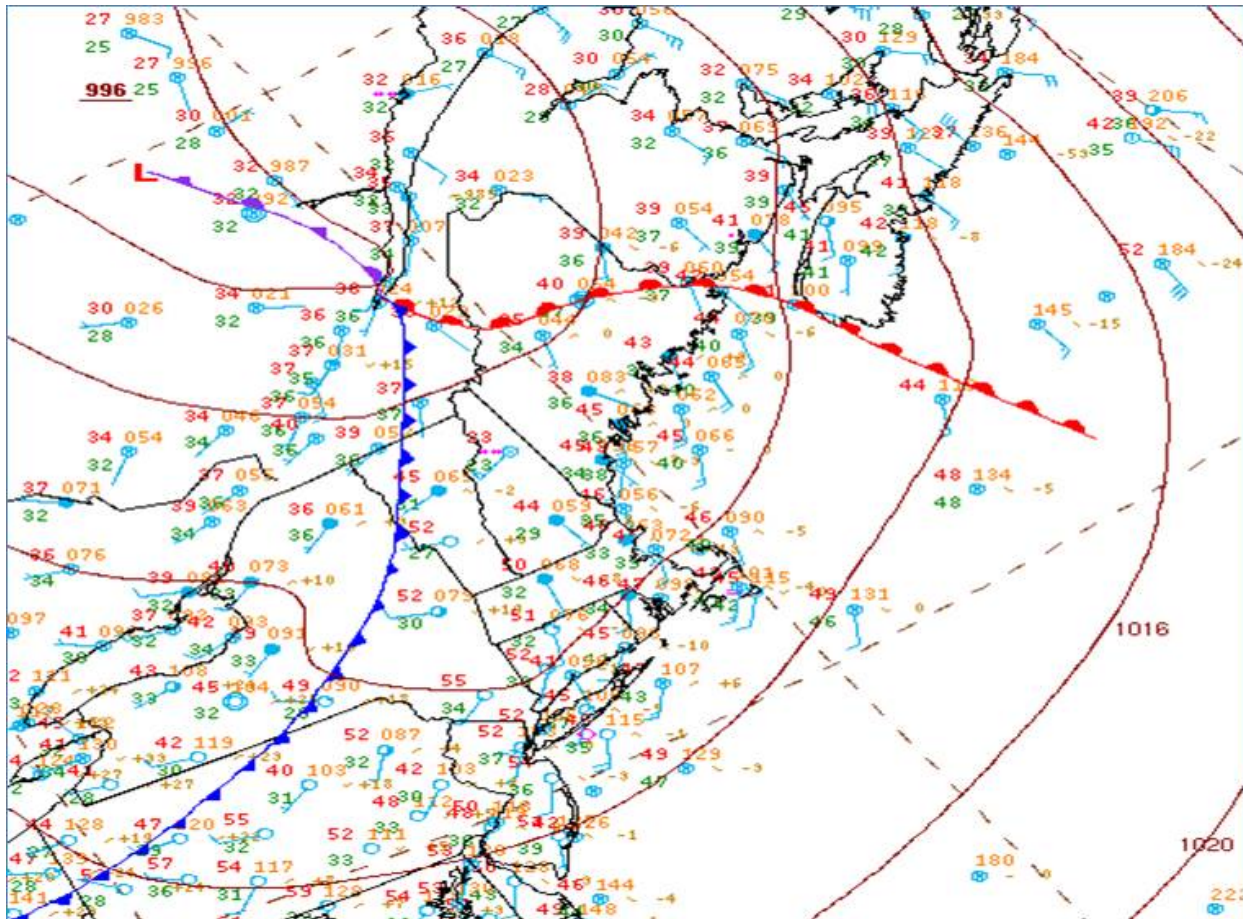


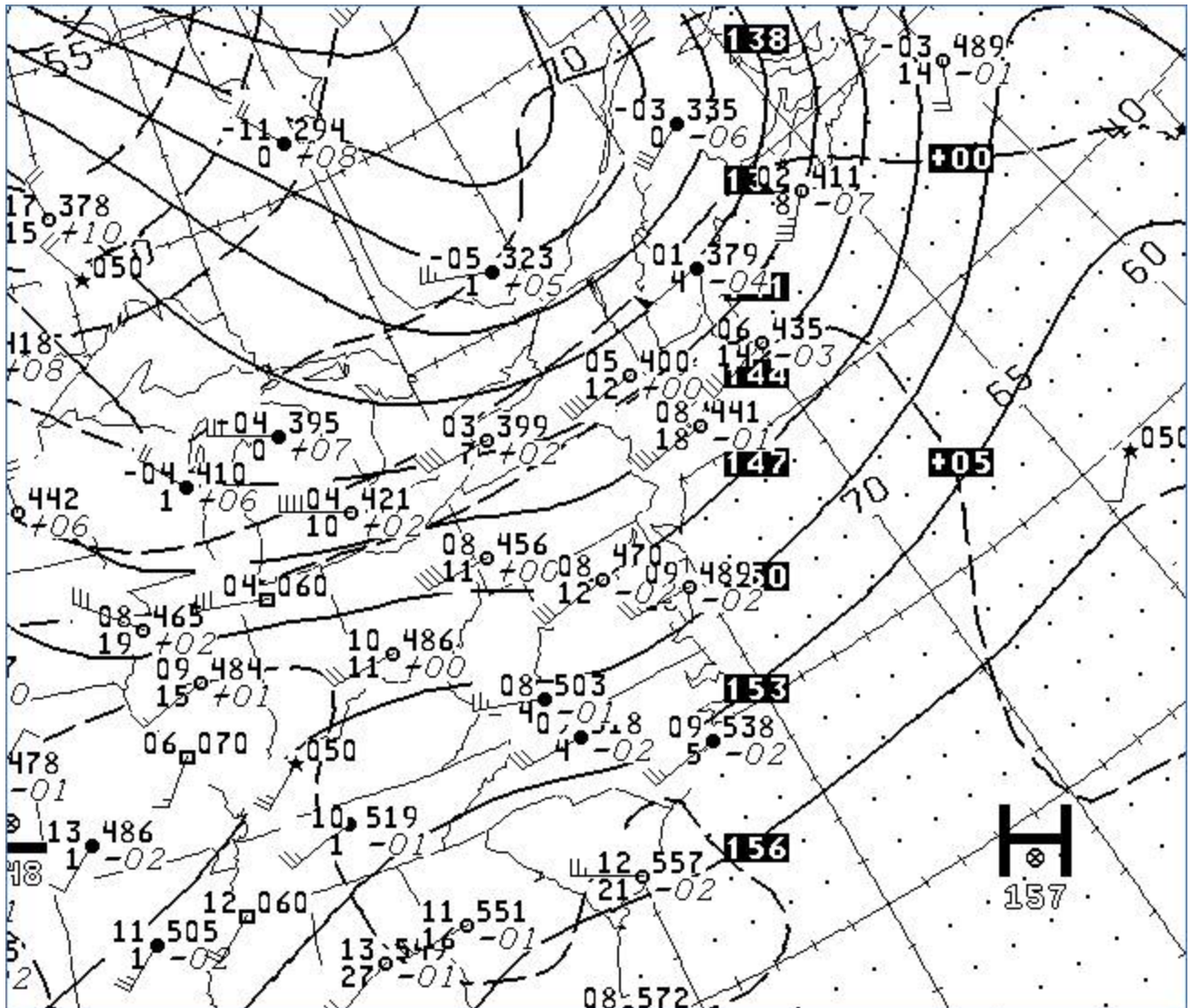
Weather Conditions on February 20-21, 2016 on Long Island, NY

Synoptic Conditions – The National Weather Service (NWS) Surface Analysis Chart for 2200 EST (0300Z on February 21, 2016) is included below. The chart depicted a deep low-pressure center at 996-hectopascals (hPa) over Canada with an occluded front extending southeastward and splitting into a warm front extending across Maine and a cold front to the southwest through Vermont, New York and into Pennsylvania. The accident site was located ahead of the cold front in the warm air sector of the front. The isobars and the surrounding station models depicted surface winds from the south-southwest at 10 to 20 knots, with no significant weather being reported in the vicinity of the accident site. The closest station model depicted relatively clear skies, temperature of 45° Fahrenheit (F), dew point temperature of 37° F.



A review of the National radar mosaic for the period indicated no significant meteorological echoes in the area at the time of the accident.

The northeast section of the NWS 850-hPa Constant Pressure Chart for 1900 EST (0000Z on February 21, 2016) depicted westerly winds of 30 to 50 knots at approximately 5,000 feet with temperatures near 6° Celsius (C).



Observation – The closest weather reporting facility to the accident site was the planned diversion airport of Long Island Mac Arthur Airport (KISP), in Islip, New York. The airport had an ASOS and listed an elevation of 99 feet, and a magnetic variation of 14° W. The following conditions were reported surrounding the period:

METAR KISP 202356Z 23006KT 10SM FEW260 07/02 A2986 RMK AO2 SLP111 T00720022 10167 20072 53004=

METAR KISP 210056Z 22010KT 10SM FEW260 08/02 A2986 RMK AO2 SLP111 T00780022=

METAR KISP 210156Z 21010KT 10SM FEW110 FEW260 08/03 A2985 RMK AO2 SLP107 T00830028=

METAR KISP 210256Z 22009KT 10SM FEW110 FEW260 07/03 A2984=

METAR KISP 210356Z 22010KT 10SM CLR 07/03 A2982 RMK AO2 SLP098 T00720028=

Accident 0405Z

SPECI KISP 210420Z 22009KT 10SM CLR 07/03 A2982 RMK AO2 T00720028=

METAR KISP 210456Z 22009KT 10SM BKN100 07/03 A2981 RMK AO2 SLP095 LAST AUGMENTED OBSERVATION UNTIL

1100Z T00720028 401670044=

METAR KISP 210556Z AUTO 23010KT 10SM CLR 07/03 A2981=

METAR KISP 210656Z AUTO 25005KT 10SM CLR 06/02 A2982=

Departure Airport – the accident airplane departed from the Fitchburg Municipal Airport (KFIT), Fitchburg, Massachusetts at approximately 2100 EST. The airport has an ASOS and lists an elevation of 348 feet, and a magnetic variation of 15° W. The following conditions were reported surrounding the period:

METAR KFIT 210052Z AUTO 16004KT 10SM BKN090 10/M02 A2974 RMK AO2 SLP075 T01001017
METAR KFIT 210152Z AUTO 16005KT 10SM OVC100 09/M01 A2973 RMK AO2 SLP070 T00941011
METAR KFIT 210252Z AUTO 18007KT 10SM OVC100 10/M01 A2972 RMK AO2 SLP067 T01001006 56013
METAR KFIT 210352Z AUTO 22011G21KT 10SM OVC100 13/M01 A2973 RMK AO2 SLP068 T01331006=
METAR KFIT 210452Z AUTO 22007G15KT 10SM BKN100 13/M01 A2973 RMK AO2 SLP068 T01281006 401500000=
METAR KFIT 210552Z AUTO 26004KT 10SM CLR 10/M01 A2973 RMK AO2 SLP070 T01001006 10133 20083 51004=

Planned destination - Republic Airport (KFRG), Farmingdale, New York, had an ASOS and listed an elevation of 80 feet, and a magnetic variation of 14° W. The following conditions were reported surrounding the period:

METAR KFRG 210053Z 21009KT 10SM CLR 09/03 A2986 RMK AO2 SLP112 T00940028=
METAR KFRG 210153Z 20006KT 10SM CLR 08/02 A2986 RMK AO2 SLP111 T00830022=
METAR KFRG 210253Z 20005KT 10SM CLR 08/02 A2985 RMK AO2 SLP108 T00780022 58002=
METAR KFRG 210353Z 22007KT 10SM CLR 08/03 A2983 RMK AO2 SLP102 T00830028=
METAR KFRG 210453Z AUTO 23007KT 10SM CLR 09/03 A2982 RMK AO2 SLP098 T00890033 401720056=
METAR KFRG 210553Z AUTO 24005KT 10SM CLR 08/03 A2982 RMK AO2 SLP097 T00830028 10094 20072 56011=
METAR KFRG 210653Z AUTO 26007KT 10SM CLR 08/03 A2983 RMK AO2 SLP103 T00780028=

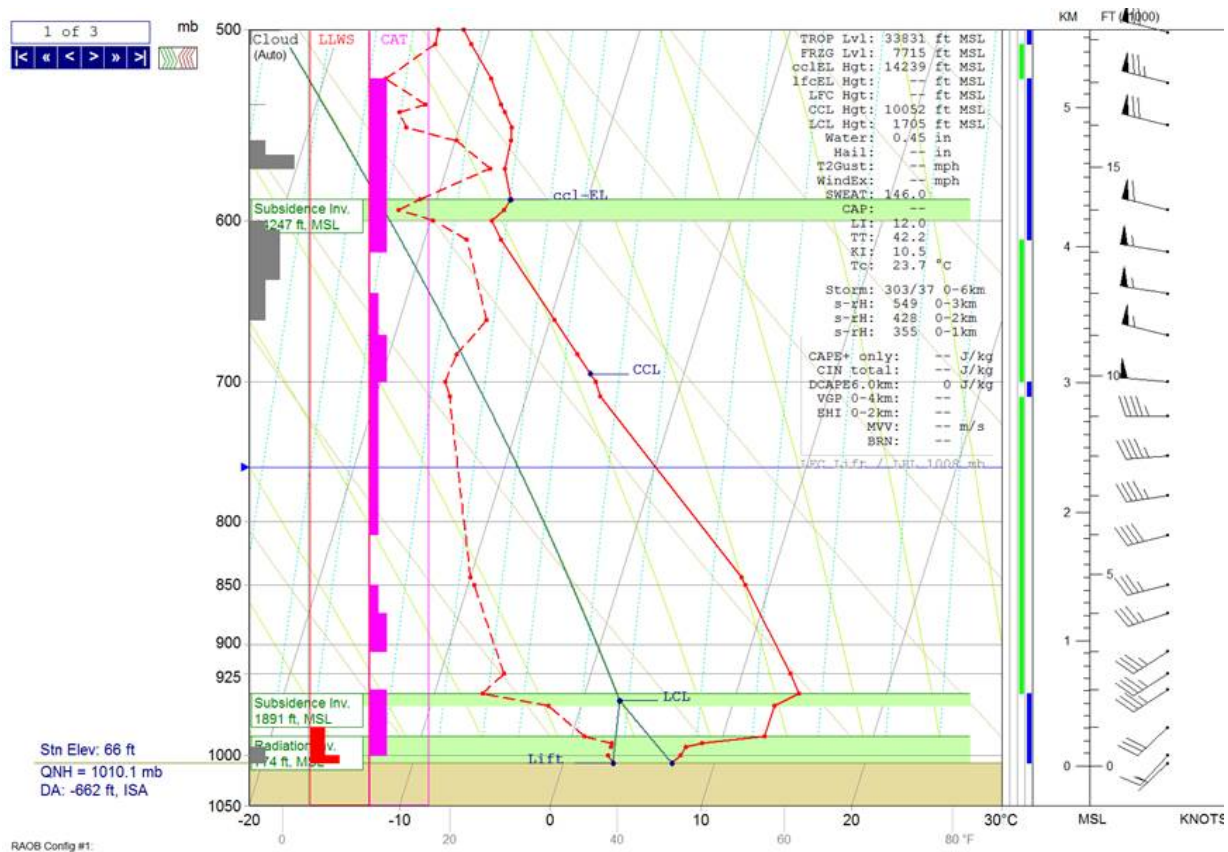
Pilot Reports (UA/UUA) – over the region:

FRG UUA /OV FRG /TM 1825 /FLUNKN /TP C172 /RM LLWS +/-10KT DURD RY19/ MULTIPLE ACFT=
OQU UA /OV SFZ-WST045017 /TM 2102 /FL030 /TP P28A /TB OCNL LGT
SCH UA /OV ALB335014/TM 2113/FL040/TP B737/TB LGT-MOD 120-040
FRG UUA /OV FRG/TM 2115/FL002/TP C172/RM LLWS +/-10KT 002-SFC DURD RY32
BAF UA /OV BAF/TM 2243/FL130/TP CL30/TA M05/IC LGT MX
BDR UA /OV 5 NE/TM 2330/FL110 /TP E190/TB MOD/RM DURING DESCENT

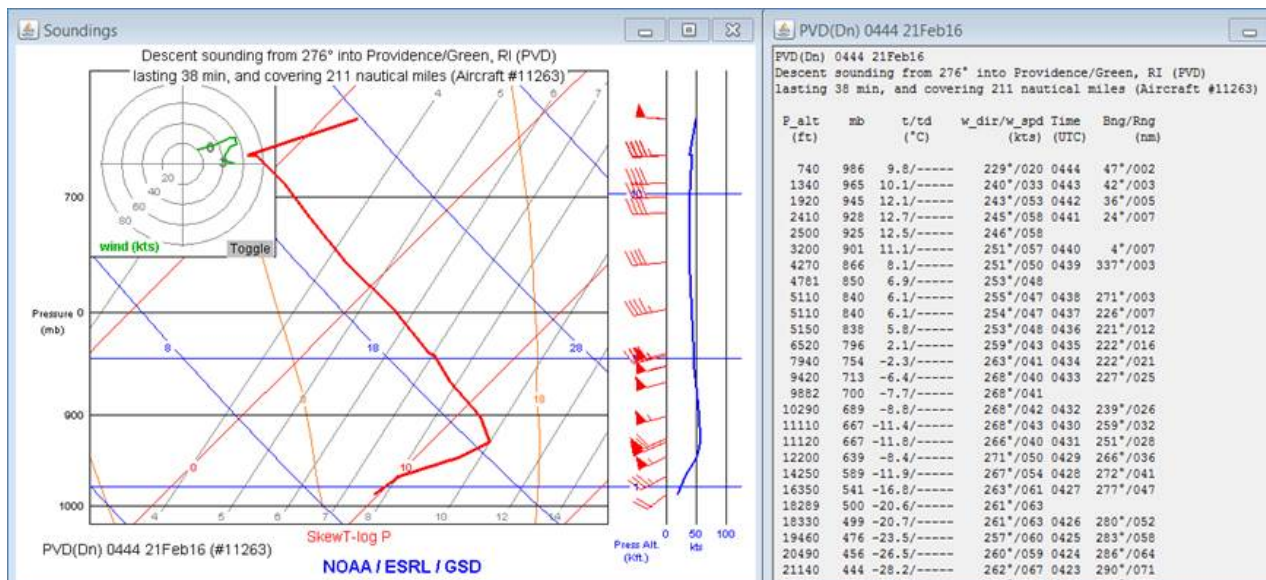
ALB UA /OV ALB180015 /TM 0340 /FL060 /TP B737 /TB MOD=

Sounding – The Upton (KOKX) Long Island 1900 EST (0000Z) sounding is attached. The sounding depicted a surface based temperature inversion with a top near 2,000 feet. The surface wind at 1900 EST was from 225° at 3 knots with the wind profile depicting the winds veering to the west with height and increasing in wind speeds. Above 10,000 feet the winds were in excess of 50 knots with the level of maximum wind at 32,000 feet from 271° at 105 knots. The mean 0 to 6 kilometer or 18,000 feet wind was from 273° at 37 knots. As a result of the light surface winds and increasing wind component with height a moderate risk of low-level wind shear existed in the lowest 1000 feet, and predominately light to moderate turbulence was predicted below 3,000 feet, and light turbulence through 10,000 feet.

The freezing level was identified at 7,650 feet. The sounding did not indicate any clouds due to the low relative humidity, which was 73% at the surface, and decreased with height. The threat of carburetor icing was in the severe range from the surface to 800 feet.



Aircraft Sounding – an aircraft descending into Providence, Rhode Island at 2344 EST (0444Z) provided an in-situ measurement of the low level winds, which is included below. The track into the airport was from the southwest parallel to the Long Island Sound and the accident airplanes general route of flight. The aircraft also detected a surface based temperature inversion to approximately 2,500 feet with westerly winds of 58 knots at that level. Another limited report from an aircraft descending into LaGuardia reported a low-level wind maximum of 52 knots at 1,800 feet.



Area Forecast (FA) – the Boston regional Are Forecast current at the time of departure was as follows:

FAUS41 KKC1 210145

FA1W

-BOSC FA 210145

SYNOPSIS AND VFR CLDS/WX

SYNOPSIS VALID UNTIL 212000

CLDS/WX VALID UNTIL 211400...OTLK VALID 211400-212000

ME NH VT MA RI CT NY LO NJ PA OH LE WV MD DC DE VA AND CSTL WTRS

SEE AIRMET SIERRA FOR IFR CONDS AND MTN OBSCN.

TS IMPLY SEV OR GTR TURB SEV ICE LLWS AND IFR CONDS.

NON MSL HGTS DENOTED BY AGL OR CIG.

SYNOPSIS...LOW PRES OVER NW QUEBEC WITH OCCLUDED FRONT FROM LOW CENTER EXTDG SWD THRU NRN NY-CNTRL NY AND BECOMES CDFNT FROM NERN PA-CNTRL PA AND EXTDG WWD INTO CNTRL OH. TROF AXIS FROM SRN ME EXTDG SWD INT ATLC WTRS. BY 20Z CDFNT FROM NRN ATLC WTRS EXTDG SWWD INTO NJ COASTAL WTRS AND WWD INTO NERN WV. LOW PRES CENTERED OVER SW WV WITH CDFNT EXTDG SWD INTO WRN TN. TROF AXIS FROM NRN ATLC WTRS EXTDG SWWD THRU SRN ME AND NEW ENGLAND COASTAL WTRS. CDFNT FROM NERN QUEBEC EXTDG SWWD ACROSS NRN NEW ENGLAND STATES-LO-CNTRL MI.

ME NH VT

E ME...BKN010 TOP FL200. VIS 3SM BR SCT -SHRASN. 11Z BKN020. VIS 3SM BR SCT -SHRA. OTLK...MVFR CIG BR SHRA.

S ME/SERN NH...BKN050 TOP FL200. 06Z BKN020. VIS 3-5SM BR. OTLK...MVFR CIG BR...15Z VFR.

RMNDR...BKN040 TOP FL200. VIS 3SM BR SCT -SHRASN. 06Z -RASN. OTLK...MVFR CIG BR SHRASN.

MA RI CT

NW MA...BKN040 TOP FL200. VIS 3-5SM BR SCT -SHRA. OTLK...MVFR CIG BR.

RMNDR...SCT-BKN CI. OTLK...VFR.

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NY LO

LONG ISLAND/SERN NY...SCT-BKN CI. OTLK...VFR.

RMNDR E-CNTRL-S NY...BKN040 TOP FL200. VIS 3-5SM BR SCT -SHRA. OTLK...MVFR CIG BR.

NW NY/S HLF LO...BKN030 TOP FL180. OTLK...VFR...18Z MVFR CIG BR.

N CNTRL NY/N HLF LO...BKN020 TOP FL180. VIS 3-5SM BR SCT -SHRA. OTLK...MVFR CIG BR SHRA.

Terminal Aerodrome Forecast (TAF) – The Islip Airport was the closest TAF which were as follows:

TAF KISP 202336Z 2100/2124 20008KT P6SM SCT250

FM210400 23006KT P6SM SCT250

FM210700 28006KT P6SM BKN250

FM211300 31010KT P6SM SCT150 BKN250

FM212000 33008KT P6SM SCT060 BKN120=

TAF AMD KISP 210220Z 2102/2124 20010KT P6SM SCT250

FM210500 23008KT P6SM SCT250

FM210700 28006KT P6SM BKN250

FM211300 31010KT P6SM SCT150 BKN250

FM212000 33008KT P6SM SCT060 BKN120=

A review of the Area Forecast Discussion for aviation indicated no significant issues or any information on any strong low-level winds or windshear.

In-Flight Weather Advisories – there were no SIGMETs in effect for the area only an AIRMET for low level turbulence and wind shear, which is included below in text and graphic format:

WAUS41 KPCI 210245

2016052 0235

WA1T

-BOST WA 210245

AIRMET TANGO FOR TURB AND LLWS VALID UNTIL 210900

.

AIRMET TURB...ME NH VT MA RI CT NY LO NJ PA OH LE WV MD DC DE VA AND CSTL WTRS

FROM 50ESE PQI TO 200SE ACK TO 160SE SIE TO 40ESE SBY TO 20N ORF TO 40SW CSN TO 50S EKN TO 50SE APE
TO 20WSW YYZ TO YOW TO YSC TO 50ESE PQI

MOD TURB BLW 100. CONDS CONTG BYD 09Z ENDG 12-15Z.

.

LLWS POTENTIAL...ME NH VT MA RI CT NY NJ PA WV MD DC DE VA AND CSTL WTRS

BOUNDED BY 40W HUL-50WSW YSJ-70SE BGR-80ESE ENE-20SSE ACK-20NW SBY-40NE RIC-30WSW CSN-EKN-20N
EWC-40S JHW-20N ENE-40W HUL

LLWS EXP. CONDS CONTG BYD 09Z ENDG 09-12Z.

The Graphic AIRMET Tango valid for the period is as follows and expected moderate turbulence from the surface to 10,000 feet and the threat of low-level wind shear (LLWS) over Long Island.



Winds and Temperature Aloft Forecast – the forecast current at the time of departure:

WINDS ALOFT FORECASTS

DATA BASED ON 210000Z

VALID 210600Z FOR USE 0200-0900Z. TEMPS NEG ABV 24000

FT	3000	6000	9000	12000	18000	24000	30000	34000	39000
BOS	2734	2638+01	2648-07	2748-10	2653-22	2663-34	266850	277153	286951
BDL	2826	2736+01	2752-06	2756-09	2661-22	2683-34	278549	277953	287052
ALB	2824	2845-03	2757-06	2755-10	2746-24	2754-35	276447	276951	277252
PWM	2633	2536-03	2644-07	2744-10	2643-21	2645-35	244752	265553	286952
JFK	2740	2840+04	2846-04	2854-07	2767-19	2774-32	288849	288857	287853
ACY	2734	2933+05	2938-01	2846-05	2752-19	2863-32	297948	298257	288152

Astronomical Conditions – from the United States Naval Observatory’s website provided the following conditions for Port Jefferson, Suffolk County, New York, on February 20, 2016:

Beginning of civil twilight	0612 EST
Sunrise	0640 EST
Moonrise	1546 EST
Sunset	1732 EST
End of civil twilight	1800 EST
Accident	2305 EST
Moonset	0549 EST February 21

At the time of the accident nighttime conditions existed with the Moon located at an azimuth of 187° and an altitude of 62° above the horizon, and the phase of the moon a waxing gibbous with 97% of the visible disk illuminated.

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National Transportation Safety Board
Office of Aviation Safety
Operational Factors Division (AS-30)
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