NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

March 18, 2015

Group Chairman's Factual Report

METEOROLOGY

DCA15MM017

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A. ACCIDENT

Location: Morgan's Point, Texas
Date: March 9, 2015
Time: 1231 Central daylight time (1731 UTC[1])
Vessels: CARLA MAERSK/CONTI PERIDOT

B. METEOROLOGICAL SPECIALIST

Mike Richards
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C. SUMMARY

The outbound 599.1 foot Danish registered chemical tanker CARLA MAERSK collided with the inbound 623.3 foot Liberian registered freighter M/V CONTI PERIDOT at Light 86 in the upper Houston Ship Channel, near Morgan's Point, TX. Both ships confirmed no injuries. The CARLA MAERSK, carrying 9,071,999 gallons of Methyl Tertiary Butyl Ether (MTBE), reported significant damage high on the hull with one port cargo tank breached and discharging an unknown quantity of MTBE into the sea. CARLA MAERSK completed emergency ballast operations to correct a port list. Four tugs and the Houston fireboat dispatched to assist. No damage report received from CONTI PERIDOT.

D. DETAILS OF THE INVESTIGATION

The National Transportation Safety Board's meteorological specialist did not travel in support of this accident investigation and gathered all weather data for this investigation remotely. Unless otherwise noted, all times are for March 9, 2015 (based upon the 24-hour clock), directions are referenced to true north, distances are in nautical miles and heights are above mean sea level (msl).

Coordinates used for the accident location: 29.67245° North latitude, -94.97903° West longitude.

[1] UTC – abbreviation for Coordinated Universal Time

E. FACTUAL INFORMATION

1. Synoptic Conditions

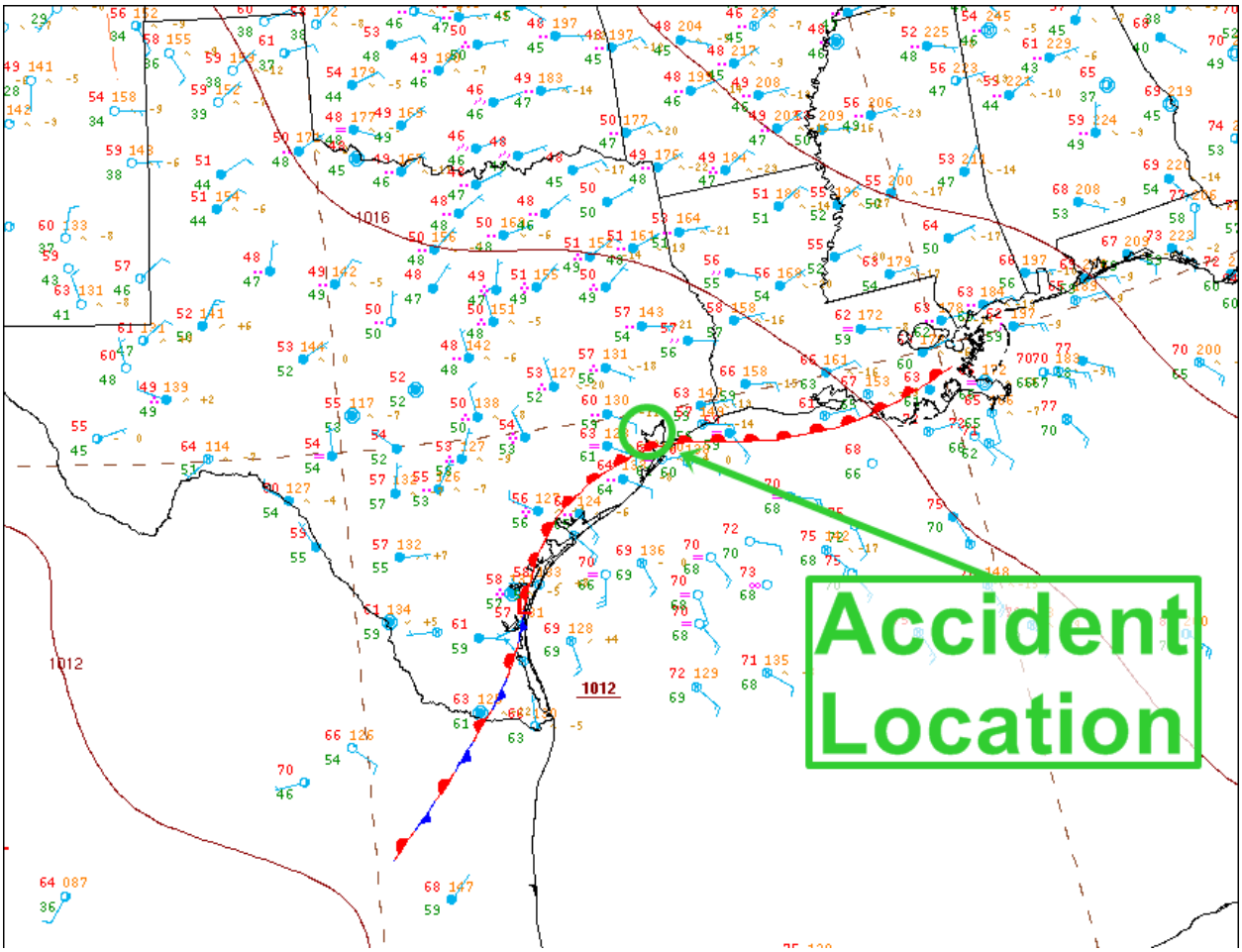

Figure 1 – NWS Surface Analysis Chart for 1300 CDT.

The National Weather Service (NWS) Surface Analysis Chart for 1300 CDT (figure 1) depicted a warm front advancing through the accident region. Wind reports in the region depicted onshore southeast flow. Land-based station models along the coast, as well as offshore models near the accident site, generally depicted low dew point depressions (with some being zero), as well as light fog and light rain.

2. Surface Observations

Surface observations from the accident region were documented for the period surrounding the accident time.

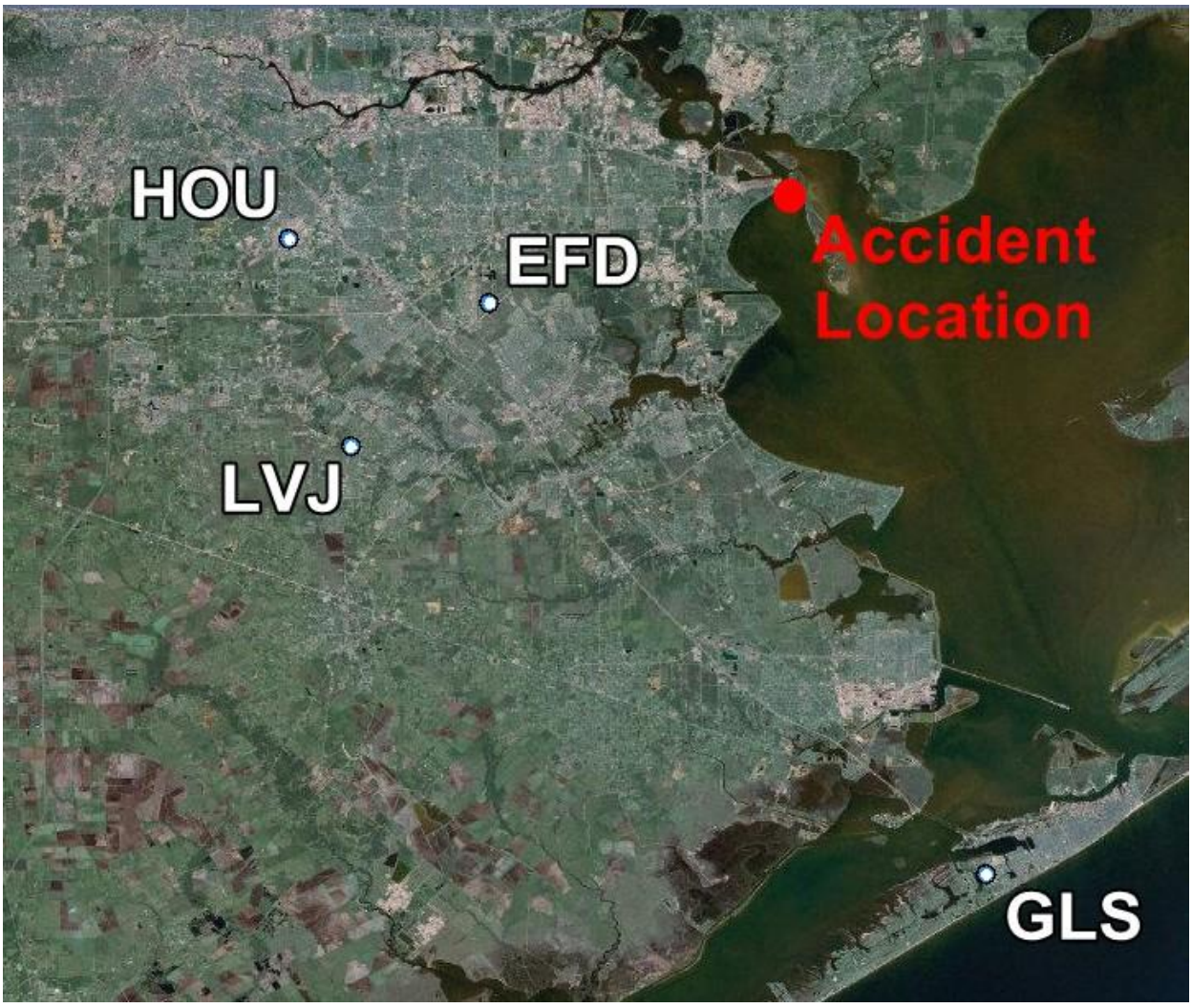

Figure 2 – Depiction of station locations presented in this section.

2.1 Ellington Airport

A meteorological reporting station was located at Ellington Airport (EFD) in Houston, Texas, which was located about 10 miles west-southwest of the accident location at an elevation of approximately 32 feet. A weather report from EFD at 1238 CDT included: a wind from 110° at 10 knots, visibility of one-half statute mile, moderate rain, fog, a vertical visibility of 200 feet, a temperature of 15° Celsius (C) and a dew point temperature of 15°C.

[1150 CDT] METAR KEFD 091650Z 11012KT 2SM RA BR OVC003 15/15 A2996=

[1238 CDT] SPECI KEFD 091738Z 11010KT 1/2SM RA FG VV002 15/15 A2996=

[1250 CDT] METAR KEFD 091750Z 10012KT 1/4SM FG VV002 15/15 A2996=

2.2 William P. Hobby Airport

A meteorological reporting station was located at William P. Hobby Airport (HOU) in Houston, Texas, which was located about 16 miles west of the accident location at an elevation of approximately 46 feet. A weather report from HOU at 1208 CDT included: a wind from 120° at 12 knots, visibility of one statute mile, mist, a temperature of 15°C and a dew point temperature of 15°C, with a surface visibility[2] of two statute miles.

[1053 CDT] METAR KHOU 091553Z 10010KT 6SM BR OVC003 15/14 A2994 RMK AO2 RAB05E20 SLP145 P0000 T01500144=

[1153 CDT] METAR KHOU 091653Z 12010KT 5SM BR OVC003 15/15 A2994 RMK AO2 SLP143 T01500150=

[1208 CDT] SPECI KHOU 091708Z 12012KT 1SM BR OVC002 15/15 A2994 RMK AO2 SFC VIS 2=

[1253 CDT] METAR KHOU 091753Z 11008KT 1SM BR OVC002 15/15 A2993 RMK AO2 SLP139 60015 T01500150 10150 20122 56011=

2.3 Pearland Regional Airport

A meteorological reporting station was located at Pearland Regional Airport (LVJ) in Houston, Texas, which was located about 17 miles southwest of the accident location at an elevation of approximately 44 feet. A weather report from LVJ at 1221 CDT included: a wind from 120° at 13 knots with gusts to 17 knots, visibility of two and one-half statute miles, mist, a temperature of 17°C and a dew point temperature of 16°C. At 1234 CDT, LVJ reported a visibility of one and one-half statute mile with mist. At 1253 CDT, LVJ reported a visibility of three-quarters of a statute mile with mist and light rain.

[1153 CDT] METAR KLVJ 091653Z AUTO 11011KT 4SM -RA BR OVC003 17/16 A2996 RMK AO2 RAB48 SLP143 P0000 T01670156=

[1221 CDT] SPECI KLVJ 091721Z AUTO 12013G17KT 2 1/2SM BR OVC003 17/16 A2996 RMK AO2 RAE05 P0000 T01670156=

[1234 CDT] SPECI KLVJ 091734Z AUTO 11011KT 1 1/2SM BR OVC003 16/16 A2996 RMK AO2 RAE05 P0000 T01610156=

[1253 CDT] METAR KLVJ 091753Z AUTO 11011KT 3/4SM -RA BR OVC002 16/16 A2994 RMK AO2 RAE05B53 SLP139 P0000

[2] Here, surface visibility refers to a visibility determined by a human observer on the ground. The visibility reported in the main body of the weather report refers to the visibility reported from an automated visibility sensor at the station, as augmented by a weather observer.

2.4 Scholes International Airport at Galveston

A meteorological reporting station was located at Scholes International Airport at Galveston (GLS) in Galveston, Texas, which was located about 25 miles south-southeast of the accident location at an elevation of approximately 5 feet. A weather report from GLS at 1220 CDT included: a wind from 090° at 10 knots, visibility of one-quarter statute mile, fog, a vertical visibility of 200 feet, a temperature of 16°C and a dew point temperature of 16°C. At 1231 CDT, GLS reported a visibility of one-half statute mile. At 1241 CDT, GLS again reported a visibility of one-quarter statute mile.

[1124 CDT] SPECI KGLS 091624Z 08011KT 1/2SM FG OVC002 16/16 A2996 RMK AO2 T01560156 $=

[1152 CDT] METAR KGLS 091652Z 08011KT 1/2SM FG VV002 16/16 A2996 RMK AO2 SLP144 T01560156 $=

[1220 CDT] SPECI KGLS 091720Z 09010KT 1/4SM FG VV002 16/16 A2996 RMK AO2 T01560156 $=

[1231 CDT] SPECI KGLS 091731Z 10010KT 1/2SM FG VV002 16/16 A2995 RMK AO2 T01610161 $=

[1241 CDT] SPECI KGLS 091741Z 09009KT 1/4SM FG VV002 16/16 A2995 RMK AO2 T01610161 $=

3. Weather Radar

WSR-88D Level-II weather radar imagery from Houston, Texas (KHGX), is presented in figure 3. KHGX was located approximately 13 miles south-southwest of the accident site at an elevation of 115 feet. Assuming standard refraction and considering the 0.95° beam width for the WSR-88D radar beam, the KHGX 0.548° tilt would have "seen" altitudes between about 325 and 1,635 feet above msl at the accident location.

The KGHX imagery from 1230 CDT depicted a large area of light to moderate reflectivity north, northwest, west, southwest and south of the accident location. Only scattered areas of very light values of reflectivity (<10 dBZ) were present within about 10-20 miles of the accident location at the accident time.

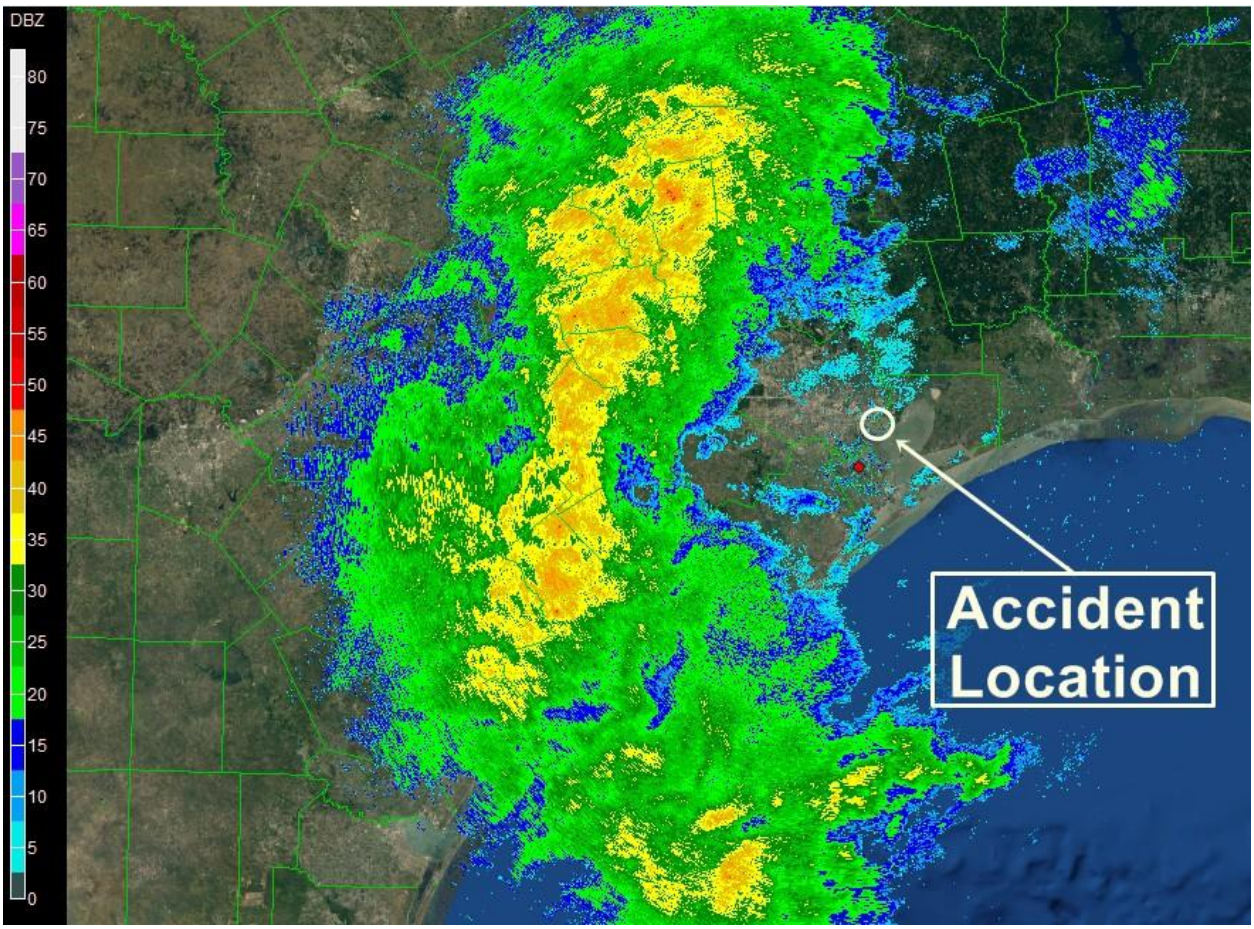

Figure 3 – KHGX 0.548° Level-II reflectivity product from 1230 CDT.

4. Satellite Imagery

Geostationary Operational Environmental Satellite (GOES)-13 "visible" (0.63µm) data were obtained from an archive at the Space Science Engineering Center at the University of Wisconsin-Madison. Imagery from 1230 CDT is presented in figure 4. The GOES-13 imagery depicts cloudy and likely overcast conditions across the accident region.

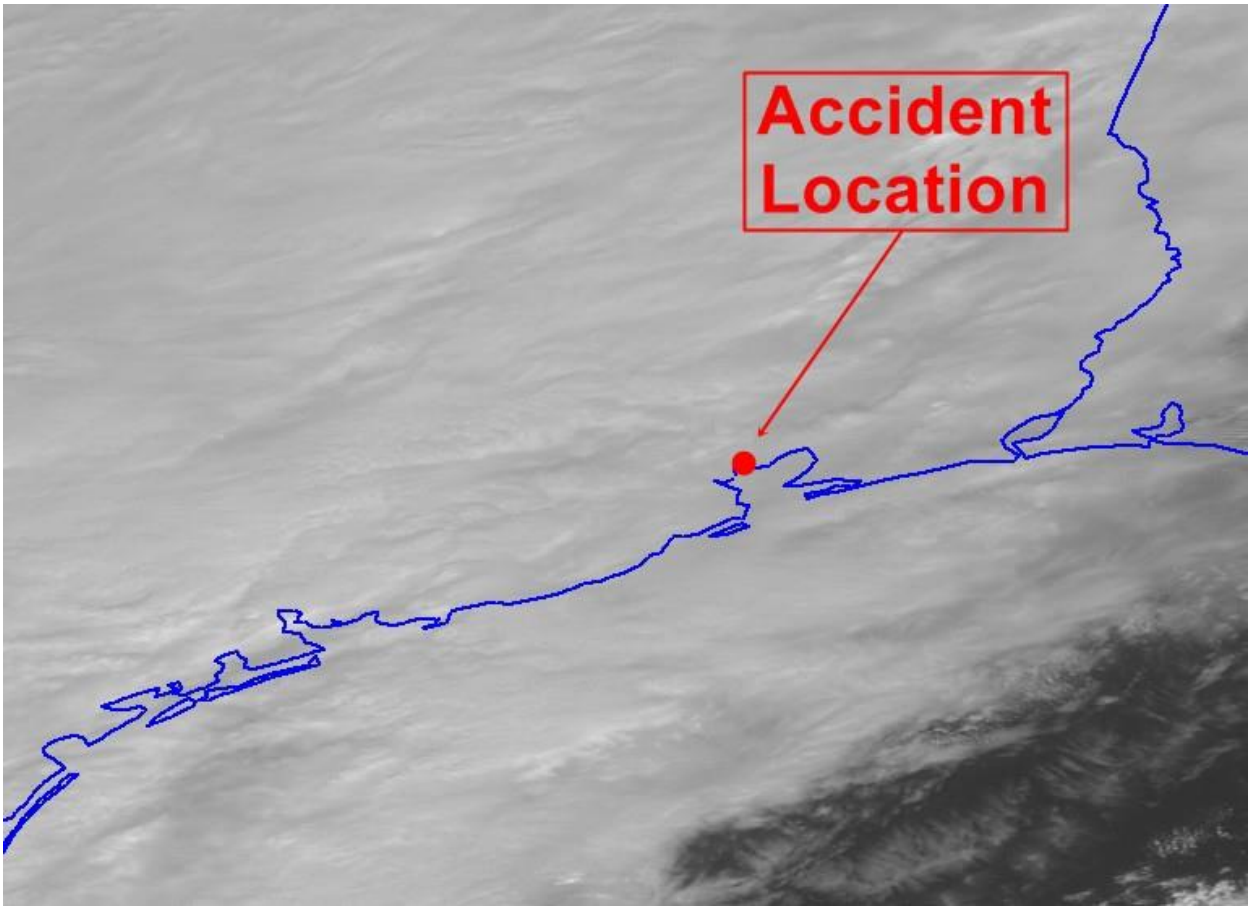

Figure 4 – GOES-13 0.63µm ("visible") imagery from 1230 CDT.

5. Area Forecast Discussion

An Area Forecast Discussion (AFD) was issued at 1044 CDT by the NWS' Houston/Galveston Weather Forecast Office (WFO). The marine portion of the AFD, which was originally issued at 0359 CDT in a previous AFD, advised of the potential for "some small sea fog by the afternoon/evening."

FXUS64 KHGX 091544
AFDHGX
AREA FORECAST DISCUSSION
NATIONAL WEATHER SERVICE HOUSTON/GALVESTON TX
1044 AM CDT MON MAR 9 2015

.PREV DISCUSSION... /ISSUED 359 AM CDT MON MAR 9 2015/

MARINE...
AS ONSHORE WINDS DEVELOP TODAY (WITH THE PASSAGE OF THE WARM FRONT) ***WE COULD SEE THE DEVELOPMENT OF SOME SEA FOG BY THE AFTN/EVE.*** *THESE LOWERED VISIBILITIES ARE FCST TO BE BRIEF GIVEN THE FCST PASSAGE OF THE NEXT LOW/STORM SYSTEM (MOVING UP FROM*

THE LOWER RIO GRANDE VALLEY) TO THE NE AND THE OFFSHORE WINDS IN ITS WAKE. THEREAFTER...NOT TOO MANY CHANGES WITH THIS OVERALL PATTERN AS A SERIES OF OTHER LOW PRESSURE SYSTEMS DEVELOP/MOVE ALONG THIS SAME GENERAL PATH. AS SUCH WE SHOULD KEEP WITH A GENERALLY LIGHT (OCCASIONALLY MODERATE) NORTH FLOW IN PLACE OVER OUR MARINE ZONES THE REST OF THE WEEK. NO ADVISORY/CAUTION FLAGS EXPECTED ATTM FOR THIS FCST CYCLE.

6. Marine Weather Message

A Marine Weather Message (MWM) was issued at 1124 CDT by the NWS' Houston/Galveston WFO. The MWM advised of patchy dense fog and visibilities of one nautical mile or less at times for an area that included Galveston Bay. The MWM indicated that "mariners should be prepared for sudden changes in visibility over short distances."

WHUS74 KHGX 091624
MWWHGX
URGENT - MARINE WEATHER MESSAGE
NATIONAL WEATHER SERVICE HOUSTON/GALVESTON TX
1124 AM CDT MON MAR 9 2015
...DENSE FOG ADVISORY IN EFFECT...
.PATCHY DENSE FOG ALONG WITH WIDESPREAD RAIN WILL REDUCE VISIBILITIES TO 1 NM OR LESS AT TIMES. VISIBILITIES WILL LIKELY REMAIN LOW THROUGH AT LEAST THE MORNING HOURS.
GMZ330-335-350-355-100000-
/O.NEW.KHGX.MF.Y.0019.150309T1624Z-150310T0000Z/
*MATAGORDA BAY-**GALVESTON BAY**-WATERS FROM FREEPORT TO THE MATAGORDA SHIP CHANNEL OUT 20 NM- WATERS FROM HIGH ISLAND TO FREEPORT OUT 20 NM-*
1124 AM CDT MON MAR 9 2015
...DENSE FOG ADVISORY IN EFFECT UNTIL 7 PM CDT THIS EVENING...
THE NATIONAL WEATHER SERVICE IN HOUSTON/GALVESTON HAS ISSUED A DENSE FOG ADVISORY...WHICH IS IN EFFECT UNTIL 7 PM CDT THIS EVENING.
** VISIBILITY...ONE NAUTICAL MILE OR LESS AT TIMES.*
PRECAUTIONARY/PREPAREDNESS ACTIONS...
***MARINERS SHOULD BE PREPARED FOR SUDDEN CHANGES IN VISIBILITY OVER SHORT DISTANCES.** REDUCE YOUR SPEED AND KEEP A LOOKOUT FOR OTHER VESSELS...BUOYS AND BREAKWATERS. KEEP YOUR NAVIGATION LIGHTS ON. INEXPERIENCED MARINERS... ESPECIALLY THOSE OPERATING SMALLER CRAFT OR NOT EQUIPPED WITH RADAR...SHOULD CONSIDER SEEKING SAFE HARBOR.*

7. Coastal Waters Forecast

A Coastal Waters Forecast for the accident region was issued at 1125 CDT by the NWS' Houston/Galveston WFO. Only the portions applicable to the accident site and accident time are provided here. This product repeated language found in the AFD and MWM regarding low visibilities

FZUS54 KHGX 091625
CWFHGX
COASTAL WATERS FORECAST FOR TEXAS
NATIONAL WEATHER SERVICE HOUSTON/GALVESTON TX
1125 AM CDT MON MAR 9 2015
UPPER TEXAS COASTAL WATERS FROM HIGH ISLAND TO THE MATAGORDA SHIP CHANNEL OUT 60 NAUTICAL MILES INCLUDING GALVESTON AND MATAGORDA BAYS SEAS ARE PROVIDED AS A RANGE OF THE AVERAGE HEIGHT OF THE HIGHEST 1/3 OF THE WAVES...ALONG WITH THE OCCASIONAL HEIGHT OF THE AVERAGE HIGHEST 10 PERCENT OF THE WAVES.
GMZ300-100515-
SYNOPSIS FOR HIGH ISLAND TO THE MATAGORDA SHIP CHANNEL OUT 60 NAUTICAL MILES INCLUDING GALVESTON AND MATAGORDA BAYS
1125 AM CDT MON MAR 9 2015
.SYNOPSIS FOR HIGH ISLAND TO MATAGORDA SHIP CHANNEL OUT 60 NM...
A LIGHT TO MODERATE ONSHORE FLOW COULD PRODUCE AREAS OF SEA FOG OVER THE BAYS AND NEARSHORE WATERS THIS AFTERNOON AND EVENING. *THE FOG IS EXPECTED TO BE SHORT-LIVED AS THE PASSAGE OF A STRONG STORM SYSTEM TO THE NORTHEAST TODAY WILL BRING OFFSHORE WINDS TO THE AREA IN ITS WAKE LATER TONIGHT. SCATTERED TO NUMEROUS SHOWERS AND EVEN A FEW THUNDERSTORMS WILL ACCOMPANY THIS SYSTEM TODAY. LIGHT TO MODERATE NORTH TO NORTHWEST WINDS ARE ANTICIPATED FOR THE REMAINDER OF THE WEEK.*
$$
GMZ330-335-100515-
MATAGORDA BAY-GALVESTON BAY-
1125 AM CDT MON MAR 9 2015
...DENSE FOG ADVISORY IN EFFECT UNTIL 7 PM CDT THIS EVENING...
.REST OF TODAY...SOUTHEAST WINDS 10 TO 15 KNOTS. BAY WATERS SLIGHTLY CHOPPY. PATCHY DENSE FOG. SHOWERS LIKELY AND ISOLATED THUNDERSTORMS.

8. Astronomical Data

The astronomical data obtained from the United States Naval Observatory for 94° 59' west longitude and 29° 40' north latitude, indicated the following:

SUN	
Sunrise	0737 CDT
Sun transit	1330 CDT
Sunset	1924 CDT

MOON	
Moonset	0946 CDT
Moonrise	2301 CDT

Submitted by: Mike Richards
NTSB, AS-30