

**NATIONAL TRANSPORTATION SAFETY BOARD**

Office of Aviation Safety  
Washington, D.C. 20594

March 22, 2005

**Meteorology**

**Meteorological Factual Report  
by James T. Skeen, Jr.**

**A. ACCIDENT**

Location: Unalaska, Alaska  
Date: December 8, 2004  
Time: 1800 Alaska Standard Time  
Vessel: M/V Selendang Ayu  
NTSB Number: DCA05MM008

**B. GROUP**

Chairman: James T. Skeen, Jr.  
Senior Meteorologist  
National Transportation Safety Board  
Washington, D.C.

Member: None

## C. SUMMARY

On December 8, 2004, at 1800 Alaska standard time (ast), the 738-foot freighter M/V *Selandang Ayu* ran aground and broke in half just offshore of Spray Cape, Unalaska Island, Alaska. The vessel was carrying soybeans and approximately 470,000 gallons of fuel oil. Note: The photograph in figure 1 was taken by Lauren Adams/Unalaska Community Broadcasting.



Figure 1. M/V Selandang Ayu hours before running aground

The Meteorological Group Chairman did not participate in the on-scene investigation.

## D. DETAILS OF INVESTIGATION

Notes: Unless noted, in the report all times are edt based on the 24-hour clock. Unless noted, all heights are above mean sea level (msl). Unless noted, all directions refer to true north. Unless noted, all distances are in statute miles. Coordinated Universal Time (UTC) = ast + 9 hours. UTC = Z.

### 1. Synoptic Situation

Figure 2 shows a portion of the Surface Analysis chart prepared by the National Weather Service (NWS) National Centers for Environmental Prediction (NCEP) for 0000 UTC December 9 (1500 ast December 8). Notes: The chart was obtained from the National Climatic Data Center (NCDC). NWS Surface Analysis charts centered on the Aleutian Islands for 0000 and 1200 UTC December 6, 0000 and 1200 UTC December 7, 0000 and 1200 UTC December 8 are enclosed in attachment 1.

The chart indicates strong northwesterly flow over the eastern Bering Sea.

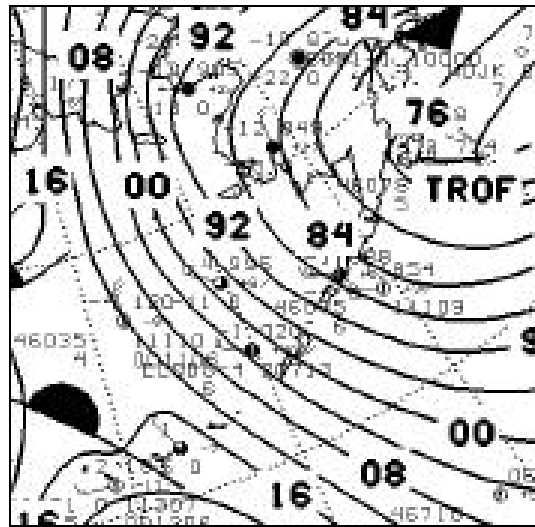


Figure 2. Surface Analysis chart for 0000 UTC December 9

Figures 3, 4, and 5 show QuikSCAT satellite wind data centered on the Aleutian Islands. The wind plots were taken from the QuikSCAT descending paths at the nominal times of 0521 UTC December 8 and 0455 UTC December 9 and the ascending path at the nominal time of 1506 UCT December 8. Note: The SeaWinds instrument on the QuikSCAT satellite is a specialized radar that measures near-surface wind speed and direction at a 25-kilometer resolution.

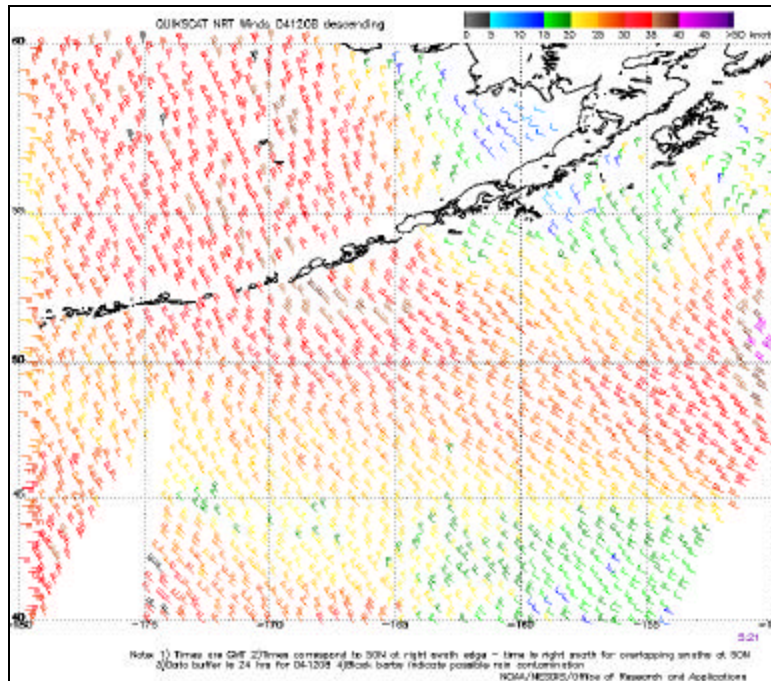


Figure 3. QuikSCAT winds for 0521 UTC December 8

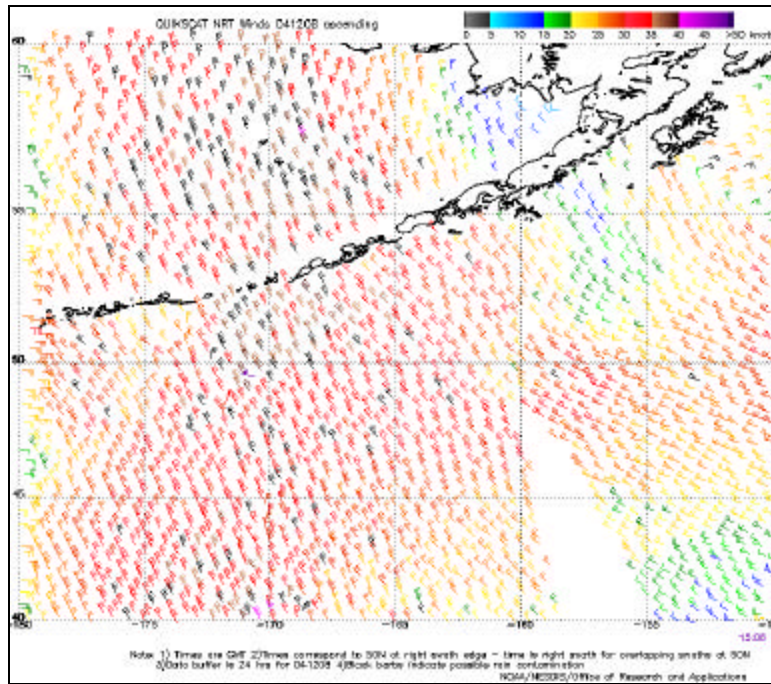


Figure 4. QuikSCAT winds for 1508 UTC December 8

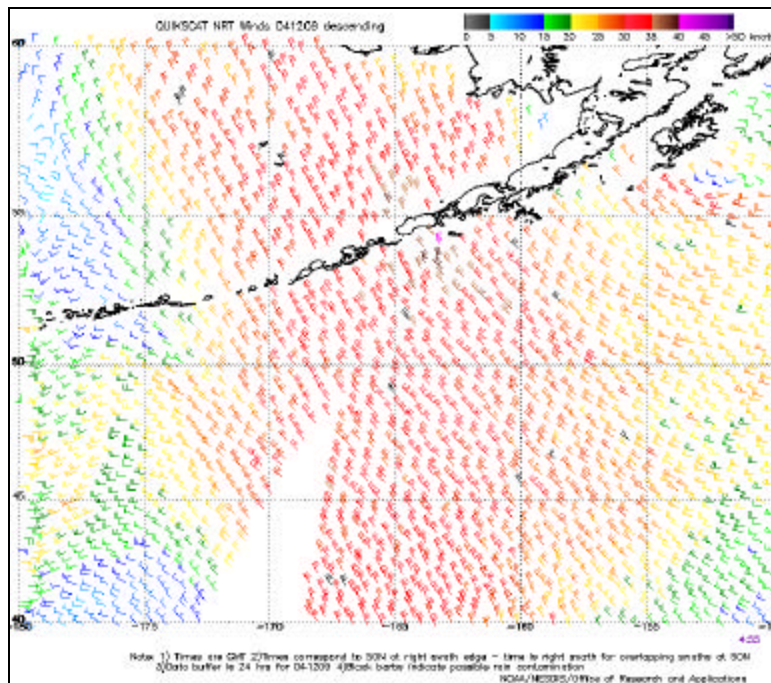


Figure 5. QuikSCAT winds for 0455 UTC December 9

## 2. Surface Weather Observations

Weather observations from the Unalaska Airport (PADU) during the period from 0036 UTC December 8 to 1236 UTC December 9 follow:

### Unalaska Airport (PADU), Unalaska, Alaska

field elevation 22 feet msl, located approximately 053 degrees at 26 nautical miles from the accident location, augmented Automated Weather Observing System-3 (AWOS-3)

PADU 080036Z 30021G32KT 3SM OVC002 01/M01 A2905 RMK AO1 2350 WEA SN  
PADU 080136Z 32022G32KT 3SM OVC007 01/M02 A2907 RMK AO1 0126 WEA -SN BR  
PADU 080236Z 33027G33KT 10SM BKN023 BKN048 02/M02 A2912 RMK AO1 200 WEA  
VCSH-NW  
PADU 080336Z 34024G37KT 5SM SCT020 BKN026 A2918 RMK AO1 0250 WEA -SN BR  
PADU 080436Z 33025G34KT 5SM BKN023 OVC046 01/M04 A2920 RMK AO1 0350 WEA  
-SN BR  
PADU 080536Z AUTO 33031G37KT 10SM FEW033 SCT043 BKN055 A2923 RMK AO1  
PADU 080636Z AUTO 34026G39KT 10SM FEW036 OVC045 02/M06 A2927 RMK AO1  
PADU 080736Z AUTO 33026G32KT 10SM FEW001 SCT037 BKN048 01/M04 A2928 RMK  
AO1  
PADU 080836Z AUTO 33027G38KT 10SM SCT034 BKN042 OVC050 01/M04 A2929 RMK  
AO1  
PADU 080936Z AUTO 32025G37KT 6SM SCT002 BKN023 OVC047 00/M05 A2930 RMK  
AO1  
PADU 081036Z AUTO 32022G30KT 7SM FEW001 SCT009 BKN030 M01/M04 A2932 RMK  
AO1  
PADU 081136Z AUTO 32022G36KT 10SM FEW034 SCT040 BKN047 01/M05 A2932 RMK  
AO1  
PADU 081236Z AUTO 33024G34KT 9SM FEW002 SCT016 BKN029 M01/M05 A2935 RMK  
AO1  
PADU 081336Z AUTO 34017G29KT 3SM SCT003 BKN009 OVC031 M01/M04 A2936 RMK  
AO1  
PADU 081436Z AUTO 31026G40KT 9SM FEW003 SCT022 BKN036 M01/M07 A2935 RMK  
AO1  
PADU 081536Z AUTO 32027G36KT 4SM FEW001 BKN037 OVC047 M01/M05 A2935 RMK  
AO1  
PADU 081636Z 31028G37KT 5SM FEW028 SCT037 M01/M04 A2936 RMK AO1 1548 WEA  
NONE  
PADU 081736Z 31023G35KT 10SM FEW026 BKN036 00/M06 A2939 RMK AO1 1650 WEA  
NONE  
PADU 081836Z 31021G32KT 3SM OVC025 M01/M05 A2941 RMK AO1 1830 WEA -SHSN  
PKWND 28043/58  
PADU 081936Z 32016G25KT 9SM SCT028 BKN035 M01/M06 A2943 RMK AO1 1850 WEA  
VCSH ALQDS  
PADU 082036Z 31028G43KT 3SM SCT019 BKN030 01/M06 A2944 RMK AO1 2030 WEA  
BLSN PKWND 31043/33  
PADU 082136Z 33022G39KT 1/2SM OVC002 M01/M04 A2947 RMK AO1 2052 WEA BLSN  
PADU 082236Z 32022G33KT 6SM BKN014 BKN035 M01/M06 A2945 RMK AO1 2150 WEA  
VCSH ALQDS  
PADU 082336Z 32023G34KT 6SM FEW018 SCT030 BKN039 M01/M05 A2946 RMK AO1  
2320 WEA -BLSN

PADU 090036Z 31020G28KT 4SM BKN020 BKN035 M01/M06 A2947 RMK AO1 0013 WEA  
-BLSN

PADU 090136Z 31030G38KT 3SM BKN020 OVC029 M01/M04 A2947 RMK AO1 0115 WEA  
-BLSN

PADU 090236Z 32029G39KT 4SM BKN020 BKN031 M01/M06 A2949 RMK AO1 0220 WEA  
-BLSN

PADU 090336Z 33024G41KT 5SM BKN023 OVC035 M01/M05 A2952 RMK AO1 1810 WEA  
--BLSN

PADU 090436Z 31031G41KT 5SM SCT012 OVC032 A2953 RMK AO1 1850 WEA -BLSN

PADU 090536Z AUTO 34015G23KT 10SM FEW005 BKN031 OVC040 M01/M07 A2955 RMK  
AO1

PADU 090636Z AUTO 30024G40KT 10SM SCT002 BKN036 OVC050 M01/M07 A2956 RMK  
AO1

PADU 090736Z AUTO 33027G47KT 4SM SCT004 BKN041 OVC049 M01/M06 A2959 RMK  
AO1

PADU 090836Z AUTO 31024G36KT 270V340 10SM FEW040 SCT048 M01/M08 A2957  
RMK AO1

PADU 090936Z AUTO 31024G41KT 10SM FEW036 SCT046 BKN060 M01/M08 A2957 RMK  
AO1

PADU 091036Z AUTO 30026G35KT 10SM FEW003 FEW036 SCT055 M01/M08 A2959 RMK  
AO1

PADU 091136Z AUTO 31022G31KT 10SM SCT042 M01/M08 A2960 RMK AO1

PADU 091236Z AUTO 31029G39KT 270V340 10SM FEW002 SCT025 BKN048 M01/M05  
A2959 RMK AO1

### 3. Buoy and Coastal-Marine Automated Network (C-MAN) Observations

No weather buoys or C-MAN stations were near the accident location.

### 4. Satellite Data

National Oceanic and Atmospheric Administration (NOAA) Polar Orbiting Environmental Satellite (POES) digital data centered on the Unalaska area were obtained through NCDC and displayed on a NTSB McIDAS<sup>1</sup> workstation.

Figure 6 shows a McIDAS plot of NOAA-16's visible data centered on the accident location for the nominal time of 0138 UTC December 9. Notes: NOAA-16 was on a descending path. PADU, the ship's position at 2100 UTC December 6, and the accident location were overlaid on the image. A map background and the NWS Coastal Waters Forecast boundaries for the accident area are shown. The nominal resolution of the visible data was 1 kilometer.

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<sup>1</sup> Man computer Interactive Data System (MCIDAS) is a meteorological and data analyses computer-based system developed by the Space Science and Engineering Center at the University of Wisconsin at Madison, Wisconsin.



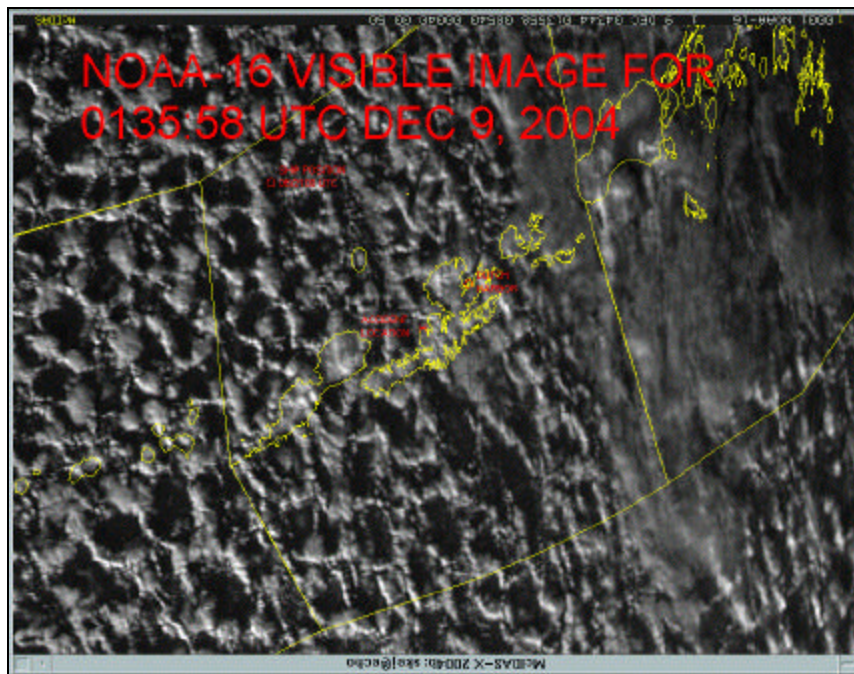


Figure 6. NOAA-16 visible satellite image for 0135:58 UTC December 9

5. NWS Forecasts and Advisories

The NWS Weather Forecast Office (WFO) at Anchorage, Alaska, prepared Coastal Waters Forecasts for the accident area. Note: Forecast Areas 12A and 12A1 were pertinent to the accident area.

Figure 7 shows a depiction of various NWS WFOs marine areas of responsibility for the Alaska region.

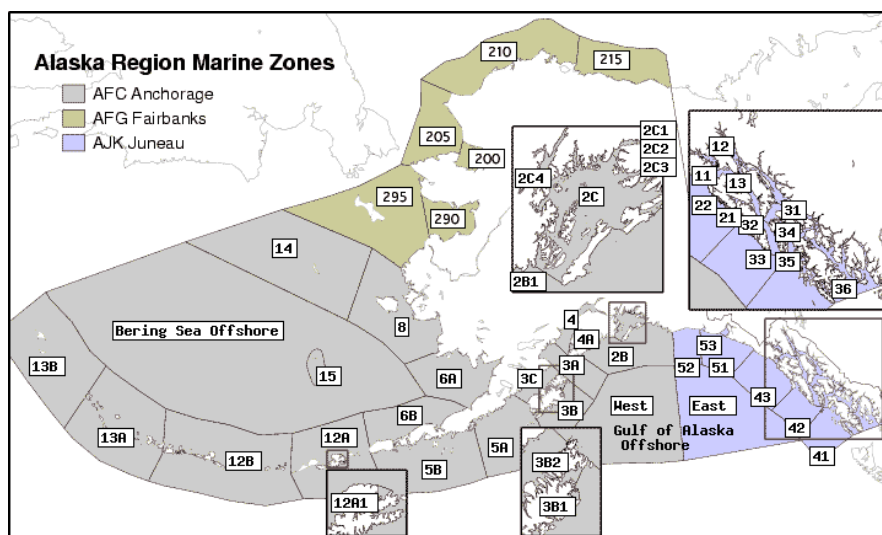


Figure 7. Alaska NWS Marine Zones

Following are the Coastal Waters Forecasts and Gale Warnings issued by the Anchorage NWS office and valid for the periods beginning 0400 ast December 8, 1600 December 8, and 2145 December 8:

PKZ170-090300-  
AREA 12A. EASTERN ALEUTIANS CAPE SARICHEF TO NIKOLSKI  
400 AM AST WED DEC 8 2004  
...GALE WARNING THROUGH THURSDAY ...  
.TODAY...NW WIND 40 KT. SEAS 22 FT. SNOW SHOWERS.  
.TONIGHT...NW WIND 35 KT. SEAS 20 FT.  
.THU...W WIND 20 KT BECOMING SW 40 KT IN THE AFTERNOON. SEAS 17 FT.  
SNOW SHOWERS.  
.THU NIGHT...W WIND 30 KT. SEAS 14 FT.  
.FRI...W WIND 40 KT. SEAS 20 FT.  
.SAT AND SUN...SW WIND 35 KT. SEAS 16 FT.  
\$\$

PKZ171-090300-  
AREA 12A1. UNALASKA BAY  
400 AM AST WED DEC 8 2004  
...GALE WARNING THROUGH THURSDAY ...  
.TODAY...NW WIND 35 KT. GUSTS TO 50 KT. SEAS 13 FT. SNOW SHOWERS.  
.TONIGHT...NW WIND 35 KT. SEAS 13 FT. RAIN AND SNOW SHOWERS.  
.THU...W WIND 15 KT BECOMING S 35 KT IN THE AFTERNOON. SEAS 6 FT.  
SNOW.  
.THU NIGHT...W WIND 25 KT. SEAS 4 FT.  
.FRI...W WIND 30 KT. SEAS 5 FT.  
.SAT...NW WIND 35 KT. SEAS 13 FT.  
.SUN...SW WIND 35 KT. SEAS 5 FT.  
\$\$

PKZ170-091500-  
AREA 12A. EASTERN ALEUTIANS CAPE SARICHEF TO NIKOLSKI  
400 PM AST WED DEC 8 2004  
...GALE WARNING THROUGH TONIGHT...  
.TONIGHT...NW WIND 40 KT. STRONGER GUSTS TO 55 KT. SEAS 22 FT. SNOW.  
.THU...WIND DIMINISHING TO W 25 KT IN THE MORNING. SEAS 17 FT.  
SNOW SHOWERS AND PATCHY FOG.  
.THU NIGHT...W WIND 35 KT BECOMING 20 KT AFTER MIDNIGHT. SEAS 14  
FT. RAIN AND SNOW SHOWERS.  
.FRI...W WIND INCREASING TO 35 KT. SEAS 14 FT.  
.FRI NIGHT...NW WIND 30 KT. SEAS 16 FT.  
.SAT...NW WIND 35 KT. SEAS 20 FT.  
.SUN...NW WIND 30 KT. SEAS 20 FT.  
.MON...S WIND 50 KT. SEAS 14 FT.  
\$\$

PKZ171-091500-  
AREA 12A1. UNALASKA BAY  
400 PM AST WED DEC 8 2004  
...GALE WARNING THROUGH TONIGHT...  
.TONIGHT...NW WIND 40 KT. SEAS 20 FT. SNOW. FREEZING SPRAY.  
.THU...WIND DIMINISHING TO W 20 KT IN THE MORNING. SEAS SUBSIDING TO  
4 FT IN THE AFTERNOON. SNOW AND PATCHY FOG.  
.THU NIGHT...W WIND 25 KT. SEAS 5 FT. RAIN AND SNOW SHOWERS.



.FRI...W WIND 30 KT. SEAS 5 FT.  
.FRI NIGHT...W WIND 25 KT. SEAS 4 FT.  
.SAT...NW WIND 35 KT. SEAS 16 FT.  
.SUN...NW WIND 30 KT. SEAS 13 FT.  
.MON...S WIND 40 KT. SEAS 6 FT.  
\$\$

PKZ170-091500-

AREA 12A. EASTERN ALEUTIANS CAPE SARICHEF TO NIKOLSKI  
945 PM AST WED DEC 8 2004

...GALE WARNING THROUGH TONIGHT...  
.TONIGHT...NW WIND 40 KT. STRONGER GUSTS TO 55 KT. SEAS 22 FT.  
FREEZING SPRAY AND BLOWING SNOW.  
.THU...WIND DIMINISHING TO W 25 KT IN THE MORNING. SEAS 17 FT.  
SNOW SHOWERS AND PATCHY FOG.  
.THU NIGHT...W WIND 35 KT BECOMING 20 KT AFTER MIDNIGHT. SEAS 14  
FT. RAIN AND SNOW SHOWERS.  
.FRI...W WIND INCREASING TO 35 KT. SEAS 14 FT.  
.FRI NIGHT...NW WIND 30 KT. SEAS 16 FT.  
.SAT...NW WIND 35 KT. SEAS 20 FT.  
.SUN...NW WIND 30 KT. SEAS 20 FT.  
.MON...S WIND 50 KT. SEAS 14 FT.  
\$\$

PKZ171-091500-

AREA 12A1. UNALASKA BAY  
400 PM AST WED DEC 8 2004

...GALE WARNING THROUGH TONIGHT...  
.TONIGHT...NW WIND 40 KT. SEAS 20 FT. SNOW. FREEZING SPRAY.  
.THU...WIND DIMINISHING TO W 20 KT IN THE MORNING. SEAS SUBSIDING TO  
4 FT IN THE AFTERNOON. SNOW AND PATCHY FOG.  
.THU NIGHT...W WIND 25 KT. SEAS 5 FT. RAIN AND SNOW SHOWERS.  
.FRI...W WIND 30 KT. SEAS 5 FT.  
.FRI NIGHT...W WIND 25 KT. SEAS 4 FT.  
.SAT...NW WIND 35 KT. SEAS 16 FT.  
.SUN...NW WIND 30 KT. SEAS 13 FT.  
.MON...S WIND 40 KT. SEAS 6 FT.  
\$\$

Note: Coastal Waters Marine forecasts for the above areas during the period from 1600 ast December 1 to 1600 ast December 7 are contained in attachment 2.

## 6. Tide and Current Information

There were no tide or tidal current gages in the vicinity of Skan Bay.

The tide predictions for Skan Bay for December 7, 8, and 9 (obtained from <http://tbone.biol.sc.edu/tide/tideshow.cgi>) are shown below:

Skan Bay, Unalaska Island, Alaska

7 December 2004 - 9 December 2004

53.6100° N, 167.0450° W

2004-12-07	20:27	AKST	1.02 feet	Low Tide
2004-12-08	03:35	AKST	2.86 feet	High Tide
2004-12-08	06:26	AKST	2.79 feet	Low Tide
2004-12-08	10:12	AKST	Sunrise	
2004-12-08	13:09	AKST	4.40 feet	High Tide
2004-12-08	17:48	AKST	Sunset	
2004-12-08	20:59	AKST	0.35 feet	Low Tide
2004-12-09	05:18	AKST	3.18 feet	High Tide
2004-12-09	06:47	AKST	3.30 feet	Low Tide
2004-12-09	10:13	AKST	Sunrise	
2004-12-09	13:28	AKST	4.65 feet	High Tide
2004-12-09	17:48	AKST	Sunset	
2004-12-09	21:39	AKST	-0.27 feet	Low Tide

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Attachments