



FROM
DE OA EWM (LONDON)

TO
À OA EWR

SECURITY - CLASSIFICATION - DE SÉCURITÉ

OUR FILE — N/ RÉFÉRENCE

2001-79

YOUR FILE — V/ RÉFÉRENCE

DATE

August 10, 1979

SUBJECT
SUJET

RECEIPT AND HANDLING OF SEVERE WEATHER WATCHES / WARNINGS BY MEDIA / OPP

1. Attached sheet shows results of telephone survey conducted August 9-10, 1979. Primarily checked to see when the initial Weather Watch (#78) and Weather Warning (#79) covering the 'Woodstock Tornado' were received and how they were handled. Some other alerts were tabulated as well.

2. Re claims by some parties that the initial alert - Weather Watch #78 - was "not received" or "not received in time", the following should be noted. Assuming that all T/T printers on any particular circuit print out the same thing at the same time then if Simcoe received #78 on the 'BN' circuit before 1600 then all radio stations received it before 1600. No lines were reported down in the Woodstock area before 1600. The same argument should hold true for the OPP and the CPIC circuit.

The validity of my assumption should be verified before any remarks using this argument are made public.

3. Note on the evening of the 9-10th how quickly 'BN' transmitted #85 and #86 to Stratford.

B. Finch

B. Finch
Officer-in-Charge
London Weather Office

RESULTS TELEPHONE SURVEY AUGUST 9-10, 1979
RE: HANDLING WATCH/WARNINGS

LOCATION	#W/W RCV'D	WHEN	SHAPE OF COPY	BROADCAST yes / no	REMARKS
	yes/ no			WHEN	
Brantford CKPC 753-2425	#78 yes	ukn	good	yes ukn	- talked to Jeff Culp - power out 1915 till after 2100
	#79 yes	2030	good	ukn	- #82 rcv'd 2017 but only valid till 2030
	#82 yes	2017	good	no	- if power out till after 2100 how did they receive #79 and #82?
Simcoe CHNR 426-7740	#78 yes	1550-55	good	yes 1600,1630 1700,1730,1800, 1900	- talked to Rich, "J.P.", Paul McKay - "J.F." and McKay were congratulated on their prompt handling of #78
	#79 no				
Stratford CJCJ 271-2450	#78 not seen				- talked to Craig Ainsley, Susan Leslie, Mark Burley
	#79 yes	after 2000	good	no	
	#85 yes	092230	good		- YXU rcv'd #85 092215-2220
	#86 yes	100309	good		
Woodstock CKDK 539-1340	#78 yes	1556	good	no	- talked to Aubrey Bell 091250-1308 - CKDK lost 'BN' at 1850
	#79 no				
Sebringville OPP 393-6123	#78 yes	1727	partly garbled but useable		
	#79 yes	2000	good		
Woodstock OPP 539-9811	#78 -				- talked to Const. Haley
	#79 yes	080404			
	#84 yes	080411			
	NOTE: Radio stations on 'BN' cct. OPP on 'CPIC' cct.				
Tillsonburg CKOT 842-4281	#78 yes	near 1600	good	yes as soon as received twice per hour	
	#79 no				

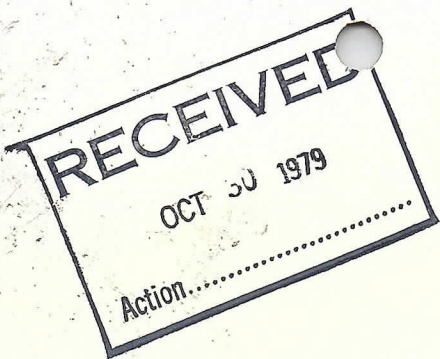
14/08/79 - Cpl Herrigan OPP Loda called 9-9:30
- questioned B.F. re. above info².

14/08/79

930-945

- called Geoff Gilhooly CFPL - Radio
News Director.

- They got #70 but didn't use it.
- felt the wording in their Accu wx test for
chance severe Ts similar enough in wording
to continue using it.
- called Accu wx 5:30 → nothing on their
radar to indicate severe wx.
- 7:15 → + huge cell on radar.
- talked of OKL. wx wrong system using sirens.



Summary of Events

Severe Local Storms

August 7, 1979

*File
Severe Local
Storms*

Introduction

On August 7, 1979 two severe thunderstorm complexes touched off tornadoes in Ontario. The first complex swept southeastward from Northern Lake Huron to Western Lake Ontario between 0600 EDT and 1430 EDT. The second developed early in the evening and moved rapidly south-southeastward from near Stratford to Lake Erie between 1820 EDT and 1900 EDT.

Performance of Weather Watch/Warning Program

The Ontario Weather Centre issued thirteen Watches and Warnings covering the events of August 7th. Appendix I highlights the most important of these and details time of issue, valid times, area of coverage and confirming evidence of occurrence when such was available. It is felt that the Warning System performed as well as it possibly can, given the severe weather detection tools currently in place.

Dissemination of Warnings

Events of August 7, 1979 serve to point out some rather serious deficiencies in our methods of communicating Weather Watches and Warnings to the media, and through them, the public.

The communications procedure progresses along the following lines:

1. OWC enters the message into the communications system via circuit 170, the collection circuit.
2. The message is queued in the CN Collins Computer with other priority 1 traffic and is eventually processed to the meteorological distribution circuits (171), the city weather wire (332), etc.
3. The messages are manually removed from teletypes after receipt at Broadcast News (BN) and are presented to an editor who scans them and assigns them a priority for processing on BN's circuits. The priority of processing depends on the editors judgement of the urgency of the message. (NOTE: All summer severe weather messages bear the statement "Immediate Broadcast Requested...")
4. The message eventually arrives in the media outlet newsroom. As soon as it is noticed on the teletype machine a decision is made locally as to its broadcast priority.

5. At some considerably earlier time the message is received at a local W04. If a particular media outlet is on that W04's Weather Warning Contact List they will be alerted by telephone. In areas where EMO is active, a "fan-out" will be initiated (e.g. Windsor and St. Catharines). It is apparent that the chain is long and has many vulnerable links.

On August 9th and 10th an investigation in the form of a telephone survey was conducted by Ontario Region staff (Brad Finch, OIC, London Weather Office) to ascertain how the communications system worked in this instance by tracing message 78, the general watch, and message 79 the actual warning, covering the Woodstock area. Appendix II summarizes our findings. It appears that the turn-around time from issue of message 78 to its being noticed in newsrooms varied from 16 minutes (Woodstock) to 50 minutes at Brantford. Apparently it was never noticed or was ignored at Stratford. For some reason, Woodstock chose not to broadcast it at all.

It appears that no station in the area received Warning Message 79 until after 2000 EDT. At first glance it appeared to us as if the non-delivery was ^{due to power failures} throughout the area. Woodstock, for example, indicated that they "lost" BN at 1850 EDT. Message 79 was collected at OWC at 1832 EDT (after being rejected three times due to "hits" on circuit 170) and had not been processed on the BN circuit prior to 1850.

Two attempts were made to contact CKDK in Woodstock around 1830. In the first instance, the OWC shift supervisor attempted to call, but could not get a long-distance connection. In the second case, the London presentation technician telephoned but received a busy signal.

Because of the apparent non-receipt of key warning 79 at media outlets in the tornado devastated area prior to 1850 EDT, Carol Klaponski, Severe Weather Meteorologist, was dispatched to Broadcast News (BN) to attempt to determine how quickly the warning messages issued August 7th had been handled by them. Appendix III summarizes her findings. It should be noted that Warning 79 was never relayed on the BN circuit. "Operator error" resulted in it being lost. In addition, Warning Number 76, a Tornado warning for Metropolitan Toronto, was delayed 68 minutes at BN before being moved on their circuits.

Summary and Conclusions

The weather warning program of the Ontario Weather Centre functioned very well on August 7th, 1979. For the morning storms, warning number 75 was late but the tornado south of North Bay was well handled. The evening's activities were very well handled, with a severe thunderstorm watch (number 78) issued well in advance (1540 EDT) and a severe thunderstorm warning issued at 1815 EDT about 45 minutes prior to the Woodstock tornadoes. These warnings reflect the "state of the art" in severe summer weather forecasting. It is literally impossible to forecast the precise location in space and time of a tornado. In rare instances a C-Band Radar will reveal a "hook echo" associated with a tornado bearing thunderstorm cell. However, visual observations is the most usual method of pinpointing a tornado. Doppler radar would be required to actually identify a tornado vortex.

The warning dissemination system proved seriously inadequate. Landline communications systems are extremely vulnerable to failure during thunderstorm activity. An eleven minute delay occurred at OWC in transmitting the critical warning and the delay was occasioned by "hits" on the collection circuit due to thunderstorm activity. Power failures due to the storm occurred in the warning area commenced around 1837 EDT. The Broadcast News relay procedure is manual. The process involves an editor assigning a priority to messages based on his assessment of the message's urgency. Finally, the media is under no obligation to broadcast a warning even after it has been received and noticed in the newsroom. The entire process is too slow, cumbersome and vulnerable to effectively handle the dissemination warnings in "short fuse" situations.

We can only conclude that if we are to consider dissemination of Weather Watches and Warnings a part of our mandate, we must take a far more active role in ensuring that the product gets to the public. This likely means a major effort to complete the Weatheradio Network as quickly as possible. Furthermore, we must ensure that the media and the public are aware of the potentially disastrous consequences of severe summer weather. For example, most people are not aware that a severe thunderstorm can spawn a tornado and therefore tend to dismiss "Severe Thunderstorm Warnings" as of little consequence. Despite a major publicity campaign carried out by Ontario Region before the onset of the new Severe Weather Warning Program, the evidence strongly suggests there is a great deal yet to be done in this regard.

P.J. Pender
A/OAEW
August 14, 1979

667-4808

APPENDIX I -- Watches & Warnings

Time of Issue (valid until)	Message Type & Number (Regions)	Type & Location of Severe Weather Events
0340 EDT (0700 EDT)	Severe TSTM/Tornado Warning Number 72 (Western Algoma Region)	0230 EDT NWS Radar Summary indicated 63 Thousand Foot Top. Warning issue on that basis. 0430 EDT YAM reports T+RW+ 0430 EDT Many small craft blown ashore near Sault Ste. Marie
0815 EDT (1115 EDT)	Severe TSTM/Tornado Warning Number 74 (Eastern Algoma, Northern Georgian Bay)	0845-0915 EDT Tornado touched down near Powassin -- 26 miles south of North Bay. Also hail and wind damage. Report received via North Bay W04 near 1000 EDT
1135 EDT (1400 EDT)	Severe TSTM/Tornado Number 75 (Simcoe, Grey, Dufferin, Southern Bruce Counties)	1100 EDT Phone call from Wiarton reporting "threatening looking" thunderstorm approaching. 1110 EDT YVV reports CIG and VSBY zero in T+RW+A. 1130 EDT Wind damage occurred at Tara - SW of Owen Sound. NOTE: Warning issued on receipt of YVV T+RW+A report. Tara info received long after the fact.
1255 EDT (1500 EDT)	Severe TSTM/Tornado Warning Number 76 (Metro Toronto, Peel, York, Durham Counties)	1250 EDT Funnel cloud viewed by staff from window Ontario Weather Centre. Basis of warning. Severe tree and crop damage Uxbridge area. No time established as yet. Cancelled at 1355
1540 EDT (2200 EDT)	Severe TSTM watch II Number 78 (Lake St. Clair, Lake Huron, Lake Erie, South- ern Georgian Bay, West- ern Lake Ontario Regions & adjacent Great Lakes)	Analysis of air mass instability & dynamics suggested the potential for further severe weather development.
1815 EDT (1930 EDT)	Severe TSTM warning Number 79 (Perth, Waterloo, Wellington Counties)	1800 EDT Rapidly growing area of TSTMS detected GOES & RADAR. WW79 issued.

Time of Issue (valid until)	Message Type & Number (Regions)	Type & Location of Severe Weather Events
1915 EDT (2030 EDT)	Severe TSTM Warning Number 81 (Brant, Hamilton- Wentworth, Haldimand, Norfolk, Niagara Counties)	<ul style="list-style-type: none"> * <u>1820-30</u> EDT Touchdown of Tornado 1, just SE of Stratford * <u>1837</u> EDT Ontario Hydro Tower between Hickson and Cassel destroyed. <u>OWC</u> advised at <u>1955</u> EDT and issued <u>Number 82</u>.
1955 EDT (2030 EDT)	Tornado Warning Number 82 (Haldimand-Norfolk Counties)	<ul style="list-style-type: none"> * <u>1858</u> EDT Tornado 2 touches down Woodstock. Ontario Hydro Tower destroyed * <u>1900-2000</u> EDT Devastating damage Woodstock to Vanessa, severe damage Vanessa to Waterford with hail damage Waterford-Renton largely wind and golf-ball to hen's egg sized hail. * This info received well after the fact.

APPENDIX II

RESULTS TELEPHONE SURVEY AUGUST 9-10, 1979
RE: HANDLING WATCH/WARNINGS

LOCATION	#W/W RCV'D yes/ no	WHEN	SHAPE OF COPY	BROADCAST yes / no WHEN	REMARKS
Brantford CKPC 753-2425	#78 yes #79 yes #82 yes	ukn 2030 2017	good good good	yes ukn ukn no	-talked to Jeff Culp -power out 1915 till after 2100 -#82 rcv'd 2017 but only valid till 2030 -if power out till after 2100 how did they receive #79 and #82?
Simcoe CHNR 426-7740	#78 yes #79 no	1550-55	good	yes 1600, 1630 1700, 1730, 1800, 1900	-talked to Rich, "J.P.", Paul McKay -"J.P." and McKay were congratulated on their prompt handling of #78
Stratford CJCJ 271-2450	#78 (not seen) #79 yes #85 yes #86 yes	 after 2000 092230 100309	good good good	 no	-talked to Craig Ainsley, Susan Leslie, Mark Burley
Woodstock CKDK 539-1340	#78 yes #79 no	1556	good	no	-talked to Aubrey Bell 091250-1308 -CKDK lost 'BN' at 1850
Sebringville OPP 393-6123	#78 yes #79 yes	1727 2000	partly garbled but useable good		
Woodstock OPP 539-9811	#78 - #79 yes	 080404			-talked to Const. Haley
		NOTE: Radio stations on 'BN' cct. OPP on 'CPIC' cct.			
Tillsonburg	#78 yes #79 no	near 1600	good	yes as soon as received twice per hour	

APPENDIX III -- NOTE: ALL TIMES G.M.T.

WATCH/ WARNING	FOR	ISSUE (GMT)	TIME IN (GMT)	TIME ON 170 (GMT)	RCVD IN YWG (GMT)	IN SSC (GMT)	OUT SSC (GMT)	BROADCAST NEWS (GMT)	MIN FM ISSUE TO ON LINE AT BN	HANDLING TIME AT BN
75	Simcoe Grey Dufferin Bruce	1535	1536	1541		1538	1541	1546	11	5
76	Tornado Wrng Peel York Durham & Metro	1655	1700	1703		1700	1702	1810	75	68
77	Marine Lk Ontario	1700	M	1725	1727			1815	75	(48)**
75c	CNCLTN Simcoe Grey Dufferin Bruce	1730	1729	M	1732			1816	46	(44)**
76c	CNCLTN Peel York Durham Metro	1750	1749	1752				1812	22	?
77c	CNCLTN Marine LK Ontario	1915	M	1932*				1950	35*	?
78	Watch for LK St. Clair LK Huron SRN GGNBA WRN LK Ont.	1940	1941	1949	1952			1956	16	(4)**
79	Perth Waterloo Oxford	2215	2216	2232*	2232			Lost due to operator error	-*	Never sent
80	Watch Update 78 for LK St. Clair LK Erie SRN LK Huron WRN LK Ont. Niagara	2300	2245	2252				2332	32	?
81	Brant Hamilton-Wentworth, Haldimand-Norfolk Niagara	2315	2315	2339*	2342			2353	38*	(11)**

WATCH/ WARNING	FOR	ISSUE (GMT)	TIME IN (GMT)	TIME ON (GMT)	RCVD IN YWG (GMT)	IN SSC (GMT)	OUT SSC (GMT)	BROADCAST NEWS (GMT)	MIN FM ISSUE TO ON LINE AT BN	HANDLING TIME AT BN
79c	CNCLTN Perth Waterloo Oxford	2330	2347	2352*				not found	-*	NEVER SENT
82	Tornado Wrng Haldimand-Norfolk	2355	2358	0003	0007	0000	0001	0017	22	16
83	Marine ERN LK Erie	0030	0026	0032		0030	0032	0039	9	7
81c	CNCLTN Brant Ham-Wentworth Niagara	0030	0035	0038				0044	14	?
82c	CNCLTN Tornado Wrng Hald-Norfolk	0100	0103	0118*				0124	24*	?
84	Watch LK St. Clair LK Erie Niagara XTRM SWRN LK Huron	0115	M	0120				0129	14	?
83c	CNCLTN Marine ERN LK Erie	0230	0233	0240				0244	14	?

* INDICATES LENGTHY DELAY YWZ (15 MIN. OR MORE FM ISSUE TO ON 170)

** TIME INFERRED FROM RECEIPT TIME AT WINNIPEG

OAED

s 8750-0; ~~8971-M-79~~

AZOAEH

23rd., August, 1979

Detection of Severe Weather

1. Reference is made to your request for information in responding to 8750-1 (AFWC), d/14 Aug 79.
2. A summary report is enclosed on events of 7th August 1979. I believe M. Newark and C. Klaponski of OMC will be preparing a more formal text and recommendations in the future.
3. It should be noted opinion stated in the accompanying text is my own; but, at least in so far as conclusions are concerned, these have been discussed with M. Newark who is in agreement.
4. Incidentally, I am forwarding a copy of a report on the Powassan incident of the same day prepared by D. Bernachi who proceeded to the site following conversation with myself.

Original Signed by
G. W. GEE

GWG/cf

(G. W. Gee),
A/Officer-in-Charge.

Atts: 2



Headquarters
22ND NORAD REGION
Hornell Heights, Ontario
POH 1PO

cr: 8780-0
8971-5.0
8971-4.79
8971-5.2

3275-1 (22OWX)

17 August 1979

Ontario Weather Centre
Atmospheric Environment Service
Toronto International Airport
P.O. Box 159
Toronto AMF, Ont.
L5P 1B1

Attention: Officer in charge -
Ontario Weather Centre



Dear Sir:


STORM DAMAGES - Aug 07/79 - POWASSAN AREA

MWO Guindon and myself toured the Powassan area on Friday, August 10, three days after the storm struck. Although much of the damage had already been cleared, a fairly consistent pattern of damage was evident. Nearly all of the destruction occurred to trees rather than to buildings. In most cases the trees toppled from the S to SW towards the North. Some were split near the base, others fell intact exposing the root system. The damage tended to be grouped, that is 2 or 3 trees in a small area were struck but nothing between the trees, including at times vulnerable sheds or small buildings, were affected.

We identified 3 or 4 such areas in town and several at nearby farms. One such farm, belonging to Mr. R. Fielding, is located about 3 miles NE of Powassan. A large metal shed, containing more than 1000 chickens, had its front doors pushed "inwards" and permanently creased. These doors face northwards.

We spoke to Mrs. Fielding, who observed the damage, to two other individuals who also observed storm damage in other areas and to the local RCMP detachment. No one saw or heard of a funnel cloud. There were no hail reports although very strong winds and heavy rain were consistently observed.

In the opinion of MWO Guindon and myself this was not a tornado. On the other hand there is no question that this was a severe weather event accompanied by very strong squalls and possibly some cloud rotation aloft.


D. Bernachi
Officer in Charge
CFFC North Bay



Government
of Canada

Gouvernement
du Canada

MEMORANDUM

NOTE DE SERVICE

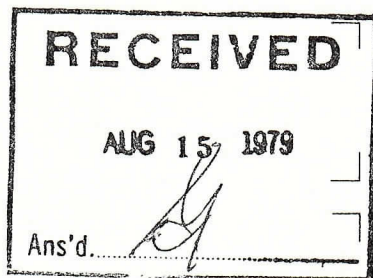
8750-1
8971-5-20
8971-11-79

TO
A

OAED

FROM
DE

AFDG



SECURITY-CLASSIFICATION-DE SÉCURITÉ
OUR FILE - N/RÉFÉRENCE 8750-1 (AFWC)
YOUR FILE - V/RÉFÉRENCE
DATE August 14, 1979

SUBJECT
OBJET

Detection of Severe Weather

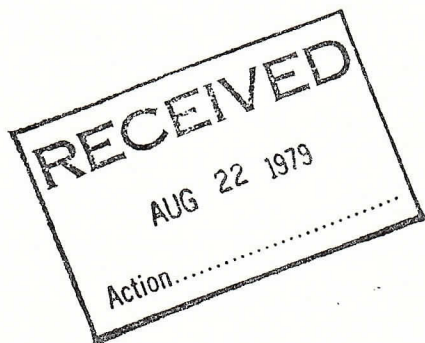
Reference is to the severe weather events of August 7, 1979 in Southern Ontario. For input to the AES Radar Committee it would be appreciated if you would perform an evaluation of satellite imagery, the Raytheon/Sceptre system and the Curtiss Wright radar in the identification and tracking of the severe weather and an estimate of the value of the information from each to the production of weather watches and warnings.

A/O AEM

Please prepare a short report as requested.
I will want to see it and prepare a covering
memo before it is forwarded.

JAM 15/8/79

J. A. W. McCulloch



AFDG

OAED



SECURITY - CLASSIFICATION - DE SÉCURITÉ
OUR FILE - N/RÉFÉRENCE 8100-1 (OAED)
YOUR FILE - V/RÉFÉRENCE
DATE August 20, 1979

SUBJECT
OBJET

Summary Report on Tornado Occurrences, August 7th, 1979

1. Attached is a summary of the events which transpired on August 7th, 1979, when severe thunderstorm conditions spawned a series of tornadoes in Ontario. The report, with its appendices, deals in considerable detail with the issue of Weather Watches and Warnings and their dissemination to the public.
2. It seems apparent to us that we must assign the highest priority to the development of improved and foolproof methods of disseminating Watches and Warnings to the media and the general public. Greater efforts to educate the public in regard to severe local storms is also needed.
3. A more detailed study of these events is being carried out by OWC meteorologists and will be available in due course. In addition, Ontario Region is developing a plan for improved methods of dissemination of Watches and Warnings and for alerting the media, provincial police and other agencies. In this latter connection we have contacted Emergency Planning Canada, Ontario Region, who are also anxious to develop an improved communication network involving the provinces, the OPP, etc.
4. Also enclosed with the memo are two sets of papers dealing with severe local storms that were presented to the U.S. House of Representatives in 1975. The papers are excellent for the purpose of providing background information to senior managers on all aspects of severe thunderstorm and tornado detection and forecasting, and the problem of getting warnings to the public. I thought you might wish to pass copies of the papers, or some edited version of them, to ADMA. Even a quick skim of the material might prove useful.

G.A. McPherson

G.A. McPherson
Regional Director
AES, Ontario Region

Attachment
Enclosures

b.c. OAED, OAEM
GAN/so



MEMORANDUM

NOTE DE SERVICE

TO
A

OAED

FROM
DE

A/OAEW

SUBJECT
OBJET

Communication of Weather Warning #79 - Woodstock Tornado

SECURITY - CLASSIFICATION - DE SÉCURITÉ

CONFIDENTIAL

OUR FILE - N/RÉFÉRENCE

YOUR FILE - V/RÉFÉRENCE

DATE

August 9, 1979

1. Although I believe the Ontario Weather Centre carried out its weather warning responsibilities in admirable fashion in the case of the Woodstock Tornado, it appears that the communications systems which we rely on to transmit our product to users experienced a serious failure.

2. At the O.W.C., hits on the CN collection circuit 170 ceased the warning to be rejected three times. It eventually was transmitted at 18:26 EDT -- an 11 minute turnaround time. No record of its transmittal time to the City Weather Wire is available as apparently SSC does not monitor 332.

3. Brad Finch was requested to survey radio stations at Woodstock and in surrounding areas to attempt to ascertain if and when the warning was received, and if it was then broadcast. He was also asked to check on message 78, the general advisory issued at 15:40 EDT.

4. The results of Brad's survey are most disturbing. Message 78 was processed and received as follows:

OPP Sebringville (via CPIC)	17:27 EDT
Tillsonburg Radio (BN)	16:00 EDT
Woodstock (BN)	15:56 EDT
Stratford (BN) -- not seen by	18:00 EDT
Brantford (BN)	16:00-16:30 EDT

The Woodstock News Director Aubrey Bell admitted to Brad that the advisory was not broadcast. At 18:50 EDT, BN apparently lost the line to Woodstock and #79 was never seen, nor were any subsequent warnings. Tillsonburg and Stratford never saw 79. Brantford received it at 20:30 EDT BN claims they never processed 79 (line outage?). OPP Sebringville received 79 at 20:00 EDT.

5. It appears that if we are going to include delivery of the product in our mandate we are going to have to devise a far more efficient method of doing so.



P.J. Pender
A/Chief, Weather Services
AES, Ontario Region

MEMORANDUM

GOVERNMENT OF CANADA



NOTE D SERVICE

GOUVERNEMENT DU CANADA

FROM
DE

Floyd Rader... London Weather Office.

TO
À

OAEWR

SUBJECT
SUJETSevere Weather August 7, 1979.

RECEIVED

AUG 13 1979

Ans'd.....

SECURITY - CLASSIFICATION - DE SÉCURITÉ

OUR FILE — N/RÉFÉRENCE

YOUR FILE — V/RÉFÉRENCE

DATE August 8, 1979.

Reported for Work 14:45.

14:45 - 14:50 Briefed on weather conditions existing throughout our area of concern for presentation service.

Noted - a plotted Teph. for Flint Michigan 1200Z indicating extremely unstable conditions in mid-high altitudes.

14:50-1800 Normal routine, however very busy on telephone and local aviation briefings due to threatening skies.

Including 3 television briefings, 1 radio broadcast.

Severe Weather Watch 78 received 16:00 hours.

Severe Weather Warning 79 received 18:15 hours... for Perth, Waterloo, Oxford Counties.

18:30 Tried to call Woodstock Radio, but was unable to get through.... busy signal. gave up due to local extremely busy workload.

18:00 - 20:00 Three groups of pilots in weather office trying to get a continual briefing by scanning the sceptre radar for vectoring to Toronto and beyond.

SEVERE WEATHER WATCH 80 19:00 hours.

19:05 Severe weather Watch 80 relayed to City Police, London; Transportation and Communication; Public Utilities Commission, Ontario Provincial Police; CKSL Radio, CJBK Radio.

19:15 CKOT Tillsonburg, called me to relay to me of severe destruction at Woodstock and wondered if it could be a Tornado. *Why no call to 42?*

19:15 - 20:00 About 8 radio stations and 2 TV stations called for information about the destruction at Woodstock.

20:05 CKOT called to confirm Tornado, witnessed by people and that the damage extended southeast from Woodstock, also there were reports of casualties and many injuries.

20:05 - 20:30 About 15 radio stns.; a couple newspapers, including one at Toronto; a couple TV stns called to enquire about the storm at Woodstock.

20:30 Brad Finch (OIC London Weather Office) called, saying he heard of Tornado at Woodstock and asked if Weather Office at Toronto had contacted us.

20:35 The answer being no, I then proceeded to call OWR at Toronto, but had to call at least four times on their unlisted number before I finally got through (busy).

20:45 Finally got hold of OWC, a man answered, and said they had heard of the possible Tornado. A woman then came on the line and said that they were on top of the situation and that current weather warning etc. were covering the situation.

20:50 - 22:00 Another dozen enquiries from the news medium, plus numerous general public calls. Extremely busy.

22:00 23:00 Briefed our normal TV stations (CFPL,CKNX,CKCO) for their weather presentation.

This time period also included numerous general public and aviation briefings, and clean up at the end of my shift.

Continued.....

MEMORANDUM

GOVERNMENT OF CANADA



NOTE DE SERVICE

GOUVERNEMENT DU CANADA

FROM DE Floyd Rader... London Weather Office.

TO A OA EWR

SUBJECT
SUJETSevere Weather August 7, 1979. Continued.

SECURITY - CLASSIFICATION - DE SÉCURITÉ

OUR FILE — N/RÉFÉRENCE

YOUR FILE — V/RÉFÉRENCE

DATE

August 8, 1979.

1. A few notes and observations during the evening shift of August 7, 1979.

It was visually observed about 17:00 - 18:00 EDT that the TCU were building very rapidly into CB clouds, shearing off into anvils to the southeast and then dissipating. Also the pilots from Great Lakes Airlines came into the Weather Office about 17:10 to take a look at the sceptre radar, mentioned that the TCU and CB to the north were developing very rapidly.

2. The evening shift at the London Weather Office has one man scheduled for the evening. His workload is regulated so that on a normal evening, he is kept busy throughout his shift.

When severe weather is in the offering, the work load becomes excessive; that is, the normal routine of monitoring weather patterns and radar information becomes almost non-existing, because all available time is taken just to file traffic and answer weather requests (2 telephones plus personal requests). The time from 18:00 - 22:00 hours on August 7, 1979 was this type of situation with only one man (myself) manning the office.

3. With all the events taking place on the evening of August 7, 1979, it left little time to ponder the situation. With perhaps more time, more effort could have been spent to contact the radio station, Utilities, or Fire Department at Woodstock, or perhaps try to get a little more information from OWC.

End.

Floyd Rader,

Presentation Technician,
London Weather Office.

*in this case with WW in effect
OAC should have been called
in*



FROM OAEWM (LONDON)
DE

TO OAEWR
A

SECURITY - CLASSIFICATION - DE SÉCURITÉ

OUR FILE — NIRÉFÉRENCE
2001-79

YOUR FILE — VIRÉFÉRENCE

DATE
08 August, 1979

SUBJECT
SUJET

SEVERE WEATHER - AUGUST 07, 1979

1. ON DUTY: F. Lochner 0545-1415 DST
B. Finch 0645-1515
F. Rader 1445-2300
2. COMMUNICATIONS: Teletype - sporadic garbling affected the T/T ccts
all day but most traffic was useable
- Weather Watch/Warnings #78-84 inclusive
were received

Telephone - no outages logged -
3. MEDIA: Radio - ten contacts during day shift (most related
to Owen Sound storm)
- thirty-three contacts during afternoon/
evening shift (re Woodstock storm)
- normally handle about nine contacts in a day

Television - nine contacts / normally five per day

Press - ten contacts / normally 3-4 per day
4. REMARKS: My first indication that severe weather had occurred was
through a call from a neighbour. He had heard of weather related injuries
being taken to the Ingersol Hospital. I called the London Weather Office at
approximately 2030 DST inquiring about the rumour's validity. Another call to
my residence relating in more detail the damage around Hickson prompted me to
call the office again around 2100. I could not get through.

I arrived at the office at 2215 to check the weather
situation. The local television station showed films illustrating the severity
of the destruction at 2320. I talked to the London Free Press at 2345. I
called the OWC at 090030.

087

B. Finch

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Officer-in-Charge
London Weather Office

(3) Carol Klaponski and Mike Newark
Severe Weather Forecasters
Ontario Weather Centre
Malton International Airport
Conducted October 25

The interview was conducted mainly with Carol, although Mike did participate in the latter part. It was very informal, and covered three main areas, around which the discussion is organised.

(a) The event

There were two tornadoes
The ~~tornado~~ followed two tracks, which are shown on the accompanying map. The tornado first touched down near Flanningan Corner and finally left the surface and dissipated south east of Waterford. The total travel time for the funnels has been estimated at 45 - 50 minutes. *estimated time of* The first report of a touchdown at Woodstock was at 6.55 p.m.[^] *computed from outage times of hydro towers* As one funnel lifted at the end of the northern and first track, another touched to commence it's path along the second track. The Ontario Weather Centre were able to identify two tracks by examining the ~~circular vegetation damage patterns~~ *on the ground* ~~at the ends of both tracks,~~ *similar patterns were recorded in* especially for shrubs and corn crops. Similiarily, the curve near Hickson was examined carefully, and the Weather Centre concluded that the first funnel changed direction here, before dissipating north-east of Bright.

The average width of the funnels and peripheral area of damage was about 0.4 kilometres, although the width extended up to 2.0 kilometres in places and reached about 1.0 kilometre at Oxford Centre for example. The funnels appeared to have touched the surface along the entire length of both tracks. On the central portion of the southern track near Oxford Centre ~~there is a possibility~~ *it appears* that a minor parallel funnel also touched the surface. It is difficult to determine it's exact extent, although Mike thought that secondary damage reports did at least verify it's existence. Carol and Mike also stressed that other areas in the vicinity also suffered severe damage. For example in the Renton - Tyrell area many crops were either destroyed or damaged by a severe hail storm.

(b) The warning

Weather forecasts are dispatched by the Ontario Weather Centre to Broadcast News, who then send the forecasts to individual radio stations. The forecasts are transmitted by teletype machines on both occasions. The following account

indicates what time specific forecasts were dispatched¹ to Broadcast News. The forecast sequence for this part of Ontario for the afternoon of Tuesday August 7 went as follows:

<u>Time</u>	<u>Nature of warning</u>
2.40 p.m.	A weather watch went out for a large area of southern Ontario, including Perth, Waterloo and Oxford counties. A weather watch is not a warning of immediate danger, but is intended to inform people that they should be on the lookout for a worsening of weather conditions.
6.15 p.m.	A warning of severe thunderstorms was issued for Perth, Waterloo and Oxford counties. Such a warning includes the proviso that this is a warning of immediate danger so that action should be taken.
7.15 p.m.	A warning of severe thunderstorms was issued for Brant and Haldimand - Norfolk counties.

A severe thunderstorm warning is supposed to communicate that large hail, strong damaging winds which are likely to remove roofs and break tree limbs and lightning are likely. It is also supposed to indicate that the possibility of tornadoes is much higher. An ordinary thunderstorm warning is much different. At the other end of the scale, I asked why a tornado warning ^{had been} not issued.

Carol said that forecasters were very cautious in their use of this term, and that a tornado forecast would only be issued if at least one of two circumstances were met: either

- (1) a radar locates an echo hook, and/or
- (2) a funnel is confirmed by an eye witness.

Neither circumstance was met in this case, consequently a tornado warning was not issued. As regards the radar echo hook, none appeared for two reasons. First, ^{20-300 miles, the characteristic signature of a hook echo is effectively} the Toronto radar has a range of ~~60-80~~ miles, so that the area affected is not covered and secondly ^{other radar echoes caused attenuation of signal} intervening weather events tended to confuse the picture anyway. Carol did say that the Buffalo weather forecasters had called to see if the Ontario people had the situation in hand, and as they thought they did, this went no further.

Similarly the second eye witness confirmation circumstance was not met. The Ontario Weather Centre did not ^{until 11-10 that night} get any reports from its new voluntary weather-watchers though coverage did extend to the affected area. Ontario Hydro phoned up at one point and asked what was happening to its towers (they were falling ^{a sag lines had gone down in that area & to enquire what weather underway.}

over), but had to hang up ^{as more lines were falling} because more were falling down. Consequently the Weather Centre made several phone - calls to try and establish what was going on. Carol thought these may be the telephone calls reported by newspapers as attempted warnings. The Weather Centre did not get any replies. Confirmation of a tornado in the area came after it was all over around 8.00 p.m. The message came to the Ontario Weather Centre via the OPP offices at Brantford and Simcoe.

(c) Since the event

There has been some discussion about warnings among forecasters and some recommendations have been sent via the Regional Director to the Minister concerned. These are an internal matter, but I was able in conversation with Carol and Mike, to identify a number of aspects on which action has or could be taken to improve the Ontario Weather Centre's service. Four aspects in particular were mentioned:

(1) the weather - watching service can be expanded. Recruitment has only been going 12 months, but since the tornado the OPP, conservation authority personnel and radio ham operators in Ontario have been recruited as weather - watchers. Reports will still be made by these people on a special telephone line however. Although better communications are advisable, the Ontario Weather Centre cannot easily initiate these since it is operating under serious budgetary constraints.

(2) there is a need for an improved liason between the Ontario Weather Centre and the news media (i.e.) radio and television stations to improve weather forecasts and their communication. The radio - stations have been sent an information brochure which seeks to explain to announcers the significance of various terms, such as 'severe thunderstorm' and 'tornado'. The Weather Centre recognises more education may still be necessary, ^{some radio stations} ~~as Chum's actions on August 7 indicated~~. Carol said that ~~Chum~~ gave ~~it's~~ first tornado warning for the Toronto area after the Weather Centre had withdrawn this warning. Another weakness in the current set - up is that the communication of forecasts via Broadcast News to stations by teletype does not necessarily ensure that they have been received, since someone at the station must physically rip off the teletype output and read it. The Weather Centre suspect that this is not done on a frequent basis at all times.

(3) there is a need for Ontario Weather Centre to get out and educate the public, if the benefits accruing from forecasts are going to be maximised. The public needs to be able to interpret what the forecasts mean, but must also believe that the forecasted events could, and indeed are likely to occur. Carol and Mike, who visited the area on the Wednesday and Thursday (August 8 - 9)

formed the impression that many people in the affected area had not believed a tornado could occur.

(4) finally, AES has it's own Weatheradio Canada which broadcasts continuous weather information. (see attached pamphlet information) It automatically turns up the volume for weather warnings. A similiar network operates throughout most of the U.S.A. and also in Vancouver, Montreal and Halifax. However this service does not extend to the affected area. The tornado event has helped highlight the need for further radio stations in Canada to maximise the coverage area. Once again, improvements will cost money, something which the Ontario Weather does not have.

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The average width of the funnels and peripheral area of damage was about 0.4 kilometres, although the width extended up to 2.0 kilometres in places and reached about 1.0 kilometre at Oxford Centre for example. The funnels appeared to have touched the surface along the entire length of both tracks. On the central portion of the southern track near Oxford Centre there is a possibility that a minor parallel funnel also touched the surface. It is difficult to determine it's exact extent, although Mike thought that secondary damage reports did at least verify it's existence. Carol and Mike also stressed that other areas in the vicinity also suffered severe damage. For example in the Renton - Tyrell area many crops were either destroyed or damaged by a severe hail storm.

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(2) a funnel is confirmed by an eye witness.

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NOT correct!

Not with the volunteers. This statement needs expansion as it is very misleading.

This is a sensitive area that requires more careful handling.

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OWC has a number a serious reservations about the factual content of this paper as well as the way it is presented.

In our opinion,
a paper prepared on the ^{basis of the} informal discussions held with Mr. Wilson has no business being a part of any published report. We are against the publication of this paper in its present form.
We suggest that you either await the publication of official AES reports on the Woodstock Tornado before compiling facts, or else set up a proper interview to obtain the correct detail.