DCA97MA017

ATTACHMENTS_I
(1 - 35)

NATIONAL TRANSPORTATION SAFETY BORAD
Office of Aviation Safety
490 L'Enfant Plaza, S.W.
Washington D.C. 20594-2000

January 24, 1997

Weather Questions

Accident: EMB-120, N265CA, COMAIR Flight 3272, January 9, 1997, at about 2055Z, near Monroe, Michigan [about 210 degrees at19 nautical miles from DTW].

Dear Captain LaViola:

In order to help us determine the environment COMAIR Flight 3272 was operating in prior to and up to the time of the accident please supply answers to the following applicable questions. Please mail the response to me at the above address or FAX the response to the following number: 202.314.6339. If you have any questions or comments please feel free to contact me at [redacted] .. e-mail [redacted]

Thank you for your help.

[redacted]
Gregory D. Salottolo
National Resource Specialist
Meteorology

ICING**********

LOCATION (ICING) Most of the Icing that occured greater then Light in nature was north of DTW on the Polar Arrival at 11-13K
TIME OR TIME PERIOD Approximatly 1540 - 50 Z
TYPE AIRCRAFT De havilland DASh- 8-106
FLIGHT NUMBER/TAIL NUMBER MESABA 3176 N828MA
ICE PROTECTION SYSTEMS INSTALLED Standard Anti + Deice Systems
TYPE SYSTEMS pneumatic Boots - Prop heat + Intake Doors + heat

(1)

CLOUD BASES IMC Throughout Flight - Multiple Layers

CLOUD TOPS During Descent IN DTW. Tops ABOVE FL190 well north of DTW.

PRECIPITATION - Mostly Snow in clouds Light in intensity

VISIBLE MOISTURE Yes - Mostly Dry Snow In clouds + Between Layers

SIZE OF DROPS (DRIZZLE, RAIN, CLOUD, MIST) N/A Snow

DROPS SPLATTERING ON WINDSHIELD " "

ICE CRYSTALS/SNOW Yes

INTENSITY OF ICING During Icing conditions, north of DTW at 16K. 11K Feet Occasional Moderate Ice - Mostly Light Mixed + Rime.

HOW DETERMINED - Windshield Post on wipes.

RATE OF ICE ACCUMULATION (INCHES PER MINUTE) N/A

HOW DETERMINED N/A

TYPE OF ICE Light + occasional moderate mixed AT 16K ↘ 11K Ft

ICING AFT OF BOOTS/PROTECTED SURFACES None

HOW FAR AFT N/A

TOP AND/OR UNDERSIDE OF WING N/A

SIDE WINDOW ICING None

ICING ON PROP SPINNER - Normal Amount

HOW FAR AFT ON PROP SPINNER 2 inches Aft

SHAPE OF ICE Conformed to Spinner

AMOUNT OF ICE ON AIRFRAME Less the 1/2"

IAS IN ICING ENVIRONMENT - Between 210 + 190 KIAS

TAS IN ICING ENVIRONMENT - Slightly higher. Not really observed At Time.

(2)

TIME IN ICING ENVIRONMENT Approx. 10-15 minutes on Arrival into DETRO AIRPORT.

ICING IN CLOUDS OR CLEAR In Clouds

ICING ALTITUDE(S) Most Icing occurred in Descent From North of FNT VOR, / Below 11,000 feet on Radar Arrival into DTW

CLIMBING, DESCENDING, LEVEL FLIGHT - Level + Descent

OUTSIDE AIR TEMPERATURE (ICING ENVIRONMENT) -10°C SAT or WARMER.

TOTAL AIR TEMPERATURE N/A

TURBULENCE IN ICING ENVIRONMENT Light Associated with Cloud Layer in Descent.

INFLIGHT VISIBILITY 0 IMC

WINDS Aloft were out of the S.W. on Approach Approach 30-40 Kt Tailwind at 4000-5000'.

HOW DETERMINED On Board computer.

WIND SHEAR IN ICING ENVIRONMENT/ INTENSITY OF WIND SHEAR - Not detected. - Directional changes were minimal in Icing Environment

AWARE ICING FORECAST - Yes. Can't Recall precise Forecast.

INTENSITY OF ICING FORECAST - Don't Recall -

HOW BECAME AWARE OF FORECAST - On Board Wx

DID YOU PROVIDE PILOT REPORT - Negative

CHARACTER OF CLOUDS- CUMULUS/STRATUS Layers

ECHOES ON WEATHER RADAR - None

DESCRIBE ECHOES ON WEATHER RADAR - None

STORMSCOPE DISPLAY N/A

DESCRIBE STORMSCOPE DISPLAY N/A

CONTROL PROBLEMS - None

TIME LANDED / LOCATION At DTW

ANY ICE OBSERVED ON AIRPLANE ON THE GROUND - Just Traces of what remained on A/C.

(3)

TYPE / LOCATION / AMOUNT OBSERVED ON GROUND SNOW / DTW / 2-3 inch

ADDITIONAL COMMENTS

****

The only thing that I can add is that the WX on this day was fairly consistent when a "wound up" Low moves through this area at this time of year. Icing was only of concern at high altitudes on the ARRIVAL. During Approach sequencing Icing was not more than a TRACE at times. The winds aloft at 4000 – 5000 feet were approximately 220° at 30-40 KNOTS. This made the approach a bit more difficult than usual, however the winds shifted, in the descent to Easterly at 10-15 K upon Landing on 3R. On the approach NO ICE was detected, Light Turbulence or "chop". Airspeed VARIATIONS were not excessive ± 5-7 KNOTS

IF I can be of any further ASSISTANCE –

Please Let Me Know –

[redacted]

④

[redacted] NATIONWIDE CONNECT 3134679753 02/06/1997 09:53

3134679753

NATIONAL TRANSPORTATION SAFETY BORAD
Office of Aviation Safety
490 L'Enfant Plaza, S.W.
Washington D.C. 20594-2000

January 31, 1997

Weather Questions

Accident: EMB-120, N265CA, COMAIR Flight 3272, January 9, 1997, at about 2055Z, near Monroe, Michigan [about 210 degrees at19 nautical miles from DTW].

Dear ~~Captain~~ Zajicek:

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Thank you for your help.

[redacted]

Gregory D. Salottolo
National Resource Specialist
Meteorology

ICING**********

LOCATION (ICING)
Descent + approach to Detroit Int'l Apt.
TIME OR TIME PERIOD
~ 1600 EST, 1/8/97
TYPE AIRCRAFT
Airbus A320
FLIGHT NUMBER/TAIL NUMBER
Flt. 2050 / N641AW
ICE PROTECTION SYSTEMS INSTALLED
Eng cowl Thermal Anti Icing (TAI), Wing TAI, Window + probes electrical anti-ice
TYPE SYSTEMS all in use at the time.
Standard Airbus anti icing equipment.

(5)

TIME IN ICING ENVIRONMENT
~ 5-10 minutes.
ICING IN CLOUDS OR CLEAR
In clouds.
ICING ALTITUDE(S)
Ground level up to considerably higher. I don't recall cloud tops. I think there were multiple layers + thick lowest layer (gnd to > 5000' AGL)
CLIMBING, DESCENDING, LEVEL FLIGHT
Descending.
OUTSIDE AIR TEMPERATURE (ICING ENVIRONMENT)
Can't recall exactly, but below +10°C TAT.
TOTAL AIR TEMPERATURE
Below +10°C.
TURBULENCE IN ICING ENVIRONMENT
Can't recall exactly, but nothing worse than light, occasional moderate.
INFLIGHT VISIBILITY
Low in clouds (< 1 mile)
WINDS
Can't recall.
HOW DETERMINED
At the time I would use ATIS winds + wind vector (direction + speed) on my Nav. Display (IRS generate
WIND SHEAR IN ICING ENVIRONMENT/ INTENSITY OF WIND SHEAR
No severe windshears.
AWARE ICING FORECAST
Yes
INTENSITY OF ICING FORECAST
Can't recall.
HOW BECAME AWARE OF FORECAST
America West weather reports, ATIS, + Tower reports.
DID YOU PROVIDE PILOT REPORT
No. Low vis approach, icy runway + taxiways + low visibility on the ground kept us busy until we were in the gate.
CHARACTER OF CLOUDS- CUMULUS/STRATUS
Stratus.
ECHOES ON WEATHER RADAR
Can't recall
DESCRIBE ECHOES ON WEATHER RADAR
~~N/A~~ - can't recall
STORMSCOPE DISPLAY
N/A
DESCRIBE STORMSCOPE DISPLAY
N/A
CONTROL PROBLEMS
Nothing major.
TIME LANDED / LOCATION
Flt. 2050 : Landed Detroit Int'l ~ 1600 EST. Aircraft N641AW.
ANY ICE OBSERVED ON AIRPLANE ON THE GROUND
Can't recall.

Greg - The following answers are to the best of my memory on the day of the accident. Unfortunately, not being awake of the tragedy so close to me, I kept no paperwork + took no notes. If I can be of further assistance - please contact me

CLOUD BASES
Low. I think less than 500' (we didn't see the runway until near 3/4 m
CLOUD TOPS
Can't recall.
PRECIPITATION
Can't recall.
VISIBLE MOISTURE
Definitely - we were in IMC for most of the approach (ILS 3R).
SIZE OF DROPS (DRIZZLE, RAIN, CLOUD, MIST)
Small I believe. Clouds, possibly freezing drizzle or snow.
DROPS SPLATTERING ON WINDSHIELD
No
ICE CRYSTALS/SNOW
Probably - can't recall exactly.
INTENSITY OF ICING
I would say moderate. It varied at different altitudes.
HOW DETERMINED
Watching ice accumulation on ice probe between pilots windshields.
RATE OF ICE ACCUMULATION (INCHES PER MINUTE)
Approx. 1/4 inch during 5-8 minute approach, varying during app at different times + at
HOW DETERMINED
By occasionally looking at ice probe + subjectively estimating rate + thickness.
TYPE OF ICE
Rime ice. White + frosty in appearance.
ICING AFT OF BOOTS/PROTECTED SURFACES
Don't recall seeing any.
HOW FAR AFT
N/A
TOP AND/OR UNDERSIDE OF WING
Don't recall seeing any.
SIDE WINDOW ICING
None
ICING ON PROP SPINNER
N/A
HOW FAR AFT ON PROP SPINNER
N/A
SHAPE OF ICE
Smooth.
AMOUNT OF ICE ON AIRFRAME
~ 1/4 inch on ice probe. This is indicative of ice on airframe where ice
IAS IN ICING ENVIRONMENT accumulates - ie leading edge of wing.
IAS on A-320 is determined by weight + configuration. I sometimes
TAS IN ICING ENVIRONMENT add 5-10 Kts for adverse conditions (ie ici
N/A. We use IAS.

TYPE / LOCATION / AMOUNT OBSERVED ON GROUND

ADDITIONAL COMMENTS

****

The icing and low visibility during the approach as well as the slippery, packed snow on the runway and taxiways stand out in my memory on 1/8/97. The traffic and radio traffic were moderate for a fairly large airport like KPTW.

The pilot workload level was pretty busy due to the icing, low visibility, concern for runway conditions, and the fair possibility of having to go missed approach - fuel, alternate, return for another try, etc.

Feel free to contact me if I can be of any further assistance.

Capt. Louis F. Zajicek Jr.

~~Capt. Louis F. Zajicek Jr.~~

P0520

2/7/97

My home Tel. # is [redacted]

My address is [redacted]

Phoenix, AZ, 85045

(8)

NATIONAL TRANSPORTATION SAFETY BORAD
Office of Aviation Safety
490 L'Enfant Plaza, S.W.
Washington D.C. 20594-2000

January 21, 1997

Weather Questions

Accident: EMB-120, N265CA, COMAIR Flight 3272, January 9, 1997, at about 2055Z, near Monroe, Michigan [about 210 degrees at19 nautical miles from DTW].

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Thank you for your help.

[redacted]
Gregory D. Salottolo
National Resource Specialist
Meteorology

ICING**********

LOCATION (ICING)

TIME OR TIME PERIOD

TYPE AIRCRAFT B 727 - 200

FLIGHT NUMBER/TAIL NUMBER Flt # 243 ship # 2202 (?tail #)

ICE PROTECTION SYSTEMS INSTALLED eng. + wing anti-ice

TYPE SYSTEMS

CLOUD BASES low to ground; do not remember exactly

(9)

CLOUD TOPS can't remember, but guessing between 5,000' → 9,000' (?) blue sky above

PRECIPITATION } on ground, yes
VISIBLE MOISTURE } in flight, no precipitation, only cloud.

SIZE OF DROPS (DRIZZLE, RAIN, CLOUD, MIST) CLOUD

DROPS SPLATTERING ON WINDSHIELD NO

ICE CRYSTALS/SNOW NO

INTENSITY OF ICING LGT - MOT

HOW DETERMINED viewing ice on bolts, washers of windshield wipers

RATE OF ICE ACCUMULATION (INCHES PER MINUTE) guessing we picked up approx. ½" in 15-20 min

HOW DETERMINED viewing windshield wipers

TYPE OF ICE rime

ICING AFT OF BOOTS/PROTECTED SURFACES

HOW FAR AFT ?

TOP AND/OR UNDERSIDE OF WING ?

SIDE WINDOW ICING no

ICING ON PROP SPINNER

HOW FAR AFT ON PROP SPINNER

SHAPE OF ICE

AMOUNT OF ICE ON AIRFRAME ?

IAS IN ICING ENVIRONMENT ≈ 250 kts

TAS IN ICING ENVIRONMENT can't remember, but TAT was less than +10°C

TIME IN ICING ENVIRONMENT do not know precisely, but guessing approx. 20 minutes

ICING IN CLOUDS

icing in clouds

(10)

ICING ALTITUDE(S) started picking it up as we entered tops of overcast

CLIMBING, DESCENDING, LEVEL FLIGHT descending, level flight

OUTSIDE AIR TEMPERATURE (ICING ENVIRONMENT)

TOTAL AIR TEMPERATURE TAT was less than +10°C; can't remember exactly

TURBULENCE IN ICING ENVIRONMENT not that I remember - smooth

INFLIGHT VISIBILITY in clouds

WINDS no wind aloft info.

HOW DETERMINED

WIND SHEAR IN ICING ENVIRONMENT/ INTENSITY OF WIND SHEAR no

AWARE ICING FORECAST aware of potential icing simply by observing outside temperature and knowing clouds were below us.

INTENSITY OF ICING FORECAST

HOW BECAME AWARE OF FORECAST

DID YOU PROVIDE PILOT REPORT I did not make a PIREP as I did not consider existing conditions a hazard; First officer was making radio transmissions at the time & I think he made some reference that we were picking up some ice. This was not a PIREP. This was his very first trip as F/O and he made no effort to the contrary. As Captain, I did not think an icing PIREP was necessary as icing was expected and rate of accumulation was not a hazard for any plane certified for flight in icing condition.

CHARACTER OF CLOUDS- CUMULUS/STRATUS STRATUS

ECHOES ON WEATHER RADAR WX RADAR not on

DESCRIBE ECHOES ON WEATHER RADAR

STORMSCOPE DISPLAY

DESCRIBE STORMSCOPE DISPLAY

CONTROL PROBLEMS

TIME LANDED / LOCATION landed at 2036z / DTW

ADDITIONAL COMMENTS

Since this was a routine, nothing out of the ordinary arrival, I was not focused on the details, the particulars of cloud tops, OAT, speeds, etc. It was a typical winter time descent into DTW. We anticipated icing by putting eng. + wing heat on prior to descending into stratus clouds below.

****

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Thank you for your help.

[redacted]
Gregory D. Salottolo
National Resource Specialist
Meteorology

ICING**********

LOCATION (ICING) DTW ARRIVAL

TIME OR TIME PERIOD 1545 L ±

TYPE AIRCRAFT A-320

FLIGHT NUMBER/TAIL NUMBER FLT 208

ICE PROTECTION SYSTEMS INSTALLED ENG & WING Heated

TYPE SYSTEMS

CLOUD BASES 400 - 500'

(12)

CLOUD TOPS 11,000

PRECIPITATION Light Snow

VISIBLE MOISTURE

SIZE OF DROPS (DRIZZLE, RAIN, CLOUD, MIST)

DROPS SPLATTERING ON WINDSHIELD NO

ICE CRYSTALS/SNOW YES

INTENSITY OF ICING Light Rime

HOW DETERMINED Windshield Probe

RATE OF ICE ACCUMULATION (INCHES PER MINUTE) UNKnown

HOW DETERMINED 1/2" or less on Probe During Descent from 11,000

TYPE OF ICE Rime

ICING AFT OF BOOTS/PROTECTED SURFACES

HOW FAR AFT

TOP AND/OR UNDERSIDE OF WING

SIDE WINDOW ICING No

ICING ON PROP SPINNER

HOW FAR AFT ON PROP SPINNER

SHAPE OF ICE

AMOUNT OF ICE ON AIRFRAME 1/2" or Less

IAS IN ICING ENVIRONMENT 250 or less

TAS IN ICING ENVIRONMENT

TIME IN ICING ENVIRONMENT ARox 15'

ICING IN CLOUDS OR CLEAR Clouds

ICING ALTITUDE(S) 11,000 & below

CLIMBING, DESCENDING, LEVEL FLIGHT Descending

OUTSIDE AIR TEMPERATURE (ICING ENVIRONMENT) ?

TOTAL AIR TEMPERATURE

TURBULENCE IN ICING ENVIRONMENT No

INFLIGHT VISIBILITY Poor

WINDS

HOW DETERMINED

WIND SHEAR IN ICING ENVIRONMENT/ INTENSITY OF WIND SHEAR No

AWARE ICING FORECAST

INTENSITY OF ICING FORECAST

HOW BECAME AWARE OF FORECAST

DID YOU PROVIDE PILOT REPORT No

CHARACTER OF CLOUDS- CUMULUS/STRATUS STRATUS

ECHOES ON WEATHER RADAR No

DESCRIBE ECHOES ON WEATHER RADAR

STORMSCOPE DISPLAY

DESCRIBE STORMSCOPE DISPLAY

CONTROL PROBLEMS No

TIME LANDED / LOCATION Detroit

ADDITIONAL COMMENTS

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Thank you for your help.

[redacted]
Gregory D. Salottolo
National Resource Specialist
Meteorology

ICING**********

LOCATION (ICING)

TIME OR TIME PERIOD

TYPE AIRCRAFT

FLIGHT NUMBER/TAIL NUMBER

ICE PROTECTION SYSTEMS INSTALLED

TYPE SYSTEMS

CLOUD BASES

15

CLOUD TOPS
@ 12000'
PRECIPITATION
None
VISIBLE MOISTURE
Clouds-
SIZE OF DROPS (DRIZZLE, RAIN, CLOUD, MIST)
cloud.
DROPS SPLATTERING ON WINDSHIELD
No
ICE CRYSTALS/SNOW
No
INTENSITY OF ICING
Trace-Light
HOW DETERMINED
Rate of accumulation on Wipers
RATE OF ICE ACCUMULATION (INCHES PER MINUTE)

HOW DETERMINED

TYPE OF ICE
Trace Rime
ICING AFT OF BOOTS/PROTECTED SURFACES
No
HOW FAR AFT
—

TOP AND/OR UNDERSIDE OF WING
N/A
SIDE WINDOW ICING
No
ICING ON PROP SPINNER
N/A
HOW FAR AFT ON PROP SPINNER
N/A
SHAPE OF ICE
Rough
AMOUNT OF ICE ON AIRFRAME
TRACE
IAS IN ICING ENVIRONMENT
250 Kts
TAS IN ICING ENVIRONMENT
— ? —
TIME IN ICING ENVIRONMENT
5-8 min.
ICING IN CLOUDS OR CLEAR
In clouds Btwn @ 12,000' - 8000'

ICING ALTITUDE(S)
8000' - 12000'.
CLIMBING, DESCENDING, LEVEL FLIGHT
Level + Descending.
OUTSIDE AIR TEMPERATURE (ICING ENVIRONMENT)

TOTAL AIR TEMPERATURE

TURBULENCE IN ICING ENVIRONMENT
Smooth.
INFLIGHT VISIBILITY

WINDS

HOW DETERMINED

WIND SHEAR IN ICING ENVIRONMENT/ INTENSITY OF WIND SHEAR
NO
AWARE ICING FORECAST
Yes, on DTW ATIS
INTENSITY OF ICING FORECAST
* Light - Moderate
HOW BECAME AWARE OF FORECAST
DTW ATIS
DID YOU PROVIDE PILOT REPORT
Yes
CHARACTER OF CLOUDS- CUMULUS/STRATUS
Stratus
ECHOES ON WEATHER RADAR
No
DESCRIBE ECHOES ON WEATHER RADAR
N/A
STORMSCOPE DISPLAY
N/A
DESCRIBE STORMSCOPE DISPLAY
N/A
CONTROL PROBLEMS
None
TIME LANDED / LOCATION
2105 Z at DTW
ADDITIONAL COMMENTS

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Thank you for your help.

[redacted]
Gregory D. Salottolo
National Resource Specialist
Meteorology

ICING Moderate to Severe

LOCATION (ICING) Could only observe windshield (front)

TIME OR TIME PERIOD 2100Z

TYPE AIRCRAFT DC9-30

FLIGHT NUMBER/TAIL NUMBER 9601 - FLT NWA 272

ICE PROTECTION SYSTEMS INSTALLED Bleed Air from Jet Eng.

TYPE SYSTEMS Hot Wing - tail - windshields

CLOUD BASES 500' AGA

(18)

CLOUD TOPS 4-5000'

PRECIPITATION Clear Above Clouds / Turning To Mod. Snow AT Ground Level

VISIBLE MOISTURE Did NOT seem TO be ANY until 2000' then snow

SIZE OF DROPS (DRIZZLE, RAIN, CLOUD, MIST)

DROPS SPLATTERING ON WINDSHIELD — ICE Formed immediately upon Entering Clouds 4-5000'

ICE CRYSTALS/SNOW

INTENSITY OF ICING Mod – To Severe – heaviest I've seen this season

HOW DETERMINED Amount Forming on Windshield wiper

RATE OF ICE ACCUMULATION (INCHES PER MINUTE) 1/2" Per minute

HOW DETERMINED Visually watching

TYPE OF ICE Rime

ICING AFT OF BOOTS/PROTECTED SURFACES N/A (Able to NOT observe)

HOW FAR AFT N/A

TOP AND/OR UNDERSIDE OF WING N/A

SIDE WINDOW ICING Some splash back does NOT happen to often on DC-9 only hvy. ice will do this

ICING ON PROP SPINNER N/A

HOW FAR AFT ON PROP SPINNER N/A

SHAPE OF ICE N/A

AMOUNT OF ICE ON AIRFRAME N/A

IAS IN ICING ENVIRONMENT 210 KTS

TAS IN ICING ENVIRONMENT 220 KTS

TIME IN ICING ENVIRONMENT 4 minutes — Asked to climb back to clear when instructed to Hold

ICING IN CLOUDS OR CLEAR Hvy in clouds

ICING ALTITUDE(S) Aprox 4-5000' down to 1800' agl

CLIMBING, DESCENDING, LEVEL FLIGHT LVL & Descending

OUTSIDE AIR TEMPERATURE (ICING ENVIRONMENT) Aprox 0° RAT Temp

TOTAL AIR TEMPERATURE —

TURBULENCE IN ICING ENVIRONMENT None

INFLIGHT VISIBILITY 0 zero in Cloud

WINDS Aprx 030 10-15

HOW DETERMINED ATIS As much as I can remember

WIND SHEAR IN ICING ENVIRONMENT/ INTENSITY OF WIND SHEAR None

AWARE ICING FORECAST Yes — from our Dispatch & ATIS

INTENSITY OF ICING FORECAST mod. to severe

HOW BECAME AWARE OF FORECAST Notice on Release From Dispatch

DID YOU PROVIDE PILOT REPORT Did not experience any other than what was forecast and told by ATC

CHARACTER OF CLOUDS- CUMULUS/STRATUS — solid overcast

ECHOES ON WEATHER RADAR — NO

DESCRIBE ECHOES ON WEATHER RADAR —

~~STORMSCOPE DISPLAY~~ Very few if any returns

DESCRIBE STORMSCOPE DISPLAY —

CONTROL PROBLEMS NO

TIME LANDED / LOCATION 2202

ADDITIONAL COMMENTS — I would say the icing at cloud entry (4-5000') until breaking out at 500' agl was extremely heavy to severe based on operations I have flown into DTW area and around Lake Erie in DC9 for 18 yrs with NWA. Ca. Wayne Sorenson DTW 11852 Tel. 810-437-0940

(20)

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Thank you for your help.

[redacted]

Gregory D. Salottolo
National Resource Specialist
Meteorology

ICING**********

LOCATION (ICING)

TIME OR TIME PERIOD

TYPE AIRCRAFT B757

FLIGHT NUMBER/TAIL NUMBER NWA 483 ship 550Z

ICE PROTECTION SYSTEMS INSTALLED - Eng + Wing

TYPE SYSTEMS

CLOUD BASES 700-800 AGL

(21)

CLOUD TOPS

PRECIPITATION - Light SNOW

VISIBLE MOISTURE - None except light SNOW

SIZE OF DROPS (DRIZZLE, RAIN, CLOUD, MIST) - small flakes

DROPS SPLATTERING ON WINDSHIELD - None

ICE CRYSTALS/SNOW - light

INTENSITY OF ICING - None observed

HOW *DETERMINED* -

RATE OF ICE ACCUMULATION (INCHES PER MINUTE)

HOW DETERMINED

TYPE OF ICE

ICING AFT OF BOOTS/PROTECTED SURFACES

HOW FAR AFT

TOP *AND/OR UNDERSIDE OF WING*

SIDE WINDOW ICING

ICING ON PROP SPINNER

HOW FAR AFT ON PROP SPINNER

SHAPE OF ICE

AMOUNT OF ICE ON AIRFRAME

IAS IN ICING ENVIRONMENT - 210 KIAS - 130 KIAS

TAS IN ICING ENVIRONMENT

TIME IN ICING ENVIRONMENT - less than 5 minutes

ICING IN CLOUDS OR CLEAR - None

ICING ALTITUDE(S)

CLIMBING, DESCENDING, LEVEL FLIGHT

OUTSIDE AIR TEMPERATURE (ICING ENVIRONMENT)

TOTAL AIR TEMPERATURE

TURBULENCE IN ICING ENVIRONMENT

INFLIGHT VISIBILITY less than 1 mile

WINDS - Don't recall

HOW DETERMINED

WIND SHEAR IN ICING ENVIRONMENT/ INTENSITY OF WIND SHEAR

AWARE ICING FORECAST

INTENSITY OF ICING FORECAST

HOW BECAME AWARE OF FORECAST

DID YOU PROVIDE PILOT REPORT - No

CHARACTER OF CLOUDS- CUMULUS/STRATUS

ECHOES ON WEATHER RADAR - None

DESCRIBE ECHOES ON WEATHER RADAR

STORMSCOPE DISPLAY

DESCRIBE STORMSCOPE DISPLAY

CONTROL PROBLEMS - None

TIME LANDED / LOCATION - Approximately 2045 Z

ADDITIONAL COMMENTS - Conditions looked like we should have expected icing problems, but none were actually observed.

****

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January 21, 1997

Weather Questions

Accident: EMB-120, N265CA, COMAIR Flight 3272, January 9, 1997, at about 2055Z, near Monroe, Michigan [about 210 degrees at19 nautical miles from DTW].

In order to help us determine the environment COMAIR Flight 3272 was operating in prior to and up to the time of the accident please supply answers to the following applicable questions. If you have any questions or comments please feel free to contact me at [redacted].. e-mail [redacted]v.

Thank you for your help.

[redacted]
Gregory D. Salottolo
National Resource Specialist
Meteorology

ICING**********

LOCATION (ICING) ON NEAR ARRIVAL INTO DTW

TIME OR TIME PERIOD @ 2040Z

TYPE AIRCRAFT B757

FLIGHT NUMBER/TAIL NUMBER NW 440 / 5509

ICE PROTECTION SYSTEMS INSTALLED WING & ENG ANTI-ICE

TYPE SYSTEMS WING & ENG ANTI-ICE

CLOUD BASES @ 3000'

(24)

CLOUD TOPS ~ FL250

PRECIPITATION SNOWING

VISIBLE MOISTURE SNOW

SIZE OF DROPS (DRIZZLE, RAIN, CLOUD, MIST)

DROPS SPLATTERING ON WINDSHIELD

ICE CRYSTALS/SNOW RIME ICING / SNOW

INTENSITY OF ICING MODERATE

HOW DETERMINED WINDSCREEN (FRONT)

RATE OF ICE ACCUMULATION (INCHES PER MINUTE)

HOW DETERMINED

TYPE OF ICE RIME

ICING AFT OF BOOTS/PROTECTED SURFACES

HOW FAR AFT

TOP AND/OR UNDERSIDE OF WING

SIDE WINDOW ICING NONE

ICING ON PROP SPINNER

HOW FAR AFT ON PROP SPINNER

SHAPE OF ICE

AMOUNT OF ICE ON AIRFRAME

IAS IN ICING ENVIRONMENT 295 - 250 KTS

TAS IN ICING ENVIRONMENT

TIME IN ICING ENVIRONMENT ~ 1 MINUTE

ICING IN CLOUDS OR CLEAR IN CLOUDS

ICING ALTITUDE(S)

CLIMBING, DESCENDING, LEVEL FLIGHT DESCENDING

OUTSIDE AIR TEMPERATURE (ICING ENVIRONMENT) ≈ −10°C.

TOTAL AIR TEMPERATURE

TURBULENCE IN ICING ENVIRONMENT NONE

INFLIGHT VISIBILITY 1/2 MI

WINDS

HOW DETERMINED

WIND SHEAR IN ICING ENVIRONMENT/ INTENSITY OF WIND SHEAR

AWARE ICING FORECAST

INTENSITY OF ICING FORECAST

HOW BECAME AWARE OF FORECAST I HEARD OTHER PIREPS OVER THE RADIO

DID YOU PROVIDE PILOT REPORT NO

CHARACTER OF CLOUDS- CUMULUS/STRATUS STRATUS (SOLID DECK FROM ≈ FL 250 − 3,000

ECHOES ON WEATHER RADAR NONE

DESCRIBE ECHOES ON WEATHER RADAR

STORMSCOPE DISPLAY

DESCRIBE STORMSCOPE DISPLAY

CONTROL PROBLEMS NONE

TIME LANDED / LOCATION ≈ 2050Z / LTW

ADDITIONAL COMMENTS

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NATIONAL TRANSPORTATION SAFETY BORAD
Office of Aviation Safety
490 L'Enfant Plaza, S.W.
Washington D.C. 20594-2000

January 21, 1997

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ICING**********

LOCATION (ICING) Detroit Metro Airport

TIME OR TIME PERIOD 9 Jan '97 about 20:45Z

TYPE AIRCRAFT DC-10-40

FLIGHT NUMBER/TAIL NUMBER NWA Flight 68 ship 1143

ICE PROTECTION SYSTEMS INSTALLED Engine + Wing Anti-Ice.

TYPE SYSTEMS Bleed air

CLOUD BASES Near ground, 200'-400' ~~AGL~~ A.G.L.

(27)

CLOUD TOPS Intermediate - about 7,000'-8000'

PRECIPITATION Snow

VISIBLE MOISTURE Vis. 3/4 mi in snow

SIZE OF DROPS (DRIZZLE, RAIN, CLOUD, MIST) NA

DROPS SPLATTERING ON WINDSHIELD NA

ICE CRYSTALS/SNOW

INTENSITY OF ICING No significant icing noted

HOW DETERMINED NA

RATE OF ICE ACCUMULATION (INCHES PER MINUTE) NA

HOW DETERMINED NA

TYPE OF ICE NA

ICING AFT OF BOOTS/PROTECTED SURFACES NA

HOW FAR AFT NA

TOP AND/OR UNDERSIDE OF WING NA

SIDE WINDOW ICING None

ICING ON PROP SPINNER NA

HOW FAR AFT ON PROP SPINNER NA

SHAPE OF ICE NA

AMOUNT OF ICE ON AIRFRAME None noted

IAS IN ICING ENVIRONMENT 210 kt → 150 kt

TAS IN ICING ENVIRONMENT

TIME IN ICING ENVIRONMENT 15 min

ICING IN CLOUDS OR CLEAR

ICING ALTITUDE(S) Below 7000'

CLIMBING, DESCENDING, LEVEL FLIGHT Descending

OUTSIDE AIR TEMPERATURE (ICING ENVIRONMENT) Don't recall

TOTAL AIR TEMPERATURE ?

TURBULENCE IN ICING ENVIRONMENT No significant turb.

INFLIGHT VISIBILITY 0 until near

WINDS N.E. 12 kts ±

HOW DETERMINED ATIS & INS

WIND SHEAR IN ICING ENVIRONMENT/ INTENSITY OF WIND SHEAR None Noted

AWARE ICING FORECAST yes

INTENSITY OF ICING FORECAST Moderate (I think)

HOW BECAME AWARE OF FORECAST Approach Control

DID YOU PROVIDE PILOT REPORT No

CHARACTER OF CLOUDS- CUMULUS/STRATUS Stratus

ECHOES ON WEATHER RADAR No significant returns

DESCRIBE ECHOES ON WEATHER RADAR

STORMSCOPE DISPLAY NA

DESCRIBE STORMSCOPE DISPLAY NA

CONTROL PROBLEMS No!

TIME LANDED / LOCATION at gate 21:00Z; approx 20:50Z touchdown.

ADDITIONAL COMMENTS

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Gregory D. Salottolo
National Resource Specialist
Meteorology

ICING**********

LOCATION (ICING) CETUS II ARRIVAL

TIME OR TIME PERIOD 2030- LANDING

TYPE AIRCRAFT DC-10

FLIGHT NUMBER/TAIL NUMBER #9451 / 1149

ICE PROTECTION SYSTEMS INSTALLED WING / ENGINE / ANTI

TYPE SYSTEMS Engine Bleed / WINDSHIELD HEAT ETC.

CLOUD BASES 200FT

30

CLOUD TOPS UNKNOWN

PRECIPITATION SLEET DEPENDS ON ALTITUDE

VISIBLE MOISTURE YES

SIZE OF DROPS (DRIZZLE, RAIN, CLOUD, MIST) CLOUD

DROPS SPLATTERING ON WINDSHIELD NO

ICE CRYSTALS/SNOW YES

INTENSITY OF ICING moderate +

HOW DETERMINED WINDSHIELD Iced over ABOVE 10,000FT Descending

RATE OF ICE ACCUMULATION (INCHES PER MINUTE) ? MAYBE ½

HOW DETERMINED LOOKING AT WIPERS

TYPE OF ICE RIME

ICING AFT OF BOOTS/PROTECTED SURFACES ?

HOW FAR AFT ?

TOP AND/OR UNDERSIDE OF WING ?

SIDE WINDOW ICING NO

ICING ON PROP SPINNER —

HOW FAR AFT ON PROP SPINNER —

SHAPE OF ICE —

AMOUNT OF ICE ON AIRFRAME NOT.

IAS IN ICING ENVIRONMENT 330 - 160

TAS IN ICING ENVIRONMENT 330 - 160

TIME IN ICING ENVIRONMENT APPROX 20-30 MIN

ICING IN CLOUDS OR CLEAR IN CLOUDS

ICING ALTITUDE(S) 24000 TO GROUND APPROX

CLIMBING, DESCENDING, LEVEL FLIGHT DESCENDING

OUTSIDE AIR TEMPERATURE (ICING ENVIRONMENT) ?

TOTAL AIR TEMPERATURE ? BELOW 8° TAT

TURBULENCE IN ICING ENVIRONMENT LIGHT

INFLIGHT VISIBILITY IMC.

WINDS ? DID NOT NOTICE VERY BUSY APPROX. RVR 6000-3000 20047, CEIL. POOR BLACK

HOW DETERMINED IAS

WIND SHEAR IN ICING ENVIRONMENT/ INTENSITY OF WIND SHEAR NONE

AWARE ICING FORECAST YES TP WITH SEVERE ICE MARK PRIOR CLR. MUST UNUSUAL

INTENSITY OF ICING FORECAST ? SEVERE

HOW BECAME AWARE OF FORECAST TP - ACARS

DID YOU PROVIDE PILOT REPORT REPORTED RUNWAY VERY VERY POOR BRAKING. MISSED TURN OFF

CHARACTER OF CLOUDS- CUMULUS/STRATUS

ECHOES ON WEATHER RADAR PRECIP - SNOW MODERATE

DESCRIBE ECHOES ON WEATHER RADAR SEE ABOVE

STORMSCOPE DISPLAY —

DESCRIBE STORMSCOPE DISPLAY —

CONTROL PROBLEMS NONE

TIME LANDED / LOCATION BLOCK IN 2102 LANDED AFFRX APPROX 2050

ADDITIONAL COMMENTS VERY HEAVY ICE ABOVE 10,000 ON APPROACH BOTH WINDSHIELD ~~WERE~~ ICED OVER WITH ANTI HEAT

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ICING**********

LOCATION (ICING) DOWNWIND RWYS 21 KDTW

TIME OR TIME PERIOD 2050-2100Z

TYPE AIRCRAFT A320

FLIGHT NUMBER/TAIL NUMBER ?

ICE PROTECTION SYSTEMS INSTALLED WING, [redacted] ENGINE

TYPE SYSTEMS BLEED AIR

CLOUD BASES RAGGED. APPROX 4000' MSL

33

CLOUD TOPS LAYERS TO 20,000 MSL

PRECIPITATION NONE

VISIBLE MOISTURE CLOUDS

SIZE OF DROPS (DRIZZLE, RAIN, CLOUD, MIST) CLOUDS

DROPS SPLATTERING ON WINDSHIELD NONE

ICE CRYSTALS/SNOW

INTENSITY OF ICING LT TO MODERATE RIME

HOW DETERMINED VISUAL

RATE OF ICE ACCUMULATION (INCHES PER MINUTE) ?

HOW DETERMINED

TYPE OF ICE RIME

ICING AFT OF BOOTS/PROTECTED SURFACES N/A

HOW FAR AFT N/A

TOP AND/OR UNDERSIDE OF WING N/A

SIDE WINDOW ICING NONE

ICING ON PROP SPINNER N/A

HOW FAR AFT ON PROP SPINNER N/A

SHAPE OF ICE N/A

AMOUNT OF ICE ON AIRFRAME NONE

IAS IN ICING ENVIRONMENT 250 - 170

TAS IN ICING ENVIRONMENT ?

TIME IN ICING ENVIRONMENT 15 MIN

ICING IN CLOUDS OR CLEAR CLOUDS

ICING ALTITUDE(S) 10,000 ↘ 4000 ?

CLIMBING, DESCENDING, LEVEL FLIGHT

OUTSIDE AIR TEMPERATURE (ICING ENVIRONMENT) ?

TOTAL AIR TEMPERATURE ?

TURBULENCE IN ICING ENVIRONMENT ~~LIGHT~~ OCNL

INFLIGHT VISIBILITY IN & OUT OF CLOUDS

WINDS ?

HOW DETERMINED N/A

WIND SHEAR IN ICING ENVIRONMENT/ INTENSITY OF WIND SHEAR NONE

AWARE ICING FORECAST NOT TO MY RECOLLECTION -

INTENSITY OF ICING FORECAST THESE WERE VERY TYPICAL CONDITIONS FOR TIME OF YEAR.

HOW BECAME AWARE OF FORECAST AWS EXPECTED.

DID YOU PROVIDE PILOT REPORT NO. ATC INVOLVED W/3272

CHARACTER OF CLOUDS- CUMULUS/STRATUS CU/STRATUS

ECHOES ON WEATHER RADAR ?

DESCRIBE ECHOES ON WEATHER RADAR

STORMSCOPE DISPLAY N/A

DESCRIBE STORMSCOPE DISPLAY N/A

CONTROL PROBLEMS NO

TIME LANDED / LOCATION ?

ADDITIONAL COMMENTS

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