to conduct trial fishing in the Donut Hole for the reporting period. In addition, no fishing activity was observed during routine aircraft surveillance.

IV. IFQ At-Sea/Dockside Enforcement

D17 conducted an IFQ Pulse Operation from 13-18 March 2001 coinciding with the start of the 2001 season. 9 cutters, Air Station Kodiak and Air Station Sitka aircraft, and 10 shore based units participated. This pulse operation promoted fishing vessel safety, rapid SAR response, and law enforcement presence. Overall, CG IFQ effort from March 15-31 was:

- 22 IFQ boardings were conducted at-sea
- 44 dockside offloads were monitored
- 106 hours were spent surveilling ports for illegal IFQ activity
- 7 sorties for a total of 18.5 aircraft hours from Kodiak and Sitka were flown in support of IFQ
- 12 CFVSA examinations resulting in 7 CFVSA decals

There was 1 at- sea violation for high grading and 2 dockside violations, one for a 15% overage and the other for failure to maintain a proper halibut log. No evidence of early fishing was detected.

V. Tanner and Opilio Crab Fisheries

For the first time in ten years, the Kodiak and South peninsula Tanner Crab fisheries opened concurrently with the Bering Sea Opilio Crab fishery. The Coast Guard's proactive efforts for the Tanner Crab fisheries included:

- MSO Fishing Vessel safety outreach to Kodiak, Akutan, Larsen Bay, Sand Point, Dutch Harbor, and King Cove
- Pre-staging of an HH-65 helicopter in Cold Bay for SAR coverage near South peninsula fishing area
- Ready HH-60 in Kodiak for SAR coverage near Kodiak
- Positioning of an WMEC for SAR coverage near South peninsula
- Positioning of a WPB for SAR coverage near Kodiak fishing area

Overall, CG effort was as follows:

- 3 Coast Guard cutters patrolled for a total of 14 days
- Coast Guard helicopters flew 6 sorties for a total of 15.5 hours

The Coast Guard's proactive efforts for the Bering Sea Opilio fishery included:

- Positioning of one WHEC and one WMEC for SAR coverage
- WHEC equipped with HH65 helicopter
- Pre-staging of an HH-60 in St Paul for SAR coverage

Overall, CG effort was follows:

- 2 Coast Guard cutters patrolled for a total of 25 days
- HC-130's flew 30 sorties for a total of 206.7 hours
- HH-60 helicopter flew 13 sorties for a total of 36.8 hours

Only 7 of the 212 registered vessels began fishing on opening day while the remaining fleet participated in a 17- day strike. The Coast Guard maintained cutter and aircraft coverage both during and following the strike. The resolution of the strike was marked by inclement weather and heavy seas, both of which contributed to vessel damage and crew injuries. Heavy seas knocked out pilot house windows of two vessels and another vessel lost its steering. Also, two crewmembers were medevaced during the fishery, one after suffering a partially amputated arm, and the other for an injured hand.

335 vessels were checked by CG fishing vessel examiners prior to the Tanner and Opilio crab openers. These checks were conducted in Dutch Harbor, Sand Point, Kodiak, Akutan, Larsen Bay, and King Cove and stressed lifesaving equipment. Damage control/stability sessions were also conducted in Dutch Harbor and Kodiak, for 70 participants. 25 CFVSA decals were issued and the 7 vessels that received Captain of the Port holds for discrepancies were corrected in time for the opener.

VI. CG Commercial Fishing Vessel Safety/Search and Rescue Cases

CGD17 CFVS/Search And Rescue Case Summary						
Date	**Vessel**	**Fishery**	**POB**	**Death**	**Vsl Loss**	**Cause**
1/19/01	Miss Maria	Pacific Cod	4	0	Y	Vessel took on water in Mukusin Bay. CG dispatched 2 helos and HC-130 to assist. Crew abandoned ship onto life raft. HH60 hoisted crewmembers from nearby beach. Vessel sank.
1/20/01	Lady L.	Crab	4	0	Y	Vessel took on water 53 NM northeast of Kodiak. CG dispatched 1 helo to assist. Master initially refused CG assistance. HH60 staged at Gore Point in case F/V Lady L. needed further assistance Vessel later reported taking on water. HH60 re-launched and hoisted 4 crewmembers from sinking vessel. Vessel sank.
1/30/01	Veter	Pacific Cod	3	0	Y	Vessel ran aground at Evans Point in Prince William Sound. CG dispatched HH60 to assist. CGC Mustang diverted to assist. F/V Red and F/V Helion arrived to assist. 3 POB abandoned ship and were recovered by F/V Helion. Vessel sank.
2/8/01	Sagacious	Rockfish	2	0	N	Vessel became disabled adrift near Pennock Island, SEAK. CGC Acushnet diverted to assist. CG 47' small boat relieved tow and moored vessel in Ketchikan.
2/08/01	Excell	Pacific Cod	3	0	N	Vessel took on water 22 NM south of Kodiak. CG dispatched HH60 to assist. HH60 hoisted 3 crewmembers. Vessel ran aground but did not sink.
2/27/01	American Eagle	Pacific Cod	5	0	N	Vessel disabled 200 yards from Lone Rock near Seward. O/O restarted engine and proceeded to Seward. CGC Mustang diverted to assist. Vessel disabled again and was towed safely to Seward by tug vessel with CGC Mustang escorting.
2/07/01	Amber Dawn	Pacific Cod	5	2	Y	F/V Katie Ann reported sinking of vessel and was able to recover 3 crewmembers. CG dispatched HH60 and HC130 to search for remaining persons. F/V's Zenith, Intrepid, & Melissa Beth assisted with search. Flooding of lazaret was believed to be cause of sinking. Two lives lost, vessel sank.

F/V Arctic Rose Case

Coast Guard North Pacific SAR Coordination Center in Juneau received a 406 MHZ EPIRB signal from F/V Arctic Rose on Monday, 2 April at 3:35 AM. The EPIRB signal was located 205nm NW of St. Paul Island. Coast Guard immediately launched an HC-130 from Air Station Kodiak, diverted CGCs BOUTWELL and POLAR STAR (both with embarked helos), and forward deployed an HH-60 helicopter to St. Paul to be available for recovery operations.

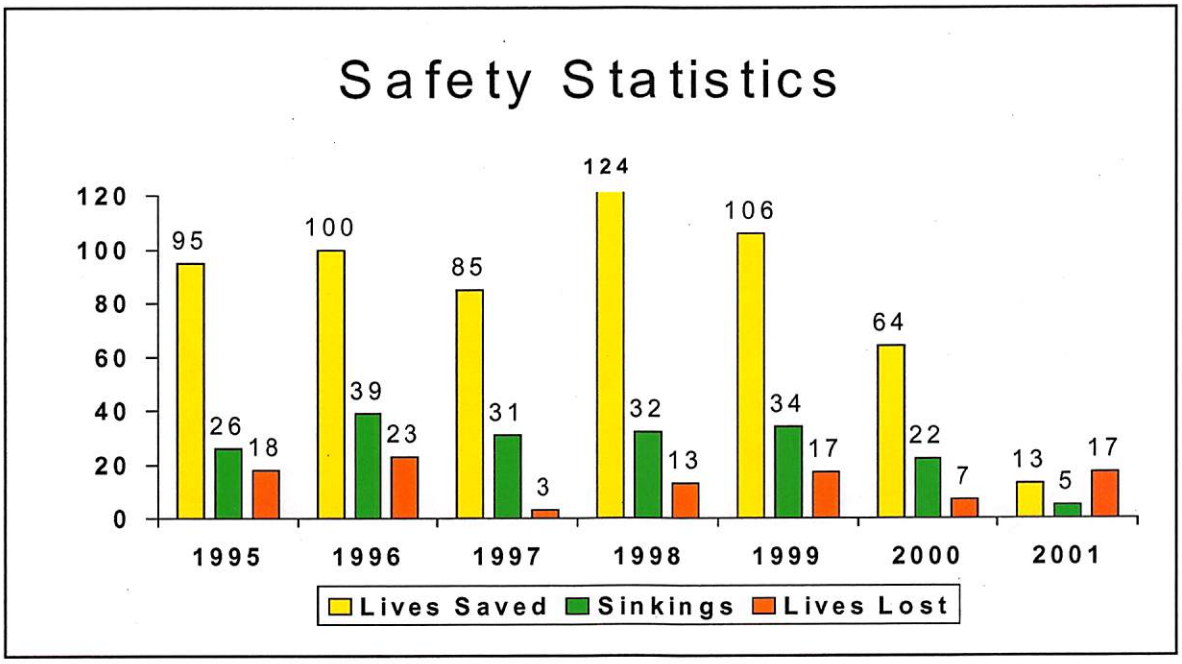
F/V Alaskan Rose reportedly was within seven miles of the F/V Arctic Rose and diverted to assist. During the morning of 2 April, F/V Alaskan Rose located debris, empty survival suits, and two persons in the water. Both were deceased. F/V Alaskan Rose recovered one person in a survival suit (later determined to be the master) but was unable to recover the other body, which was not in a suit.

Also that morning, the CG HC-130 sighted the empty life raft from the Arctic Rose. This was subsequently confirmed empty by the Alaskan Rose, and recovered. A persistent and heavy oil sheen was observed in the search area, along with a debris field of baseball bats, wood, and other items. As the search continued, weather on scene deteriorated to winds of 40kts and seas of 20 ft. Heavy icing was a major concern for the searching ships, and Alaskan Rose eventually had to depart the area to seek a lee.

Coast Guard air and surface units continued their search effort throughout the day of 4 April. Only debris and small items from Arctic Rose were recovered. No other crewmen were located. The Coast Guard suspended the search on the evening of 4 April, after covering the 2,500 square mile primary search area numerous times. The upper limit of expected survival time for a fit person in a functional survival suit in 35 degree water is 36 hours.

The Commandant of the Coast Guard has convened a four member formal board of investigation, to be headed by Captain Ron Morris. The Board is to begin its work in Alaska the week of 9 April; its report is expected to be available to the public within a year.

Figure 3. Historical Overview of CFVS Statistics



*There were 17 lives lost, 13 lives saved, and 5 vessel losses during this reporting period. Lives saved reflect direct CG participation in the SAR case.

VII. CGD17 Boarding Statistics

The Coast Guard conducted a comparable number of at sea boardings to last year's reporting period and observed a similar violation rate. Boarding data is shown in the following tables:

Figure 4. Boardings by Year

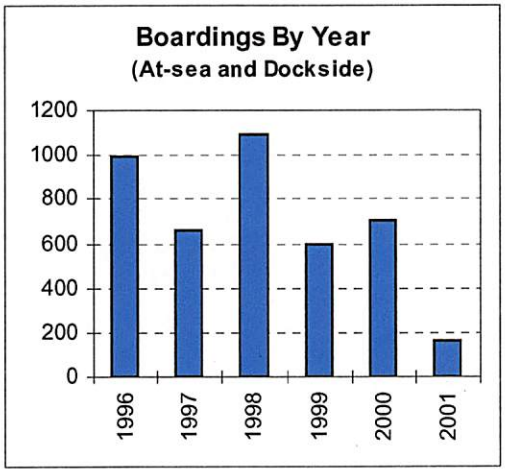
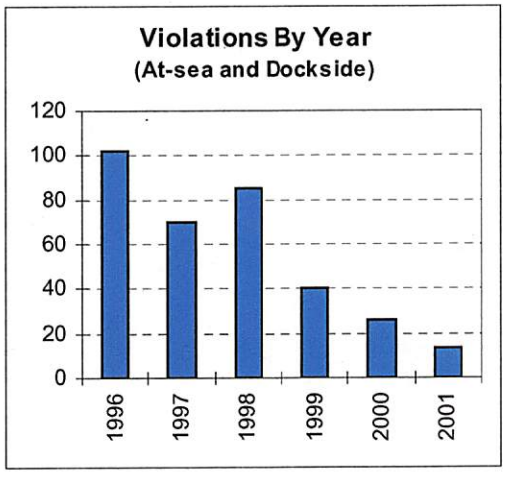


Figure 5. Violations by Year



DEC 1999 - MAR 2000		DEC 2000 - MAR 2001	
F/V Boardings (at sea):	120	F/V Boardings (at sea):	118
IFQ Monitors (dockside):	33	IFQ Monitors (dockside):	44
Boarding/monitor w/fisheries vio's:	14	Boarding/monitor w/fisheries vio's:	15
Violation Rate:	9.1%	Violation Rate:	9.2%

VIII. Steller Sea Lions

The CG continued monitoring critical habitat areas (CHA) with cutter and aircraft. CG effort for the reporting period is as follows:

- Coast Guard HC-130's flew 27 sorties totaling 123.8 hours
- Coast Guard helicopters flew 40 sorties totaling 187.4 hours
- Coast Guard WHEC/WMEC's surveilled CHA for 2572.8 hours

One F/V was sighted by an HC-130 aircraft and was issued a violation for fishing inside the 3NM no-fishing zone around Anagaksik Island.

IX. Miscellaneous Admin

CG officers participated in the US-RS Intergovernmental Consultative Committee on fisheries in Seattle, WA in January. The CG presented an overview of CG enforcement effort along the US-RS MBL in 2000 and cooperative activities of RS Federal Border Service.

Appendix A

Boardings without Violations

DATE	UNIT	VESSEL NAME	VESSEL TYPE	FISHERY	AREA
12/7/00	Mustang	Nuka Island	Pot Boat	No Product	N/A
1/20/01	Mellon	Ms Amy	Trawler	Pacific Cod	517
1/21/01	Mellon	Defender	Trawl, C/P	Pacific Cod	509
1/24/01	Alex Haley	Majesty	Trawler	Pollock	610
1/26/01	Alex Haley	Miss Brenda	Trawler	Pollock	610
1/26/01	Liberty	Skipjack	Dive Boat	Sea Urchin	State
1/26/01	Alex Haley	Aleutian Belle	Trawler	Pollock	610
1/26/01	Alex Haley	Marauder	Trawler	Pollock	610
1/26/01	Mellon	Clipper Epic	Longliner	Pacific Cod	509
1/26/01	Alex Haley	Annette	Trawler	Pollock	610
1/26/01	Alex Haley	Advancer	Trawler	Pollock	610
1/26/01	Alex Haley	Defender	Trawler	Pollock	610
1/27/01	Alex Haley	Celtic	Trawler	Pollock	610
1/27/01	Alex Haley	Heather Margene	Trawler	Pollock	610
1/27/01	Alex Haley	Tern	Trawler	Pollock	610
1/29/01	Mustang	Chesapeak	Pot Boat	Pacific Cod	630
1/30/01	Mustang	Red	Longliner	Pacific Cod	630
1/30/01	Alex Haley	Jericho	Longliner	Pacific Cod	630
1/30/01	Mellon	Bristol Explorer	Trawler	Pollock	509
1/30/01	Mellon	Columbia	Trawler	Pollock	509
1/30/01	Mustang	Veder	Longliner	Pacific Cod	630
1/31/01	Mellon	American No.1	Trawl, C/P	Rock Sole	509
2/1/01	Juneau	Kil Ana	Troller	No Product	650
2/10/01	Alex Haley	Dakota	Longliner	Pacific Cod	630
2/10/01	Alex Haley	Echo Belle	Pot Boat	Pacific Cod	630
2/11/01	Alex Haley	Sun Runner	Longliner	Pacific Cod	630
2/12/01	Roanoke	Chanticleer	Pot Boat	Pacific Cod	630
2/12/01	Alex Haley	Golden Fleece	Trawler	Rex Sole	630
2/12/01	Alex Haley	Rosella	Trawler	Rex Sole	630
2/12/01	Alex Haley	St Patrick	Trawler	Pacific Cod	630
2/14/01	Roanoke	Joann Marie	Longliner	Pacific Cod	630
2/14/01	Roanoke	Almaz	Longliner	Pacific Cod	630
2/14/01	Roanoke	Deliverance	Pot Boat	Pacific Cod	630
2/14/01	Roanoke	Laura S	Pot Boat	Pacific Cod	630
2/14/01	Roanoke	Monarque	Pot Boat	Pacific Cod	630
2/17/01	Storis	Patience	Pot Boat	Pacific Cod	610
2/18/01	Storis	North Cape	Longliner	Pacific Cod	509
2/19/01	Storis	Amber Dawn	Trawler	Pollock	509
2/20/01	Storis	Alaska Rose	Trawler	Pollock	509
2/21/01	Storis	Enterprise	Trawler	Rock Sole	509
2/21/01	Storis	Golden Alaska	Trawl, C/P	Pollock	509
2/25/01	Storis	Predator	Trawler	Pollock	509

DATE	UNIT	VESSEL NAME	VESSEL TYPE	FISHERY	AREA
2/25/01	Storis	Walter N	Trawler	Pollock	509
2/25/01	Storis	Raven	Trawler	Pollock	509
2/25/01	Storis	Arctic Rose	Trawler	Rock Sole	509
2/26/01	Storis	Nordic Fury	Trawler	Pollock	509
2/27/01	Storis	Kodiak Enterprise	Trawler	Pollock	509
3/3/01	Mustang	Shadow Fax	Seiner	Herring	State
3/3/01	Mustang	Shady Lady	Seiner	Herring	State
3/7/01	Storis	Defender	Trawler	Rock Sole	509
3/14/01	Roanoke	Monarque	Pot Boat	Pacific Cod	630
3/14/01	Roanoke	Almaz	Longliner	Pacific Cod	630
3/14/01	Roanoke	Deliverance	Pot Boat	Pacific Cod	630
3/14/01	Roanoke	Laura S	Pot Boat	Pacific Cod	630
3/14/01	Sweetbrier	Endeavour	Longliner	Halibut	2A
3/14/01	Anacapa	Dutch Treat	Charter	No Product	650
3/14/01	Roanoke	Joann Marie	Longliner	Pacific Cod	630
3/15/01	Liberty	Silver Tip	Longliner	Halibut	2C
3/15/01	Liberty	Mongoose	Longliner	Halibut	2C
3/15/01	Liberty	Sundee Lynn	Longliner	Halibut	2C
3/15/01	Anacapa	Carolyn Ann	Longliner	Halibut	2C
3/15/01	Anacapa	Nikka	Longliner	Halibut	2C
3/15/01	Munro	Beauty Bay	Trawler	Pacific Cod	513
3/15/01	Liberty	Slayer	Longliner	Halibut	2C
3/16/01	Naushon	Baranof	Longliner	Halibut	2C
3/16/01	Liberty	Shari Marie	Longliner	Halibut	2C
3/16/01	Naushon	Miracle	Longliner	Halibut	2C
3/16/01	Liberty	Vulcan	Longliner	Halibut	2C
3/16/01	Naushon	Towego	Longliner	Halibut	2C
3/16/01	Acushnet	Silver Lady	Longliner	Halibut	3A
3/16/01	Liberty	Marchele	Troller	Salmon	State
3/16/01	Liberty	Lady Barbara	Longliner	Halibut	2C
3/16/01	Anacapa	Summer Breeze	Longliner	Halibut	2C
3/17/01	Munro	American Beauty	Trawler	Pacific Cod	517
3/17/01	Acushnet	Nip'n Tuck	Longliner	Halibut	3A
3/17/01	Munro	Dona Martita	Trawler	Pacific Cod	517
3/18/01	Naushon	Dusty	Longliner	Halibut	2C
3/19/01	Munro	Husky	Pot Boat	Pacific Cod	513
3/19/01	Munro	Alaska Ocean	Trawler	Pacific Cod	513
3/21/01	Munro	Viekoda Bay	Pot Boat	Pacific Cod	509
3/22/01	Munro	Windjammer	Trawler	Pacific Cod	509
3/23/01	Mustang	Green Hope	Trawler	Misc Flats	630
3/29/01	Roanoke	Northern Sea	Longliner	Halibut	2C
3/29/01	Roanoke	Gaff-Rock	Longliner	Halibut	2C
3/31/01	Acushnet	Legacy	Trawler	Yellowfin	513
3/31/01	Acushnet	Sea Fisher	Trawler	Yellowfin	513

DATE	UNIT	VESSEL NAME	VESSEL TYPE	FISHERY	AREA
3/31/01	Acushnet	Alaska Warrior	Trawler	Yellowfin	513
3/31/01	Munro	Kjevolja	Longliner	Pacific Cod	610

Appendix B

Boardings with Violations

Date	Vessel Name	Vessel Type	Species	Area	Termination	Violation Notes
1/23/01	Hunter	Pot Boat	Shrimp	650	N	Expired survival craft inspection
1/24/01	Cape Caution	Trawler	Pollock	610	N	No Federal Fisheries Permit onboard & expired fire extinguisher
1/24/01	Karen Evich	Trawler	Pollock	610	N	Failed to carry Limited License Permit
1/24/01	Solstice	Trawler	Pollock	610	N	Failed to carry Limited License Permit
1/26/01	Sand Dollar	Dredge	Clam	State	N	Failed to have documentation on board
1/27/01	Ms Ingrid	Trawler	Pollock	610	N	Failed to carry Limited License Permit
1/27/01	Milky Way	Trawler	Pollock	610	N	Expired life raft inspection and hydro static release
2/1/01	Robetta J	Troller	No Product	650	N	Expired flares
2/1/01	Hank	Troller	No Product	650	N	Expired flares
2/1/01	Judy Ann	Troller	No Product	650	N	Expired flares
2/2/01	Dustin Sea	Troller	No Product	650	N	No life ring
2/10/01	Jeanoah	Pot Boat	Pacific Cod	630	N	Insufficient life rings
2/11/01	Alaskan	Trawler	Pollock	630	N	Failed to carry Limited License Permit
2/12/01	Winona J	Trawler	Pacific Cod	630	N	Failed to retain IR/IU species to required level
2/18/01	Blue Atta	Longliner	Pacific Cod	509	N	Failed to carry Limited License Permit
2/19/01	Alaskan Rose	Trawler	Rock Sole	509	N	No name & hailing port on stern
2/22/01	Aldebaran	Trawler	Pollock	509	N	Failed to provide boarding ladder
2/24/01	U.S. Intrepid	Trawler	Rock Sole	509	N	Failed to energize navigation lights after sunset
2/25/01	Pegasus	Trawler	Pollock	509	N	Failed to retain IR/IU species to required level
2/25/01	Northern Dawn	Pot Boat	Pacific Cod	610	N	No FCC Ship Station License
3/1/01	Jamie Marie	Trawler	Pollock	630	N	Failed to renew documentation
3/2/01	Highland Light	Trawler	Pollock	513	N	Expired flares
3/7/01	Alaska Warrior	Trawler	Rock Sole	517	N	Expired flares

Date	Vessel Name	Vessel Type	Species	Area	Termination	Violation Notes
3/7/01	Arica	Trawler	Rock Sole	509	N	Expired hydro release on EPIRB
3/9/01	Northern Glacier	Trawler	Rock Sole	513	Y	2 life rafts 92 days out of service/expired flares/expired life raft release
3/15/01	Ptarmigan	Longliner	Halibut	2C	N	Expired flares
3/15/01	Riptide	Longliner	Halibut	3A	N	Expired EPIRB hydro release & inoperable immersion suit light
3/16/01	Sunset	Longliner	Halibut	3A	N	Expired flares
3/17/01	Miss Emily	Longliner	Halibut	3A	N	Discarded legal sized halibut/highgrading
3/30/01	Alaska Juris	Trawler	Yellowfin	513	N	Expired flares

National Marine Fisheries Service
Alaska Enforcement Division

ENFORCEMENT REPORT

February 7, 2001 through April 2, 2001

National Marine Fisheries Service
Office for Law Enforcement
P.O. Box 21767
Juneau, AK 99802-1767

www.nmfs.noaa.gov/ole/Alaska

**To report fisheries violations,
call our National Hotline at
1-800-853-1964**

Agenda Item B4 April 11, 2001

ENFORCEMENT REPORT
FOR THE PERIOD 2/7/2001 THROUGH 4/2/2001

National Marine Fisheries Service
Alaska Enforcement Division

During the period since the last Council meeting, the Alaska Enforcement Division has opened fifty-five (55) new cases. We currently have 295 open cases.

A prioritization meeting was held on March 8 and March 22, 2001. Participants included RA Jim Balsiger, DRA Ron Berg, Mike Payne (PRMD), Sue Salveson (SF), CPT Vince O'Shea, Susan Auer and Garland Walker (NOAA GCEL in Alaska) and me. The group agreed that the following would be the enforcement priorities for this year. We plan to meet mid-year to evaluate how we are meeting these priorities and if they need to be changed.

1. Observer Related Offenses
- Interference and harassment
- Interference with sampling
- Bribery

2. Cook Inlet Belugas
- Illegal takes (poaching)

3. Steller Sea Lion Protection Measures

4. Sea Bird Avoidance Measures

5. Recordkeeping and Reporting Violations
- Failure to maintain observer coverage
- Violations which affect the Agency's ability to carry out its management responsibilities such as wilful or grossly negligent mis-reporting.

6. IFQ Specific Violations
- Closed Areas or Closed Season Violations
- Illegal Landings - with emphasis on those with Registered Buyer participation

7. Interdiction of Maritime Boundary Line Incursions

Cases Involving Observers

Of the fifty-five (55) cases opened this period, twelve (12) were observer-related. The Anchorage Office continues to review observer affidavits and prioritize complaints for investigation.

Cook Inlet Belugas

We began patrolling the area around Cook Inlet in March by boat, plane, and vehicle. We have plans to rotate Officers from around Alaska to the Anchorage area for as long as belugas are still in Cook Inlet.

Stellar Sea Lions

Critical Habitat - We are investigating reports of four vessels unlawfully fishing within 3nm of a Steller sea lion haulout. These vessels are all under 60 feet and were trawling for pacific cod.

Recordkeeping and Reporting

We are increasing our efforts to enforce observer compliance in 30% fleet. We will do this by identifying the worst offenders from past years and by looking harder during boardings this year.

IFQ

Major Cases: To close out the Kenai Customs case, James Hill, Sr. was sentenced in March to 15 months in jail and agreed to pay a $8,000 fine. James Hill, Jr. was sentenced to 15 months in jail and agreed to pay a $4,000 fine.

Community Oriented Policing and Problem Solving (COPPS)

We had a booth at COMFISH in Kodiak in March. Over 500 people visited the Officers and Agents there. Many had questions about the critical habitat areas and regulations, but most wanted to learn more about who we were and what we did. Most people only see us performing specific duties, and did not realize the many roles we have and the variety of regulations we enforce.

We discovered that thirty-three (33) individuals may have fished their "D" class quota on vessels over 35 feet last year. Our COPPS Officer mailed out letters to all these people informing them that we had information that they may have violated the regulations. They were encouraged to look into the matter. Many card holders discovered the vessel length in the IFQ data base was wrong and they were told how to correct this.

From:
Sharon Moesel
North American CLS, Inc.
9200 Basil Court, Suite 306
Largo, MD, 20774

To:
North Pacific Fishery Management Council
605 West 4th Ave, Suite 306
Anchorage, AK, 99501-2252
April 2, 2001

Re:
150th Plenary Session, April 11-16, 2001

Please accept this written comment as an answer to the February 2001 request for information regarding the Argos Vessel Monitoring System (VMS). Specifically in answer to item 2 as shown below:

Vessel Monitoring Systems

Under the SSL item, the Council recommended releasing for public review the analysis requiring vessels that conduct directed fishing operations for pollock, Atka mackerel, or Pacific cod in the BSAI and GOA to install and use a vessel monitoring system with the following modifications listed below. Final action is scheduled for no later than June 2001.

1. Add option not requiring vessels to stop fishing in the event of a system failure.
2. Provide data regarding failure rate of VMS units and VMS data transfer system and potential costs to vessels resulting from breakdowns if required to stop fishing. Additionally, add an attachment from Argos documenting performance attributes of existing technology and proposed upgrades to VMS.
3. Remove floating, inshore processors from data in Tables.
4. Add option not prohibiting vessels without VMS to stop fishing in quota management area when CH closed to directed fishing.
5. Add option requiring VMS only when fishing for cod, pollock or Atka mackerel.
6. Add option dropping Motherships if vessels delivering to MS has VMS.
7. Add clarification of protocols for use of VMS to evaluate fish harvests inside/outside CH and separately protocols for using VMS for enforcement purposes.
8. A discussion comparing costs for VMS systems relative to current enforcement costs as well as a discussion of lost opportunity costs due to current catch accounting.
9. Discussion on potential use of state or federal funds (ie: savings from enforcement costs) to provide assistance to fisherman for VMS equipment, installation and operating costs.
10. Add discussion of the % of each management area's quota taken by each vessel category, and the % of effort spent inside and outside of CH.
11. Explore the option of archiving data in the event of equipment failure in order to allow continued fishing;
12. Explore the option of exempting vessels under 55 ft. for each of the alternatives in the analysis.

North Pacific Fishery Management Council, February 2001
2

If there any questions, I may be contacted at either 301-341-1814 or 240-463-8642, or by email at smoesel@nacls.com. I will also be in attendance at the April meetings of both the Council and Advisory Panel.

Sincerely,

Sharon Moesel
Fisheries Department Manager
North American CLS, Inc.

ARGOS VESSEL MONITORING (VMS) IN ALASKA;
SYSTEM DESCRIPTION, RELIABILITY, FUTURE DEVELOPMENTS

APRIL 2, 2001

PREPARED FOR

THE NORTH PACIFIC FISHERY MANAGEMENT COUNCIL

BY

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Table of Contents

Table of Contents
(continued from previous page)

Appendices

Satellite Based Fishing Vessel Monitoring for Conservation and Management

Fishery Management Application

Introduction:

Conservation and management of fishery resources is necessary to facilitate optimal utilization on a continuing basis while ensuring the protection of fish stocks and habitats. Fishery management plans should be based upon the best scientific information possible and must take into account every aspect of a particular fishery; from the biology of the species to the kinds of fishing gear used, to the regulatory and socio-economic landscape of the fishery. Practical and effective measures, emphasizing efficiency while minimizing unnecessary waste, must be actively explored, developed and implemented.

Vessel Monitoring Systems (VMS):

Satellite-based vessel monitoring systems (VMS) are an increasingly important conservation and management tool for fisheries around the world. VMS has numerous advantages for fishing industry participants, management agencies, and the scientific community. VMS reduces monitoring costs for management agencies by reducing or eliminating the need for an onsite presence. Vessels are tracked and appropriate action may be taken if a vessel fishes in an unauthorized area. Catch information is sent directly from vessels to managers in real, or close to real, time. Timely receipt of this information allows more accurate management and control of the resource being monitored. VMS may also allow vessels to remain on fishing grounds longer and may allow vessels to participate in quota-sensitive fisheries.

VMS as a Management Tool:

VMS may be applied to a particular fishery or may be implemented on a national level. VMS is applied on a fishery by fishery basis in the United States. VMS may be implemented in a single or multi vendor format. Both types are present in the US. A number of factors go into the choice of a system for a given application. These factors include the management needs of individual fisheries, socio-economic impact of VMS implementation upon affected fishing communities, and geographic considerations such as latitude and topography. A crucial, and often overlooked, factor in the successful implementation of a system is industry participation and acceptance.

Argos VMS:

Argos, satellite-based, vessel monitoring equipment is intended specifically for fishing vessel monitoring. The Argos VMS was initially designed, and has been continuously modified and upgraded, in response to the needs of both fisheries management agencies and the fishing industry. Previously, many of the system features have resulted from management needs and input. More recently, the importance of industry buy-in and acceptance has been recognized. Therefore, any features of the Argos vessel monitoring system that may prove useful to vessel operators and fleet managers, can only serve to facilitate acceptance and implementation of the system.

Various reporting operations can add value to the system, as long as they do not hinder the primary purpose of the equipment; that of resource management and protection. Reports such as fish catch, trawl status, hold temperatures, etc can also add value from the point of view of both industry and management. The expansion of vessel monitoring from a purely regulatory initiative into a tool useful to both industry and management is a worthwhile and necessary objective.

Argos VMS in Alaska

Vessels Fishing for Atka Mackerel

During the early part of 1999, the National Marine Fisheries Service (NMFS) placed Argos VMS equipment aboard two vessels participating in the Atka mackerel fishery. NMFS wished to explore the suitability of VMS as a tool to aid in the enforcement of areas closed to fishing. The Argos VMS was chosen as the only system historically robust enough to meet agency requirements of data throughput and latency, geographic coverage, and cost effectiveness. During the latter part of 1999, eight vessels participating in the Atka mackerel fishery were equipped with Argos VMS transmitters. Five of the vessels, belonging to a single company, were monitored by their fleet manager using Argos display software.

On October 17, 2000, NMFS issued a final rule requiring vessels participating in the directed fishery for Atka mackerel in the Aleutian Islands subarea (AI) of the Bering Sea and Aleutian Islands Area to carry and use a Vessel Monitoring System (VMS) transmitter. At this time, Argos is the only VMS approved for use in Alaska.

Vessels Fishing for Pollock

During the early part of 2000, VMS was explored as an alternative to human observer coverage of positions of vessels participating in the pollock fishery. Approximately 50 vessels were equipped with Argos VMS transmitters initially, with another dozen or so installing units over the course of the year. Vessels were monitored by both NMFS representatives and fleet managers, using the Argos display software. This application of VMS was well received by both industry and management. The success of this project can most likely be attributed to industry and management identifying a need and working together to find a solution acceptable to all stakeholders.

At this time, NMFS is proposing that all vessels engaged in the BSAI directed pollock fishery carry VMS units. The effective date of this regulation is presumed to be sometime in 2002. Approximately 100 vessels participating in the pollock fishery are presently equipped with Argos VMS transmitters.

Argos Vessel Monitoring Systems (VMS), as provided by North American CLS, Inc.

Product Information

Products Offered (hardware, software, service, options):

Argos VMS transmitter, the MAR GE-RB; data processing and distribution, Service Argos; shoreside display software, Elsa99, and charts; optional catch reporting and sensor functions. NACLS' offerings described in Appendix 1-A, MAR GE-RB described in Appendix 1-B, catch reporting functions described in Appendix 1-C, sensor functions described in Appendix 1-D.

Product Performance (hardware, software, service, options):

Performance demonstration and analysis, of all Argos VMS components, is an important and ongoing part of NACLS' mission. Geographic performance has been tested and demonstrated in areas of extreme topography. For details, see Appendix 1-E. Accuracy and expediency of catch reporting has been tested and demonstrated. For details, see Appendix 1-F. Sensor function as an indication of fishing status has been demonstrated and tested and continues to be an area of active development.

Product Reliability (hardware):

As of April 1, 2001, approximately 120 Argos VMS units (MAR GE – RB) have been sold for use in Alaska. To date, there has been a 10% failure rate. The majority of these failures have been traced to power supply irregularities aboard the vessels. All failed units were replaced immediately by NACLS. Purchase from NACLS includes a three year warranty with an additional two years available for purchase.

Product Recall (hardware):

On November 10, 2000, North American CLS issued a recall of all MAR GE – RB satellite vessel monitoring (VMS) transmitters purchased between August 1999 and November 2000. Following extensive testing by the manufacturer, modification procedures were developed and implemented. Modified replacement units were provided, or original units were modified, by NACLS. All previously purchased units were replaced by the end of December 2000. Subsequently purchased transmitters have all been modified. For more information, see Appendix 1-G.

Product Availability (hardware):

NACLS is prepared to supply Argos VMS transmitters at a rate far exceeding installation capacity. However, given the global ramp-up in VMS implementation expected over the next few years, it is advisable to set out a reasonable implementation schedule for any VMS requirement in Alaska, to allow sufficient time for equipment to be ordered, shipped, installed, etc.

Argos Vessel Monitoring Systems (VMS), as provided by North American CLS, Inc. (continued from previous page)

Product Development

Hardware:

***Transmitter*:** NACLS is actively developing a new, re-engineered, Argos VMS transmitter. Modifications are also being explored for the present Argos VMS transmitter.

Fishing status sensor function: A sensor function for the determination of vessel fishing status is available. Necessary attachments, specifically designed for groundfish trawlers, are being explored.

Software:

GPS display: A beta version software is presently being tested aboard a number of groundfish trawlers. This software displays the most recent GPS position obtained and transmitted by the Argos VMS. This position is updated every minute.

Electronic catch reporting: A beta version software (the same as used for the GPS display) is being tested by several groundfish trawlers. Concise amounts of time-critical information may be transmitted through the Argos VMS. This feature is intended to facilitate in-season catch management.

Display software: The Elsa mapping software, in use by a large portion of the groundfish fleet, is continually being modified and improved. New map layers displaying all statistical and critical habitat areas are being developed.

Future Developments:

Both the providers of the Argos system and NACLS are extremely interested in, and receptive to, working with management and industry to develop a VMS product meeting as many needs as possible. Extensive interaction is encouraged during this time of rapid VMS evolution.

Specific Issues

Onboard Troubleshooting:

The Argos VMS presently in use has two indicator lights; one indicating power on and the other indicating transmission. Upon initial installation, vessels are encouraged to verify successful data transmission and receipt with NACLS and/or NMFS. Verification upon re-powering after some sort of shut-down is also recommended. Several instances of damaging power surges have been reported during these times. A small, onboard frequency detector is also available to verify transmission only – not data receipt.

Accuracy of Positions:

The Argos VMS transmitter acquires its GPS positions from the same group of satellites the vessels' own GPS units are using. Optional onboard display of the Argos-acquired GPS position, as described previously, may be used to compare with vessel GPS positions.

An interesting point to keep in mind is that the lat/long coordinates (used to draw the baselines from which the closed areas are referenced) in the published regulations are based on paper charts. When plotted on the newer vector shoreline charts (taken from satellite imagery rather than the old surveys), some of the points end up out in the water while some of them are considerably inland. The majority of electronic chart programs, including Elsa, rely on vector shoreline information.

Onboard Position Logging:

All GPS positions, obtained by the Argos VMS transmitter presently in use, are stored in the transmitter itself for a period of several months. These positions may be downloaded, by connecting an appropriately configured computer to the transmitter, via the interface box. In addition, modifications planned for the beta version software described previously will include logging of GPS positions in an Access database.

The Argos Data Collection and Location System

General Information

Use of the Argos System:

Use of the Argos system is governed by CFR 15, Part 911; "Policies and Procedures Regarding Use of the NOAA Space-Based Data Collection Systems." Specific applications are bound by an "Argos System Use Agreement." Information regarding both of these documents may be obtained by contacting Service Argos, as described below.

Organization of the Argos System:

The Argos Data Collection and Location System (DCS) is a satellite system devoted to monitoring and protection of the earth's environment. The Argos instrument flies on NOAA's Polar-orbiting Operational Environmental Satellites (POES). Operation of the system is covered by a bilateral agreement between the United States and France. The National Oceanic and Atmospheric Administration (NOAA) has the responsibility for readout and decommutation of the derived data from their receiving stations at Wallops Island, Virginia, and Fairbanks (Gilmore Creek), Alaska, and through their processing facility at Suitland, Maryland. The Centre National d'Etudes Spatiales (CNES), the French Space Agency, is responsible for development of the Argos instruments that fly onboard the POES.

Collecte Localisation Satellites (CLS), in Toulouse, France, is the designated operating agent of the Argos system for CNES. CLS operates two data processing facilities, Service Argos Inc., in Largo, Maryland, and CLS/Service Argos in Toulouse, France. The Largo office processes data for North America, while the Toulouse facility processes data for Europe and the rest of the world. Any questions regarding use of the Argos system should be directed to Bill Woodward, President, Service Argos.

Contact Information for the Argos System:

Service Argos, Inc.	Phone: 301-925-4411
1801 McCormick Drive	Fax: 301-925-8995
Largo, MD 20774	Web: http://www.argosinc.com

Argos and NACLS:

CLS has a subsidiary in the United States, North American Collection and Location by Satellite (NACLS). NACLS' activities include hardware and software sales, and valued-added services, primarily based upon Argos technology at this time, although diversification is planned. NACLS' focus is on Argos application markets other than those considered pure science (oceanography, meteorology, biology), as these science efforts are typically served through many of the world's nations operating under a preferential tariff agreement.

Applications marketed by NACLS fall into environmental protection categories such as hazardous waste tracking, pollution monitoring, and fishing vessel tracking/monitoring. Under the precepts set out in Part 911, NACLS is considered a user of the Argos system. Certain products and services available from NACLS are also available from other private companies. The Argos system can be used by any entity interested in monitoring and protection of the earth's resources, either as a direct user or as a company or institution interested in acting in interface to Argos data products or services.

The Argos Data Collection and Location System
(continued from previous page)

System Information

Satellite Portion of the Argos System:

Argos instruments are flown on board NOAA's POES, polar orbiting satellites. See Appendix 2-A. These satellite-mounted instruments receive data from Argos transmitters and relay them to the ground via two mechanisms; in "real time" when both the transmitter and downlink antenna are visible to the satellite at the same time, and in the form of recorded messages stored aboard the satellite until the satellite passes over one of three main system ground stations located in Wallops Island, VA, Fairbanks, AK, or Lannion, France.

At least two satellites are considered to be operational by NOAA at any given time (presently NOAA L and NOAA K, Argos 2 generation). The Argos instruments, however, are particularly robust and are fully functional for some time after NOAA no longer considers the satellite operational for other purposes. See Appendix 2-B. NOAA has scheduled launches well into the 21st century. Beginning early in the 21st century, Argos instruments will also be flown on satellites operated by the Japanese space agency NASDA and the European Meteorological Satellite organization, Eumetsat.

The two "operational" satellites, when used in global mode, record data onboard and then download the data to NOAA's receiving stations at Fairbanks and Wallops Island. Data from the other satellites (NOAA H, NOAA D and NOAA J, Argos 1 generation) is processed, by NOAA, on an "as available" basis. Satellites ND, NH, NJ, as well as NK and NL, are operated in regional mode during which all transmitter messages are simultaneously recorded onboard and then relayed to receiving stations. These receiving stations make up the "real-time" network. See Appendix 2-C.

Coverage of the Argos System:

The POES satellites pass over both the North and South Poles on each orbital revolution. Their orbital planes rotate about the polar axis at the same rate as the Earth rotates about the Sun, completing one revolution per year. Each orbital revolution transects the equatorial plane at fixed local solar times. Therefore, each satellite passes within visibility of any given transmitter at virtually the same local solar time each day. One orbital revolution around the Earth takes approximately 102 minutes. Orbits are spaced to provide maximum coverage throughout a 24 hour period. See Appendix 2-D.

Because of the near-polar orbit, the number of daily passes over a transmitter increases with latitude. At the poles, each satellite passes over a given location approximately 14 times a day, for a total of 28 passes with two satellites. At the equator there are 6 to 7 passes total. See Appendix 2-E. Since Argos instruments are operational on five satellites at this time however, the latency, or time between satellite passes, is less than two hours the majority of the time. See Appendix 2-F.

At any given time, each satellite simultaneously "sees" all transmitters, and receiving antennas and ground stations, within a visibility circle or "footprint." These footprints are approximately 5000 kilometers in diameter. As each satellite progresses through its orbit, its footprint traces a 5000 kilometer wide swath around the Earth, covering both poles. Due to the Earth's rotation, the swath shifts about the polar axis on each revolution. See Appendix 2-G. The duration of transmitter visibility by the satellite (pass duration over the transmitter) is the "window" during which the satellite can receive messages from the transmitter. This window typically lasts for 8 to 15 minutes with an average of 10 minutes.

When a satellite can "see" a transmitter and a receiving antenna at the same time, the data is relayed in "real time." Otherwise, the data is stored aboard the satellite to be relayed in "delayed time." For the reasons described previously, data disposal (processing) time is dependant upon latitude and time of day. For the Aleutian Islands area, approximately 80% of data is relayed in real time with an average processing time of 17 minutes. See Appendix 2-H.

The Argos Data Collection and Location System
(continued from previous page)

Ground Segment of the Argos System:

The ground segment consists of the main ground stations and regional receiving stations, and the global processing centers. The three main ground stations (Wallops Island, Fairbanks, and Lannion, France) all receive messages recorded by the satellites during their respective orbital revolutions, providing complete global coverage. Regional receiving stations receive data from the satellites, relayed directly from the transmitters, whenever a satellite is within "sight" of the station. The main ground stations also act as regional receiving stations. Regional receiving stations operate in Largo, Miami, Hawaii and Monterey in the USA; Halifax and Edmonton in Canada; and in a number of locations in Australia, New Zealand, Japan, Peru, Russia, South Africa and Antarctica. More regional stations are planned. See Appendix 2-I.

Data Processing for the Argos System:

The two Global Processing Centers (GPCs), in Largo, Maryland and Toulouse, France, process all data from the main ground stations and the regional receiving stations. The GPCs archive the data and make it available to users on line. The GPCs' functions are fully redundant and include, but are not limited to: quality control which includes message time-tagging, signal level, transmitter ID number, length of sensor data message, the receive frequency for use in Doppler location calculation; message classification in chronological order; location calculation; sensor data processing; data distribution via network or physical media; archival of processed data. Modifications and upgrades to computer equipment and communications links are an ongoing effort.

Data Availability, Storage and Security:

Service Argos does not provide data archiving as a service. However, internal policy requires all data be kept online for six months, on system disks for two years, and on tape for three years. Access to data is password protected. Both GPCs are staffed 24 hours per day, 7 days per week.

Argos VMS Data Path; Components, Responsibility, Reliability

1) Vessel:

System components: Argos VMS unit consisting of integrated GPS receiver and Argos transmitter and computer, suitable power supply, optional software for GPS display or catch reporting.
Operational responsibility: Vessel operator responsible for proper installation, maintenance of suitable power supply, protection of VMS components from damage beyond normal wear and tear.
Reliability: Specifics on the Argos VMS unit presently in use in Alaska, the MAR GE – RB, described previously.

a) Vessel to satellite:

System components: Vessel must be "in sight" of satellite. Frequency, and duration and quality, of satellite pass, and therefore of data transmission, dependant upon latitude, time of day, position of satellite in sky. Also dependent upon installation of transmitter in suitable location aboard vessel.
Operational responsibility: NOAA responsible for maintaining satellites in proper functioning order.
Reliability: Results from a pilot test, undertaken by the Alaska Enforcement Division (NMFS-OLE) during early 2000, showed an average of 61 positions per 24 hours with a fault percentage of 0.2%.

2) Satellite:

System components: Argos instrument developed by CNES and placed aboard POES satellites as described previously. POES satellites developed and maintained by NOAA. In the future, Argos instruments will also be placed aboard satellites operated by the Japanese space agency (NASDA) and the European Meteorological Satellite Organization (Eumetsat).
Operational responsibility: NASA is responsible for the launch of the POES satellites, after which maintenance is the responsibility of the satellite operator, which is NOAA at this time.
Reliability: No Argos instrument aboard a POES satellite has ever failed.

b) Satellite to receiving station:

System components: Receiving antenna must be "in sight" of satellite. Duration and quality of satellite pass, and therefore of data transmission, dependant upon latitude, time of day, position of satellite in sky. Also dependent upon installation location and maintenance of receiving antenna.
Operational responsibility: Receiving station operators as described previously.
Reliability: Redundant receipt of stored data by main ground stations (Wallops and Fairbanks) and of "real time" data by regional ground stations. Fairbanks functions as both a main ground station and as a regional ground station. For vessels in Alaska, data is received in "real time" approximately 80% of the time.

3) Receiving station:

System components: Main ground stations and regional receiving stations.
Operational responsibility: Station operators as described above.
Reliability: Main stations maintained in accordance with NOAA standards, regional stations dependent upon agreements with operators.

c) Receiving station to processing center:

System components: Internet and phone lines.
Operational responsibility: Various communications providers.
Reliability: Dependent upon quality of communications providers.

Argos VMS Data Path; Components, Responsibility, Reliability
(continued from previous page)

4) Processing centers:

System components: Global processing centers in Largo and Toulouse.
Operational responsibility: Service Argos and CLS respectively.
Reliability: Global processing centers fully redundant as described previously. Data stored for six months on line, 2 years on system disks, 3 years on tape.

d) Processing center to user:

System components: Internet and phone lines.
Operational responsibility: Various communications providers.
Reliability: Dependent upon quality of communications providers.

5) User:

System components: Computer hardware and local communication system. Data retrieval protocol and software.
Operational responsibility: Entirely with the user, although technical assistance provided by NACLS and Service Argos.
Reliability: Variable and dependent upon users' equipment and maintenance.

APPENDIX 1-A *Quickstart Guide*

The Quickstart Guide to ArgoNet: You fish, we track.

ArgoNet: provides all services and hardware necessary to meet NMFS requirements for VMS

Information Available at: www.nacls.com or may be mailed upon request
Hardware: MAR GE Argos/GPS transmitter
Service: Automatic data processing and distribution
Software (optional): ELSA; single user vessel monitoring software

Point of Contact: North American CLS
9200 Basil Court, Suite 360
Largo, MD 20774
Phone: 301-341-1814
Fax: 301-341-2130

Pricing Information: Hardware - $1800 FOB in Largo, MD (shipping extra – weight ≈ 17 lb)
Service - $5/transmitting day (no charge while vessel is in port)
Software - $1000 (shipping extra)

Purchase Procedure:
- Contact NACLS to request ArgoNet contract, registration form, and credit card (Visa or MC) authorization form.
- Credit authorization will include hardware and one year's service, to be billed automatically.
- Request should be faxed or mailed on company letterhead with vessel name and registry.
- Complete and return contract, registration form, and credit card authorization form (may be faxed with originals to follow).
  a line of credit can be established but this may take up to two weeks

Installation Procedure:
- MAR GE shipped preconfigured and ready for installation.
- Installation of hardware arranged and paid for by vessel owner.
- Installation of unit by the vessel crew or by a marine electronics specialist in a location that a) is out of the beam of any radar devices, and b) has a clear view of the sky.
- Installation typically takes less than 1 hour.

Commission Procedure:
- Confirm activation initially by observing status lights that appear on the MAR GE junction box.
- Confirm with NACLS during normal business hours no less than 8 hours after initial activation
- Confirmation can also be provided by the Argos Operator on a 24 hour basis.
- Confirmation will only be provided to those who know the assigned Program Number, Argos Username and Password (all vessels belonging to one owner may be grouped under a single Program Number).

ELSA Software:
- ELSA installation and activation require one business day prior to use.
- Vessel position may be accessed via Internet 24 hours a day at no extra cost.

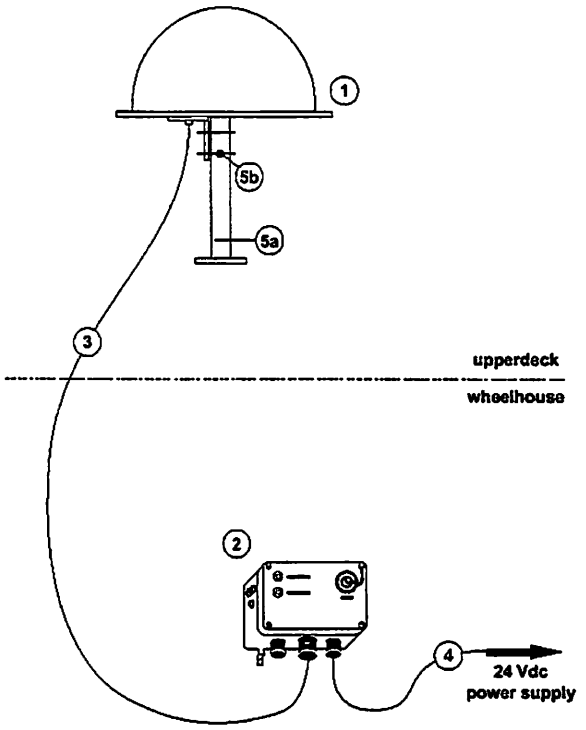
Warranty:
The MAR GE is warrantied for a period of 3 years from date of purchase. An additional 2 years warranty coverage may be purchased (at a cost of $200) prior to the expiration of the standard warranty. Replacement units are available within 5 business days of return of a malfunctioning MAR GE unit.

Argos VMS transmitter: MAR GE - RB

The MAR GE transmitter set comprises:

1. Argos transmitter/GPS receiver
2. Junction box
3. 7 wire cable
4. Power lead

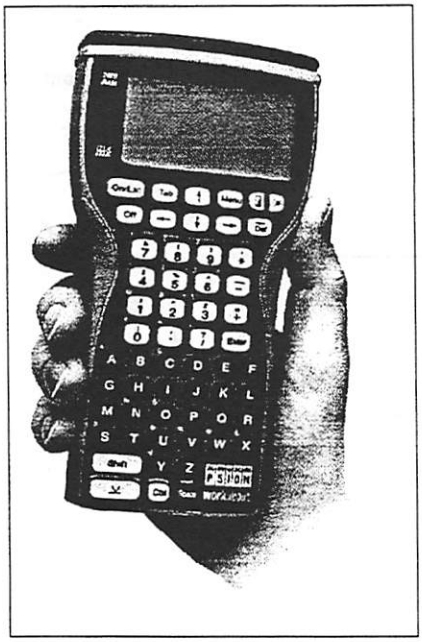
5a-5b. Mounting devices



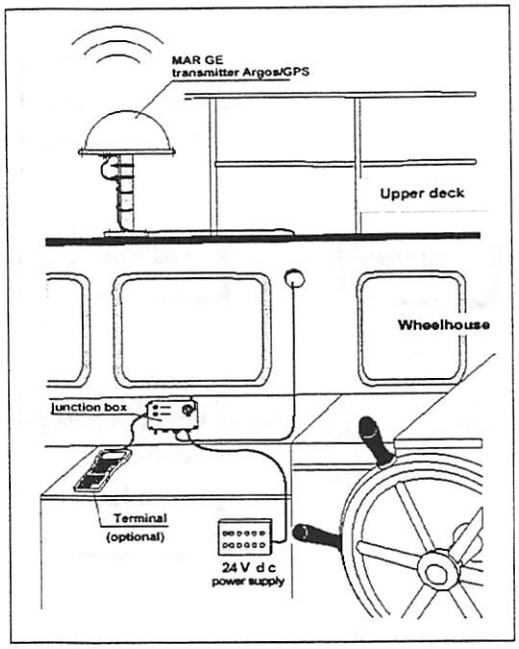
Technical Specifications

Size:	Dome: 300 mm diameter, 160 mm height (11.8 x 6.3 in.)
Junction Box:	124 mm x 80 mm x 56 mm (4.9 x 3.1 x 2.2 in.)
Weight:	Dome: 2.4 kg (5.3 lb.), total with cables: 7 kg (15 lb.)
Water resistance:	IP66 (splashproof, non submersible)
Operating temperature:	-20°C to +50°C
Storage temperature:	-20°C to +70°C
Power:	External 24V DC power supply (18-36V tolerance)
Current drain:	270 mA average drain (at 140 second transmission interval)
GPS receiver:	Rockwell Jupiter 12-channel receiver
Argos transmitter:	SERPE-IESM PTT07 certified transmitter
Argos message:	Length: 160 bits, standard 140 second interval
Output frequency:	401.650 MHz
Output power:	2 watts

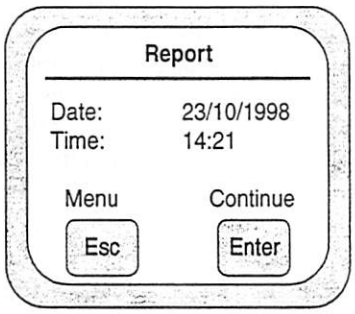
APPENDIX 1-C *Argos VMS Catch Reporting Function*

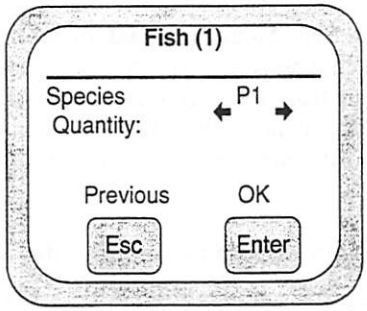


PSION Workabout Keypad Terminal



Keypad Installation Set-up Aboard Vessel



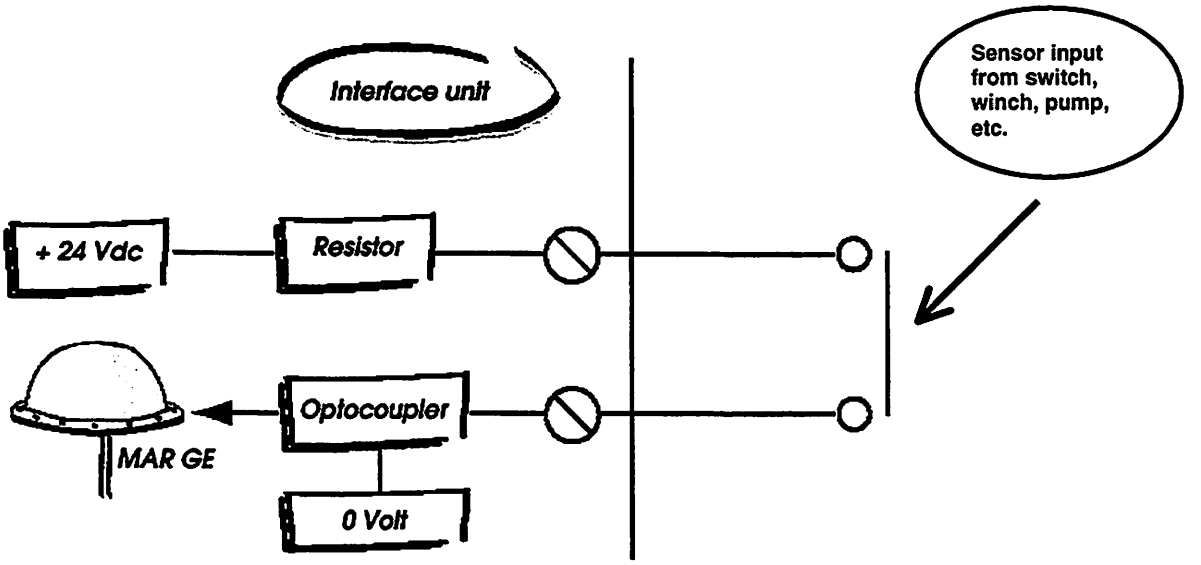


Sample Catch Reporting Displays used on PSION Workabout Keypad Terminal

"Real Time" Catch Reporting:

Small, pre-coded catch reports may be sent in near real time via the Argos VMS system. These catch reports may be used by fishery managers to monitor total catch and bycatch throughout a fishing season. Fleet managers may also monitor catch and bycatch totals and potentially redirect individual vessels as necessary. These catch reports are not intended to replace other forms of reporting, but to allow critical information to be sent from vessels within timeframes not always possible with other communication systems. Catch reports may be sent through the Argos system using either a portable data entry device or a standard computer. The data device presently in use is illustrated above.

APPENDIX 1-D *Argos VMS Sensor Function*



Schematic of sensor circuit closure, with information input denoted.

Sensor Function:

The Argos VMS transmitter, the MAR GE, is equipped with a sensor input function. The sensor input accepts data in the form of either a circuit closure or a voltage output. The input is interpreted as on/off or yes/no information. Sensor input information is automatically recorded on the same schedule as positional information. In other words, every position is correlated with a sensor status message. Any information aboard a vessel that may be converted into on/off or yes/no information may be input to the sensor. Examples are: switches activating winches or pumps, critical pressure or temperature sensors, saltwater circuits, etc. Additional equipment may be necessary to acquire sensor information and to input data to the MAR GE.

Sensor Function Applied to Vessel Fishing Status:

The sensor input function of the MAR GE has been used to indicate vessel trawl status in several fisheries to date. One application utilized a salt-water connection that was activated when hauling back. In another application, a pressure sensor was inserted into the vessel hydraulic system. Any component of a vessel's trawling system that is used only when the vessel is actively trawling may be used to indicate trawl status. While every vessel is unique, operations across a given fishery tend to be similar enough so that a common solution may be applied.

Fishing Status Application Potential in Alaska:

VMS has been applied in Alaska to enforce no-trawl areas. Vessels are typically permitted to transit these areas as long as no trawling takes place. Whether a vessel is trawling or transiting is presently being assessed based upon the vessel's speed, which is calculated from positional information. However, there may be reasons other than trawling for a vessel to be proceeding at a slow speed. These reasons may include inclement weather, equipment failure, crew overboard, etc. An indication of vessel trawl status is a logical feature of a VMS intended to enforce no-trawl areas.

APPENDIX 1-E *Geographic and Positional Performance*

Argos VMS in Alaska - Pilot Project

Introduction:

During the early part of 2000, seven groundfish trawlers, fishing in the Aleutian Islands, were tracked for a period of three months. The purpose of this project was to demonstrate and analyze the performance of the Argos VMS within the constraints of a representative Alaskan fishery. Vessels were equipped with Argos VMS transmitters, the MAR GE, configured to record 48 GPS position fixes, per 24 hour time period. These position fixes were relayed via satellite, displayed with the Elsa99 software, and stored in an Access database for analysis.

Timeframe:

Evaluation Start Date: 1/1/2000
Evaluation End Date: 3/31/2000

Geographic Coverage:

The test vessels were initially tracked from Seattle/Bellingham, Washington to Dutch Harbor, Alaska. Thereafter, the vessels proceeded to fishing grounds varied throughout the Aleutians. There were no breaks in coverage.

Overall Results:

Requested Daily Positions:	48
Average Daily Positions:	60.99
Optimum Position Fixes*:	19,615
Total Position Fixes:	21,477
Difference:	+1.862
Erroneous Positions**:	43
Fault Percentage:	0.2%

* Reflects a 48 position per day baseline, with positions adjusted for days in port & expected downtime.
** Later attributed to non-standard transponder placement aboard one vessel.

APPENDIX 1-F *Catch Report Performance*

Argos VMS Catch Reporting – Performance Analysis

Excerpts from a report prepared for Fisheries and Oceans Canada, January 2000.
Project carried out during the chum salmon season in the fall of 1999.

Introduction:

The purpose of the real time monitoring component of the Area D Salmon Gillnet Study (part of Fisheries and Oceans Canada's Selective Fishing Initiative) was to explore the potential of using satellite technology for real time catch monitoring. Two satellite systems were tested; the ArgoNet system and the Orbcomm system. The study utilized six salmon gillnetters fishing in pairs, side by side. One vessel in each pair was equipped with ArgoNet (Argos) equipment and the second vessel carried Orbcomm equipment. The study was carried out between the northern portion of Vancouver Island and mainland British Columbia. High mountains and narrow fjords typify the local topography.

The goal of the study was to monitor vessel positions and receive catch reports via satellite. Timeliness of data receipt and accuracy of received data were analyzed in depth. Standard GPS positions of vessels were recorded hourly, at a minimum, and transmitted as available. Catch reports were sent either several times a day, or after every set. Nets were set at least eight times per 24 hours, sometimes as often as once every 60 to 90 minutes.

This report summarizes the performance of the ArgoNet system according to evaluation parameters provided by Fisheries and Oceans Canada.

Executive Summary:

Two satellite systems, ArgoNet and Orbcomm, were tested aboard Area D salmon gillnetters in the real time monitoring component of the Area D Salmon Gillnet Study. The goal of the study was to analyze timeliness and accuracy of vessel positions and catch reports sent by satellite.

The ArgoNet system is a low cost, robust vessel monitoring system in place on thousands of vessels worldwide. Data is available via email or Internet and may be displayed on standard (NOAA, CHS) nautical charts.

A minimum of 24 GPS vessel positions were reported per day (24 hours), with almost 40 positions being reported per day for vessels in the study area. The average interval between successive positions was 37 minutes.

All catch reports (43 reports received of 43 sent) were received, when sent three times per day at specified times. All data in received catch reports was identical to sent data. Sent and received data, in 169 catch reports, was compared and found to be identical.

The average time interval between data transmission from vessel to data receipt at Argos system processing center, of positions and catch reports, was always less than two hours between 2 am and midnight, often one hour or less. The shortest time intervals were on the order of minutes. The longest intervals, all occurring between 11 pm and 2 am, ranged from three to five hours. Argos system processing time averages less than 20 minutes, after satellite receipt of data.

The results of this study indicate that catch reports sent via the ArgoNet satellite system can be received in less than two hours, often in one hour, with 100% accuracy. Results also show a minimum of 24, average of 38, GPS positions reported per day, unlimited by latitude, in the rugged topography of near shore British Columbia.

APPENDIX 1-G *NACLS Recall Letter*

NACLS

Sharon Moesel
North American CLS
9200 Basil Court, Suite 306
Largo, Maryland 20774
Tel 301-341-1814
Fax 301-341-2130
moesel@nacls.com

February 21, 2001
To All Argos VMS Customers:

On November 10, 2000, North American CLS issued a recall of all MAR GE – RB satellite vessel monitoring (VMS) transmitters purchased between August 1999 and November 2000. Following extensive testing by the manufacturer, modification procedures were developed and implemented. Modified replacement units were provided or original units were modified by NACLS. All previously purchased units were replaced by the end of December 2000. Subsequently purchased transmitters have all been modified.

On October 22, 2000, the dome portion of a MAR GE – RB sold by NACLS, failed aboard a tugboat in Rhode Island. Fortunately, no one was injured. NACLS was informed of this incident on October 23. On October 24, NACLS learned of another failure aboard a fishing vessel in Japan, which had occurred on October 14, 2000.

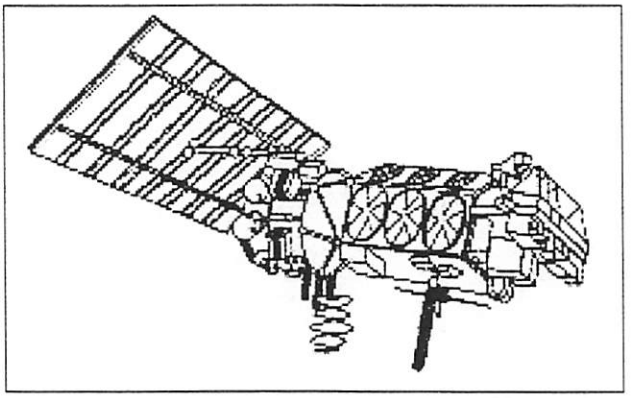
Over October 24 and 25, NACLS notified all users of MAR GE units, purchased from NACLS, to avoid close proximity to the dome of the unit. Later that week, users were notified that power to the units should be disconnected and proximity should continue to be avoided. On November 10, NACLS issued a recall of all MAR GE – RB units purchased since August 1999.

Simulated dome failures performed by the manufacturer (SERPE-IESM) indicate the cause of the failure to originate with the internal rechargeable battery. Under certain circumstances, these batteries may generate an excessive amount of hydrogen gas. Given the sealed nature of the dome, this gas can accumulate, particularly under conditions of extreme and or variable temperatures. It is believed that an abnormal electrical charge, generated internally or externally, is the precipitating cause of the failure. It should be noted that out of over 2500 transmitters deployed worldwide, this type of failure has occurred on only three occasions; none of which resulted in either personal injury or property damage.

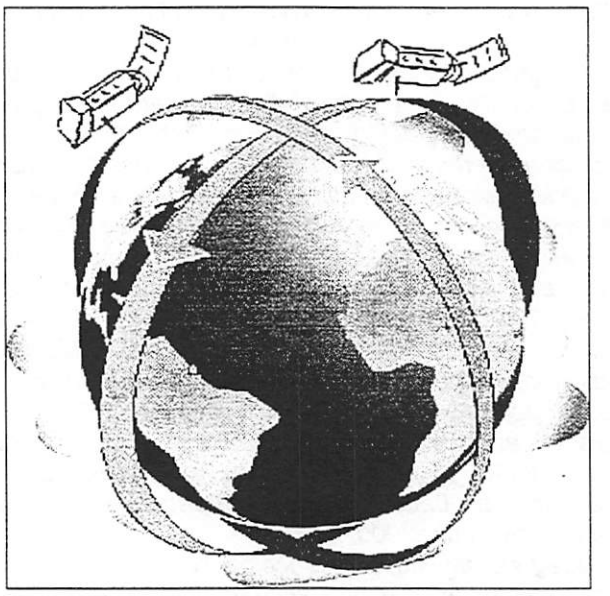
NACLS' engineers are exploring alternatives to the present VMS transmitter design. Any and all alternatives will be thoroughly tested before being deployed aboard any vessels. As in interim solution, the rechargeable batteries have been disconnected in all replacement units as well as all units sold after November 2000.

NACLS deeply regrets any inconvenience caused by this incident. We continue to make the rectification of this situation, and the avoidance of any similar such incidents in the future, a top priority. NACLS is deeply committed to providing a safe and reliable VMS product to the fishing and marine community. We welcome any and all comments, concerns and feedback as we work toward a long and successful future.

Sincerely,
Sharon M. Moesel
Fisheries Department Manager
North American CLS, Inc.



TIROS – Polar Orbiting Environmental Satellite



Polar Earth Orbits of TIROS POES

APPENDIX 2-B *POES Instrument Status*

POLAR ORBITING ENVIRONMENTAL SATELLITE (POES) STATUS						
NOAA 10	NOAA 11		NOAA 14	NOAA 15	NOAA 16	INSTRUMENT
G	G	G	G	G	G	DCS DATA COLLECTION SUBSYSTEM
-	G	-	G	-	-	SSU STRATOSPHERIC SOUNDING UNIT
R	R	G	Y	-	-	MSU MICROWAVE SOUNDING UNIT
Y	R	Y	Y	R	G	HIRS HIGH RESOLUTION INFRARED SOUNDER
-	-	-	-	Y	G	AMSU-A1 ADV. MICROWAVE SOUNDING UNIT
-	-	-	-	Y	G	AMSU-A2 ADV. MICROWAVE SOUNDING UNIT
Y	R	G	G	R	G	AVHRR ADV. HI RESOLUTION RADIOMETER
G	Y	-	G	Y	G	SARR SEARCH & RESCUE REPEATER
R	G	-	R	G	G	SARP SEARCH & RESCUE PROCESSOR
R	-	-	-	-	-	ERBE EARTH RADIATION BUDGET EXPERIMENT
-	Y	-	Y		G	SBUV SOLAR BACKSCATTER UV RADIOMETER
G	-	G	Y	G	G	SEM SPACE ENVIRONMENT MONITOR

Instrument Status Aboard POES as of November 2000

NOAA 10:NG NOAA 11:NH NOAA 12:ND NOAA 14:NJ NOAA 15:NK NOAA 16:NL

Key: G: Operational
Y: Standby
R: Not Operational

Note: "DCS Data Collection Subsystem" refers to the Argos instrument

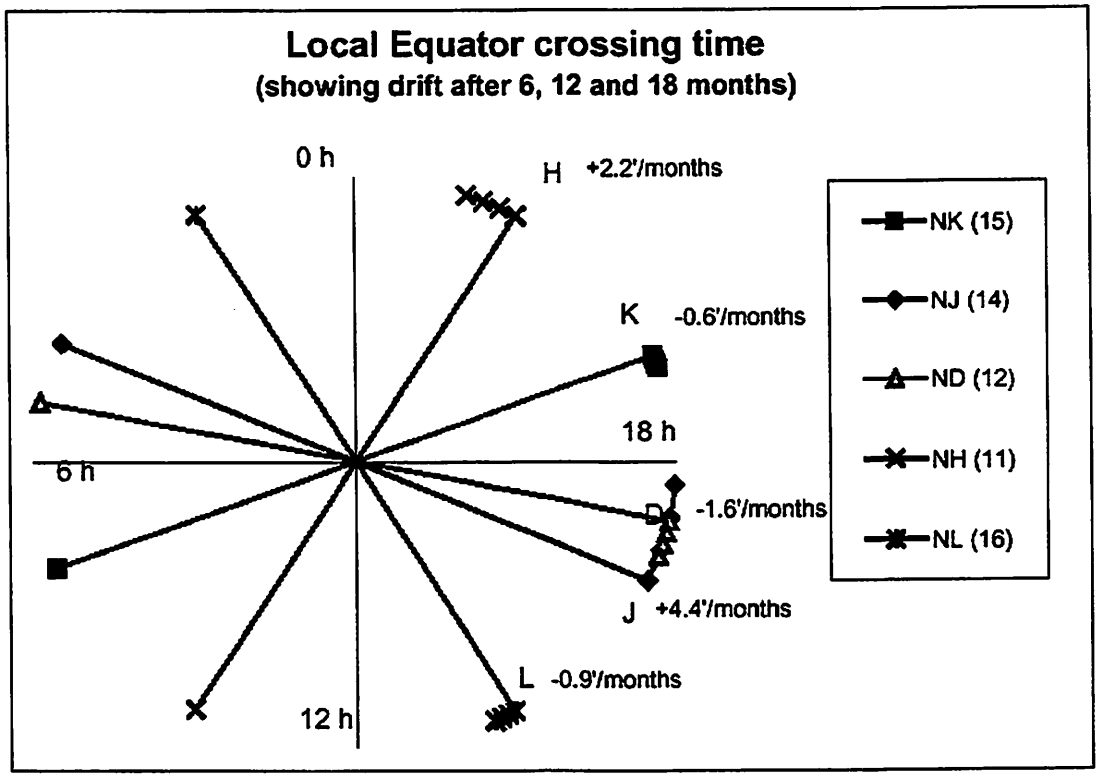
APPENDIX 2-C *Argos Receiving Stations*

Antennas	Sigle	Country	Operator	Satellites
Aussaguel	AU	France	CLS	ND,NJ,NK,NL
Cape Town	SA	South Africa	CLS/SAWB	ND,NJ,NK,NL
Casey	CA	Australia	BOM	ND,NJ,NK
Cayenne	CY	Guyane	IRD	ND,NJ,NK
Darwin	DA	Australia	BOM	ND,NJ,NK
Gilmore	GC	USA	NOAA	ND,NJ,NK,NL
Halifax	HA	Canada	Canadian Coast Guard	ND,NJ,NK,NL
Hawai	HW	USA	NWS	ND,NJ
Ile de la reunion	RN	France	Meteo France	ND,NJ
Lannion	WE	France	Meteo France	ND,NJ,NK
Melbourne	ME	Australia	BOM	ND,NJ,NK
Miami	MI	USA	NOAA	ND,NJ,NL
Perth	PE	Australia	BOM	ND,NJ,NK
Wallops	WI	USA	NOAA	ND,NJ,NK,NL
Wellington	NZ	New-Zeland	Met Office	ND,NJ,NK
CLS	BV	France	CLS	ND,NJ,NK,NL
Largo	LA	USA	SAI	ND,NJ,NK,NL
Lima	PR	Peru	CLS Peru	ND,NJ,NK,NL
Murmansk	RU	Russia	Complex System	ND,NJ,NK,NL
Petropavlovsk	PT	Russia	Rybnadzor	ND,NJ,NK
Tokyo	JM	Japan	Jamstec	ND,NJ,NK,NL
Edmonton	ED	Canada	Environment Canada	ND,NJ
Monterrey	MO	USA	NWS	ND,NJ

Antennas under agreement
CLS and subsidiaries antennas
Customer antennas under CLS maintenance contract
Antennas without written agreement ("Best effort")

Argos Receiving Stations and Satellites Received

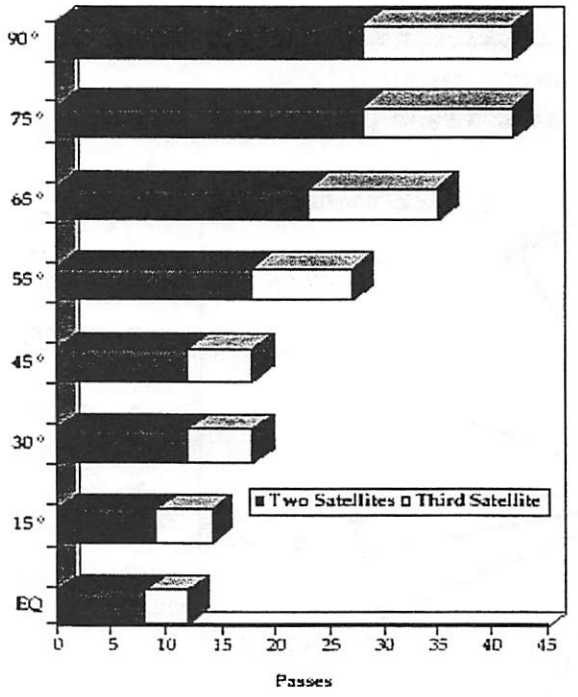
APPENDIX 2-D *Orbital Spacing of POES*



Orbital Spacing of POES Satellites (as of November 2000)

Local Equator crossing time (ascending node) and associated predictions for 6, 12 and 18 months. This extrapolation is based on the assumption that the orbital plane drifts in a linear fashion. As ND and NJ are drifting significantly and in opposite directions, they will be in exactly the same plane within about 14 months. The local Equator crossing time of the recently launched NOAA-L satellite is 2:00 p.m.

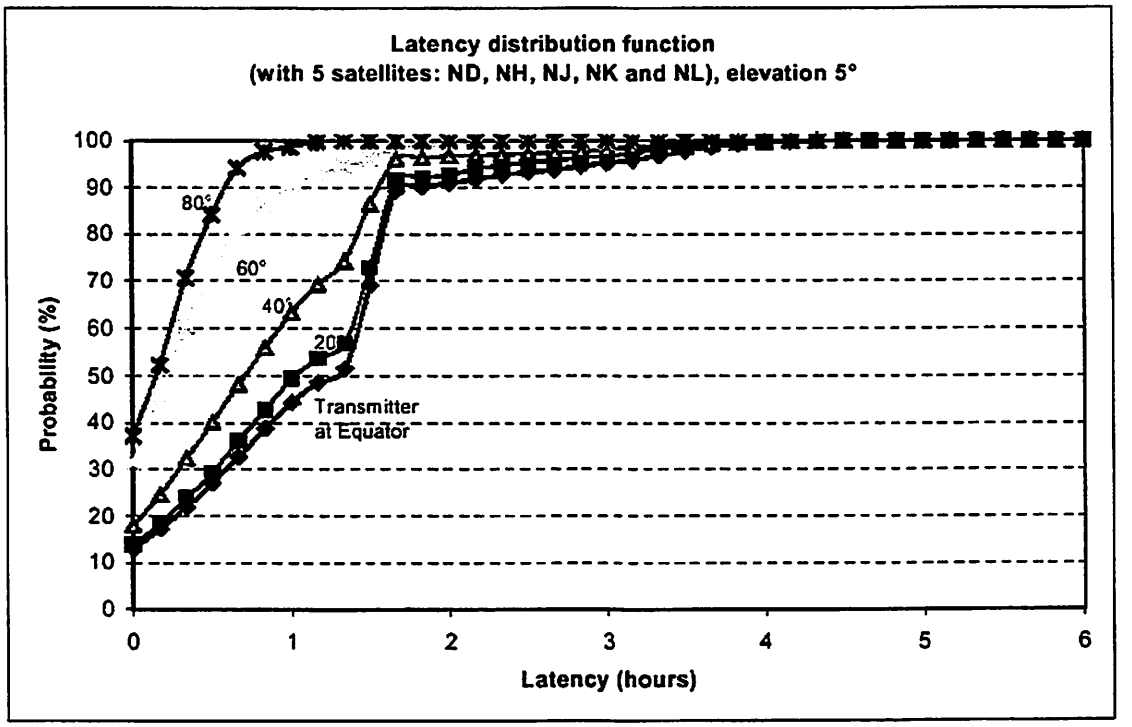
APPENDIX 2-E *Satellite Pass Frequency*



Satellite Passes by Day, by Latitude

Due to near-polar orbit, the number of daily satellite passes, over an individual transmitter, increases with latitude. In the Aleutian Islands area, there are 20 to 30 passes per day.

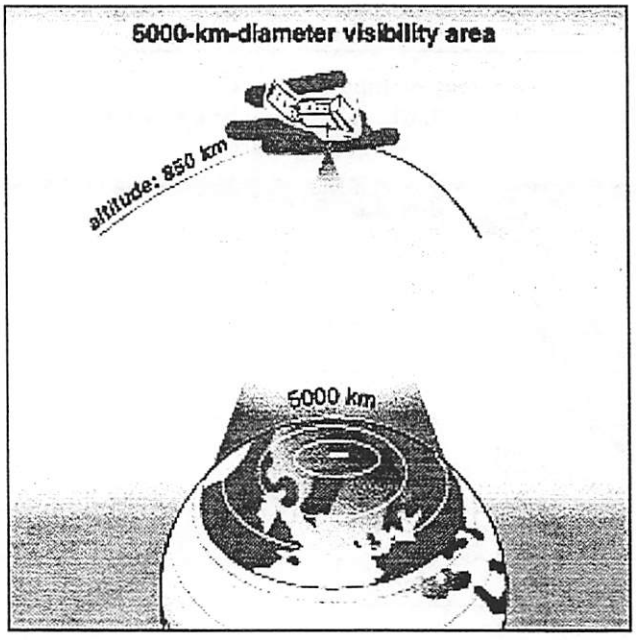
APPENDIX 2-F *Satellite Pass Latency*



Probably latency, as a function of latitude, given the current constellation (November 2000)

This parameter is expressed as a distribution function. For a transmitter at the Equator, 20, 40, 60 or 80 degrees latitude, the curve shows the probability that the transmitter will be received after a certain time delay (expressed in hours). For example: the probability of a latency on the order of 100 minutes is 40% for a transmitter located at the Equator.

APPENDIX 2-G *Satellite Visibility Area*



Satellite Visibility Circle

At a given time, each satellite "sees" any and all transmitters within its visibility circle. This "footprint" is approximately 5000 kilometers in diameter and progresses from one pole to the other on each orbit.

Visibility Circle Shift

Due to the Earth's rotation, a satellite's visibility circle shifts about the polar axis during each revolution.

APPENDIX 2-H *Average Availability of Data*

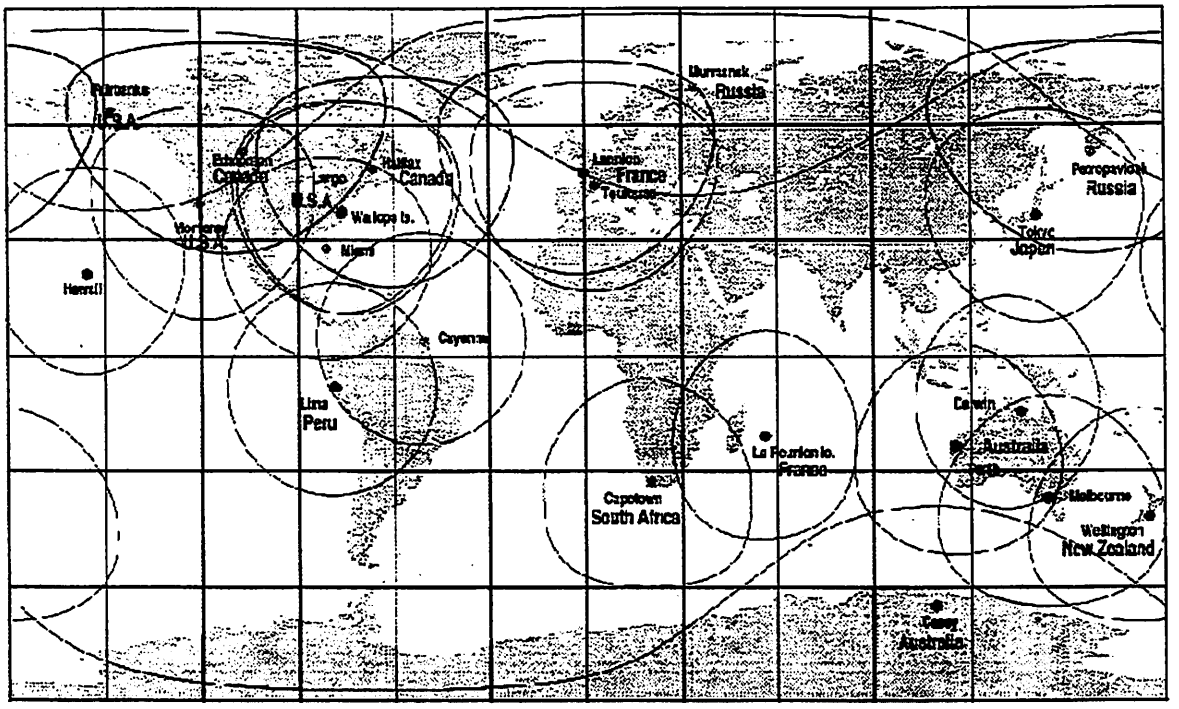
Longitudes / Latitudes	180/210	210/240	240/270	270/300	300/330	330/360	0/30	30/60	60/90	90/120	120/150	150/180
6 60/90	00:18:3	00:15:5	00:16:2	00:16:0	00:15:5	00:17:2	00:17:2	00:18:3	00:18:2		00:21:1	00:16:1
	80.26 %	79.69 %	82.95 %	81.54 %	86.91 %	79.19 %	81.64 %	83.50 %	68.19 %		56.04 %	76.06 %
	03:04:0	02:54:0	02:46:5	03:22:3	03:08:0	02:57:5	02:55:5	02:41:4	02:43:3		02:36:0	02:50:5
	19.74 %	20.31 %	17.05 %	18.46 %	13.09 %	20.81 %	18.36 %	16.50 %	31.81 %		43.96 %	23.94 %
5 30/60	00:17:4	00:18:2	00:17:1	00:18:1	00:18:1	00:18:3	00:16:1	00:18:3	00:20:4	00:22:4	00:23:1	00:21:1
	79.78 %	76.80 %	84.97 %	71.37 %	89.40 %	77.37 %	76.20 %	76.63 %	67.52 %	53.27 %	56.32 %	69.04 %
	03:24:0	02:47:0	02:51:3	02:45:4	02:52:4	02:55:0	03:04:4	02:46:2	02:48:0	03:12:0	03:09:1	03:17:4
	20.22 %	23.20 %	15.03 %	28.63 %	10.60 %	22.63 %	23.80 %	23.37 %	32.48 %	46.73 %	43.68 %	30.96 %
4 0/30	00:25:0	00:23:0	00:18:5	00:18:5	00:18:5	00:18:4	00:15:2	00:18:2	00:19:4	00:20:2	00:23:4	00:24:1
	49.49 %	50.60 %	66.97 %	59.45 %	78.66 %	65.39 %	63.56 %	56.67 %	37.65 %	53.34 %	67.04 %	50.59 %
	03:04:2	02:56:2	02:52:2	02:52:2	02:41:0	03:31:1	04:02:2	02:50:2	02:40:1	02:27:3	03:40:2	03:06:1
	50.51 %	49.40 %	33.03 %	40.55 %	21.34 %	34.65 %	36.44 %	43.33 %	62.35 %	46.66 %	32.96 %	49.41 %
3 -30/0	00:25:4	00:24:5	00:18:4	00:19:5	00:20:5	00:21:3	00:23:1	00:19:2	00:20:2	00:22:3	00:22:4	00:20:5
	34.73 %	35.87 %	49.50 %	84.72 %	41.83 %	43.39 %	57.61 %	58.51 %	58.90 %	60.56 %	59.65 %	58.66 %
	03:01:0	03:14:1	02:35:1	02:27:3	02:41:0	03:04:1	03:06:1	02:53:2	02:47:1	02:19:3	02:08:5	03:18:2
	65.27 %	64.13 %	50.50 %	15.27 %	58.17 %	56.61 %	42.49 %	41.49 %	41.10 %	39.44 %	40.34 %	41.34 %
2 -60/-30	00:21:0	00:16:3	00:21:4	00:22:2	00:20:2	00:21:3	00:19:5	00:22:0	00:21:2	00:22:1	00:22:6	00:21:2
	29.26 %	7.82 %	49.56 %	31.15 %	41.89 %	51.75 %	61.68 %	63.17 %	62.40 %	66.88 %	62.06 %	49.14 %
	02:49:4	02:38:1	02:34:0	02:35:1	03:02:3	03:06:4	03:08:0	02:53:1	02:33:1	02:10:4	02:26:1	02:56:0
	70.74 %	92.18 %	50.44 %	68.85 %	58.11 %	48.25 %	38.32 %	36.83 %	37.60 %	33.12 %	37.92 %	50.86 %
1 -90/-60	00:24:2	00:31:0	00:32:0	00:22:0	00:25:5	00:24:1	00:23:1	00:21:5	00:24:2	00:25:2	00:24:0	00:26:3
	36.20 %	29.61 %	31.09 %	10.88 %	26.25 %	36.89 %	37.97 %	46.47 %	42.17 %	48.12 %	48.72 %	38.81 %
	02:56:5	02:59:5	02:51:2	02:50:3	02:53:1	02:59:5	03:02:4	02:58:4	02:29:4	02:51:2	02:58:4	02:59:5
	63.80 %	70.39 %	68.91 %	89.44 %	73.75 %	63.11 %	62.03 %	53.53 %	57.83 %	51.88 %	51.28 %	61.19 %

Average availability of real time vs. delayed time data relay (December 2000)

Key: for Aleutian Islands area

00:17:4 Real time data disposal time
79.78% Real time data ratio
03:24:0 Delayed time data disposal time
20.22% Delayed time data ratio

APPENDIX 2-I *Argos Ground Segment*



Main Ground Stations and Regional Receiving Stations (December 2000)