

CAFD

8971-M-79

CAEM

4th., February,
1980.

Article: "The Night of the Tornado"

By: Irvin Pesen in "CAEM"

1. I believe the essence of the conditions described in the crossing from Tobermory to Parry Sound to be correct, although highly coloured.

i.e. "The wind was now off scale above 60".

The last winds available to the marine forecaster for the 4 a.m. Marine Forecast would have been from 2 am reports (enclosed). A single 25 knot report in northwest Lake Huron might have been a tip-off, but still far away from Georgian Bay. The 8 am reports, of course, reveal the presence of winds approaching 35 knots and in thunderstorms probably briefly higher.

2. The Mafor quoted was the 4 pm issue of Monday Aug 6th, and it indicated increasing winds to 28 - 33 knots with thunderstorms in the period 10 am to 4 pm the following day. As the author stated, the forecast lagged development by 5 hours. I do not understand the statement: "I called the coast guard (presumably after 5 am - the last time given) → they said it was a U.S. Coast Guard Warning for eastern Lake Superior and that there was no change in the Canadian forecast for Georgian Bay". At this time, both the 10 pm and 4 am issues of Marine forecasts should have been in the hands of Canadian Coast Guard. The 4 am forecast indicated 4 am ---- 10 am average 11 to 21 knot winds, but varying to 28 - 33 knots in thunderstorms.

3. The statement concluding the story is biased and misleading. "It was not a freak storm, its potential was known to the U.S. Coast Guard hours before it was made known to Canadians on the water and the land".

OWC - issued a warning for Algoma at 3:40 a.m. (same warning referred to as only given by U.S. Coast Guard.

OWC - re-issued warning at 6:30 and raised to tornado status.

Unfortunately neither referred to waters of Georgian Bay.

The 8:14 Warning (Tornado and Severe Thunderstorm) which specifically mentioned waters of Georgian Bay, while too late for this user, was nonetheless an important and highly relevant warning for the waters of southern Georgian Bay. The bias on the part of the writer is understandable, but it is unfortunate that the statement: "Even though about 0800 a weather warning (tornado) was issued ----- the storm was already on its way to Woodstock", was made. It implies the message was useless when, in fact, heavy thunderstorms moving across southern Georgian Bay were very much in evidence until 10 or 11 am. Marton had a very heavy thunderstorm and hail at 11:15 am.

4. However, there is no question in my mind this yachtsman ran into largely unanticipated severe weather. I believe the incapability of OMC to monitor Georgian Bay with a radar installation and the paucity of ship reports in the area largely explain the lag in responding to development. A radar installation at Brett would serve this segment of the public adequately whereas current and proposed radar sites leave the area open to a repetition of the events outlined.

Original Signed by

G. W. GEE

ovg/wf

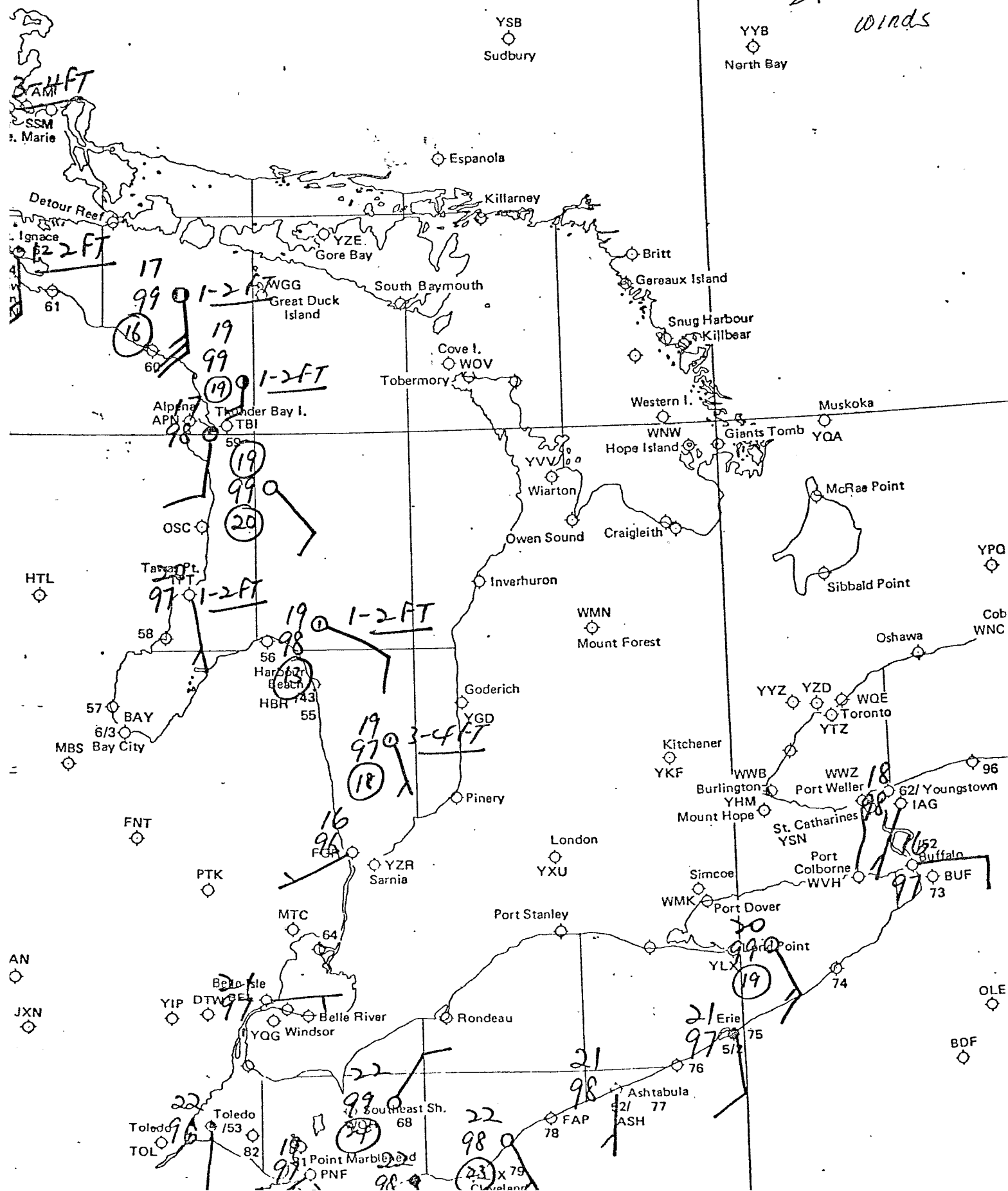
(P.J. Fender),
Officer-in-Charge.

Encls.,

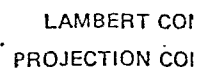
Wind Summary MusKoka Wiliston Aug 2/1979

[illegible]

Aug 7 2AM
winds

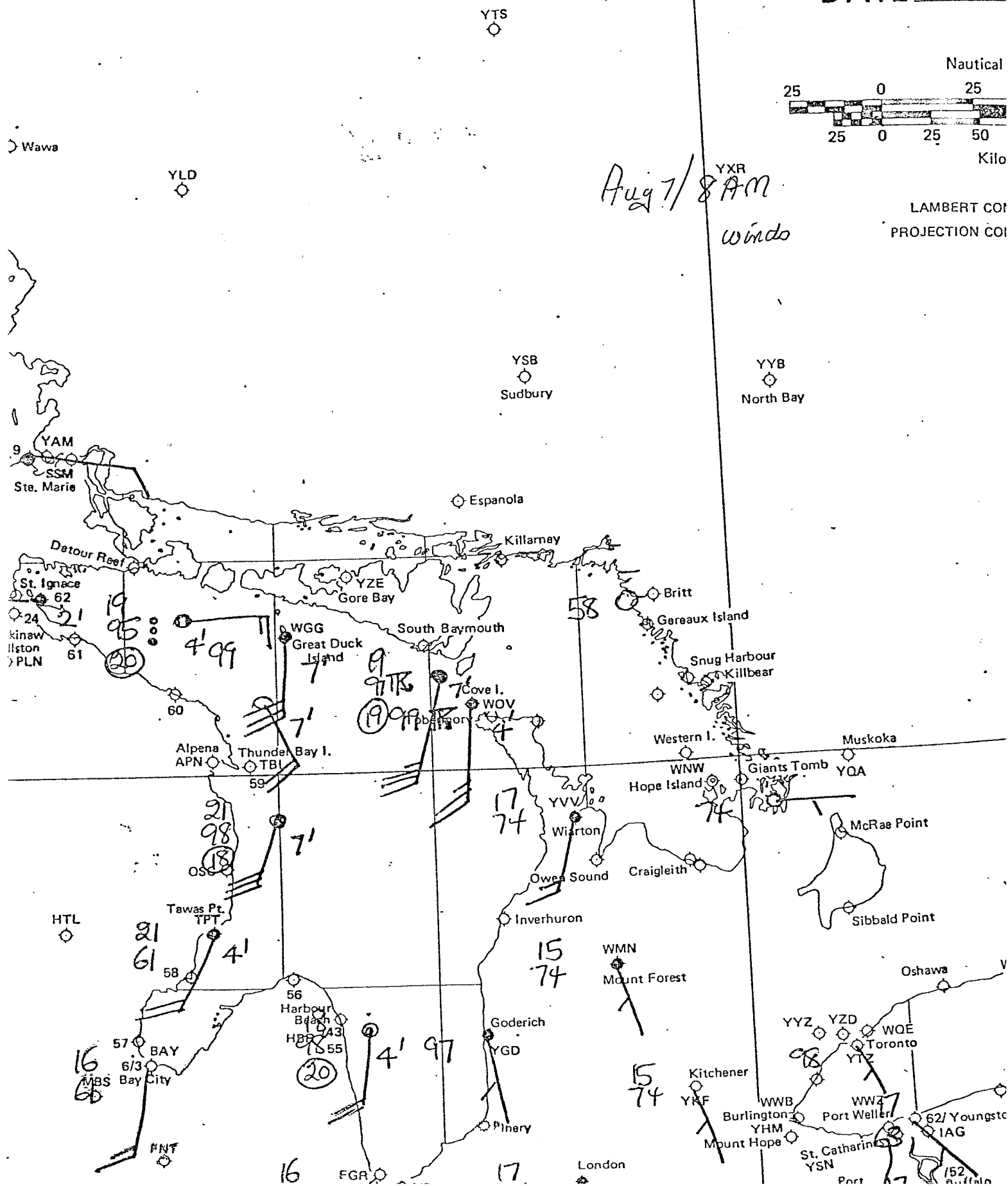


DATE Aug



Aug 7/8 AM YXR

windo



FPCN20 CYYZ 062000

170-79080619:39

MARINE FORECASTS FOR THE GREAT LAKES ISSUED BY ENVIRONMENT
CANADA AT 4 PM EDT MONDAY AUGUST 6TH 1979 VALID UNTIL 5 PM
EDT TUESDAY.

LAKE SUPERIOR WEST HALF.

WINDS SOUTHEASTERLY 10 TO 20 KNOTS GRADUALLY VEERING TO
SOUTHERLY 20 TO 25 TONIGHT AND SHIFTING TO NORTHWESTERLY
15 TO 25 TUESDAY MORNING. FAIR TONIGHT. A FEW SHOWERS AND
ISOLATED THUNDERSTORMS TUESDAY GIVING HIGHER GUSTS.

LAKE SUPERIOR EASTERN HALF.

WINDS EAST TO SOUTHEAST 10 TO 15 KNOTS GRADUALLY VEERING
TO SOUTHEAST TO SOUTH 10 TO 20 THEN INCREASING TO SOUTHERLY
20 TO 25 OVERNIGHT AND TO SOUTHWESTERLY 20 TO 25 TUESDAY
AFTERNOON. FAIR TONIGHT. A FEW SHOWERS AND ISOLATED THUNDER
STORMS DEVELOPING TUESDAY GIVING HIGHER GUSTS.

LAKE HURON NORTH HALF

GEORGIAN BAY.

WINDS VARIABLE 5 TO 10 KNOTS GRADUALLY BECOMING SOUTHEASTERLY
10 TO 15 TONIGHT AND SOUTHERLY 15 TO 25 TUESDAY. FAIR.
ISOLATED SHOWERS OR THUNDERSTORMS TUESDAY AFTERNOON GIVING
HIGHER GUSTS.

LAKE HURON SOUTH HALF.

LAKE ERIE.

WINDS NORTHEASTERLY 10 TO 20 KNOTS GRADUALLY VEERING TO
SOUTHEASTERLY 10 TO 15 OVERNIGHT AND TO SOUTHERLY 10 TO 20
TUESDAY. FAIR.

LAKE ONTARIO.

WINDS NORTHEASTERLY 10 TO 20 KNOTS GRADUALLY VEERING TO
SOUTHERLY 10 TO 20 TUESDAY. FAIR.

END

MARINE SYNOPSIS FOR THE GREAT LAKES.

LARGE HIGH CENTRAL PRESSURE 30.24 INCHES OVER NORTHERN
LAKE MICHIGAN MOVING EASTWARD TO REACH THE ATLANTIC SEABOARD
IN 24 HOURS. NORTH TO SOUTH TROUGH AND WINDSHIFT LINE AVERAGE
PRESSURE 29.77 INCHES ACROSS THE DAKOTAS MOVING TO JAMES
BAY-CENTRAL LAKE SUPERIOR LINE IN 24 HOURS.

MAFOR 0621.

SUPERIOR WEST 11310 19320 12420 19436 13436 19949 12720 19736
SUPERIOR EAST 11210 19310 12310 19420 12420 19530 13536 19949
HURON NORTH/GEORGIAN 12900 12310 12420 19430 12536 19949 ✓
HURON SOUTH/ERIE 14110 19120 12310 12420 19410
ONTARIO 14120 19810 14410 19320

END

NNNN

FPCN20 CYYZ 070800

MARINE FORECASTS FOR THE GREAT LAKES ISSUED BY ENVIRONMENT
CANADA AT 4.00 AM EDT TUESDAY AUGUST 7 1979 VALID UNTIL
5.00 AM EDT WEDNESDAY.

LAKE SUPERIOR WEST HALF.

WINDS SOUTHWEST TO WEST 15 TO 25 KNOTS VEERING TO WEST
TO NORTHWEST THIS MORNING DIMINISHING TO NORTHWEST 15
TO 20 TONIGHT. PARTLY CLOUDY.

LAKE SUPERIOR EAST HALF.

WINDS SOUTH TO SOUTHWEST 20 TO 25 KNOTS SHIFTING TO WEST
TO NORTHWEST 15 TO 25 BY NEAR NOON BECOMING NORTHWEST
15 TO 20 TONIGHT. A FEW THUNDERSTORMS WITH BRIEFLY HIGHER
GUSTS ENDING THIS MORNING THEN FAIR.

LAKE HURON

GEORGIAN BAY.

WINDS SOUTHERLY 10 TO 20 KNOTS INCREASING TO SOUTHWEST
15 TO 25 LATER THIS MORNING THEN VEERING TO WEST TO NORTHWEST
10 TO 20 KNOTS THIS EVENING. A FEW
SHOWERS OR THUNDERSTORMS WITH BRIEFLY HIGHER GUSTS.

LAKE ERIE

LAKE ONTARIO.

WINDS VARIABLE TO SOUTHEAST 5 TO 15 KN

TT

LAKE ONTARIO.

WINDS VARIABLE TO SOUTHEAST 5 TO 15 KNOTS INCREASING TO
SOUTH TO SOUTHWEST 15 TO 20 BY AFTERNOON BECOMING WESTERLY
10 TO 15 LATE TONIGHT. FAIR TODAY. CHANCE OF A THUNDERSTORM
WITH BRIEFLY HIGHER GUSTS TONIGHT.

END

MARINE SYNOPSIS FOR THE GREAT LAKES.

TROUGH AND WINDSHIFT LINE AVERAGE PRESSURE 29.71 INCHES
NORTHEAST TO SOUTHWEST THROUGH WESTERN LAKE SUPERIOR MOVING
TO LIE THROUGH THE LOWER LAKES BY 5AM WEDNESDAY.

MAFOR 0709

SUPERIOR WEST 12520 19630 14620 19730 12720

SUPERIOR EAST 13430 19549 13620 19730 12720

HURON GEORGIAN 12410 19420 19549 13520 19549 13610 19720

ERIE ONTARIO 13900 19310 14420 19520 19549 11610

END

NNCH1 CYYZ 070740
SEVERE WEATHER WARNING NUMBER 72
ENVIRONMENT CANADA TORONTO ONT
0340 EDT AUGUST 7 1979

IMMEDIATE BROADCAST REQUESTED

THE ONTARIO WEATHER CENTRE HAS ISSUED A SEVERE
THUNDERSTORM/TORNADO WARNING EFFECTIVE UNTIL 0700 EDT FOR
WESTERN ALGOMA REGION INCLUDING SAULT STE MARIE CITY

AMERICAN RADAR HAS PICKED UP AN INTENSE THUNDERSTORM
CELL OVER THE WATERS OF LAKE SUPERIOR ABOUT 100 KM
NORTHWEST OF SAULT STE MARIE. THE CELL IS MOVING
EASTSOUTHEASTWARD AT 60 KMH. STRONG GUSTY SURFACE WINDS
AND HAIL ARE POSSIBLE FROM THIS STORM. THERE IS THE RISK
OF TORNADO DEVELOPMENT.

PEOPLE IN THE WARNED COUNTIES SHOULD TAKE IMMEDIATE
SAFETY PRECAUTIONS

THIS WARNING WILL BE UPDATED OR CANCELLED BY 0700 EDT

END/ TGO

WNCN1 CYYZ 071030
SEVERE WEATHER WARNING NUMBER 73
ENVIRONMENT CANADA TORONTO ONT
0630 EDT AUGUST 7 1979

IMMEDIATE BROADCAST REQUESTED

THE ONTARIO WEATHER CENTRE HAS ISSUED A SEVERE
THUNDERSTORM/TORNADO WARNING EFFECTIVE UNTIL 0930 EDT FOR
ALGOMA REGION INCLUDING SAULT STE MARIE CITY

THE WARNING HAS BEEN EXTENDED TO EASTERN SECTIONS OF
ALGOMA REGION. STRONG GUSTY SURFACE WINDS AND HAIL ARE
POSSIBLE FROM THIS STORM. THERE IS STILL A RISK OF TORNADO
DEVELOPMENT. AS OF YET THERE HAS BEEN NO CONFIRMATION
OF SEVERE ACTIVITY BUT THUNDERSTORMS HAVE BEEN INTENSE.

THIS WARNING REPLACES SEVERE THUNDERSTORM WARNING NUMBER 72.

PEOPLE IN THE WARNED COUNTIES SHOULD TAKE IMMEDIATE
SAFETY PRECAUTIONS

THIS WARNING WILL BE UPDATED OR CANCELLED BY 0930 EDT

END/ TGO

AUG 7 12: 51

WWCN1 CYYZ 071215

CANCELLATION OF SEVERE WEATHER WARNING NUMBER 73
ENVIRONMENT CANADA TORONTO ONTARIO
0815 EDT AUGUST 7TH 1979.

THE ONTARIO WEATHER CENTRE HAS CANCELLED SEVERE WEATHER
WARNING NUMBER 73 FOR THE WESTERN ALGOMA REGION INCLUDING
SAULT STE MARIE CITY ISSUED AT 0630 EDT.

END/AJC

AUG 7 12: 53

WWCN1 CYYZ 081215

SEVERE WEATHER WARNING NUMBER 74
ENVIRONMENT CANADA TORONTO ONTARIO
0815 EDT AUGUST 7TH 1979

IMMEDIATE BROADCAST REQUESTED

THE ONTARIO WEATHER CENTRE HAS ISSUED A SEVERE THUNDERSTORM/
TORNADO WARNING EFFECTIVE UNTIL 1115 EDT FOR THE EASTERN ALGOMA
AND NORTHERN GEORGIAN BAY REGIONS INCLUDING NORTH BAY AND
SUDBURY CITIES.

RADAR, SATELLITE AND WEATHER REPORTS INDICATE STRONG THUNDER-
STORM ACTIVITY IN THE EASTERN ALGOMA MANITOULIN ISLAND AND
NORTHERN GEORGIAN BAY REGIONS. BRIEF PERIODS OF HEAVY RAINFALL
HAIL AND DAMAGING WINDS ARE POSSIBLE FOR THE NEXT 2 TO 3 HOURS.
THERE IS A POTENTIAL OF AN ISOLATED TORNADO DEVELOPMENT
IN A FEW LOCALITIES. PEOPLE IN THE WARNED REGIONS SHOULD
TAKE IMMEDIATE SAFETY PRECAUTIONS.

Note

ALL MARINE INTERESTS IN GEORGIAN BAY WATERS SHOULD TAKE
IMMEDIATE SAFETY PRECAUTIONS. THIS WARNING WILL BE UPDATED
OR CANCELLED BY 1030 EDT TUESDAY AUGUST 7TH 1979.

END/AJS

this period. Just before the storm begins all activity ceases.

15. Study gulls as they take off or land in the water to gauge the velocity and direction of the wind. Note that when the wind is light they take a long slide into the water, when it is strong they simply spread their wings and come almost straight down.
16. When people are absent minded, and move as though in a fog, rain is often two to four hours away.
17. When arthritis or old wounds give more pain than usual, it often indicates that rain is near.



SouthOrn Bound

by Angela Wellman

We are on our way south in the new boat *Suffolk Punch*, taking a year's cruise down the Intercoastal and to the Bahamas and working at the same time. I just finished some experiments at the Institute of Marine Sciences at Moorehead City.

While we were there the *Penny Royal* (the Wellmans' old boat) came in and anchored beside us. Yesterday we went on down the seaway together. It's such a small world when you are cruising. We've met several people we first met in 1973-74 in England or in the U.S. It's fun to GAM with them.

As usual we are living off the land and sea, catching blue crabs, gathering mussels and oysters and scallops, etc. We are now entering conch country, three large conch will provide an excellent meal for us.

While we were in Virginia the persimmons were ripening, and I collected quite a few. Wild onions or chives are plentiful all through this area. If we are lucky we can also collect pecans after a wind storm, provided we get to the trees before the children.

Lisa Kanter forwards our GAM to us each month so we can keep up with the local news. We went to the Anapolis Boat Show and I bought one of those solar showers and an extension pipe for the woodburning stove.

THE COUNTDOWN IS ON.

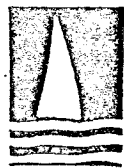
Davidson's are ready.
Are you?

~~November~~
~~December~~
January
February
March
April

CHECK OUT:

Rigging
Paint
Hardware and don't forget
the shoes and boots.
Battens need repairing?
See the best Selection.

At



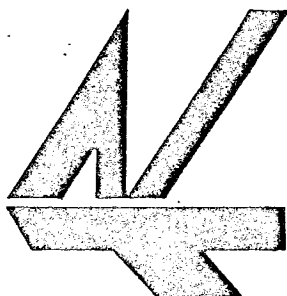
DAVIDSON'S

107 KING STREET EAST (at Church), Toronto, Ontario M5C 1G6
PHONE: 363-8859

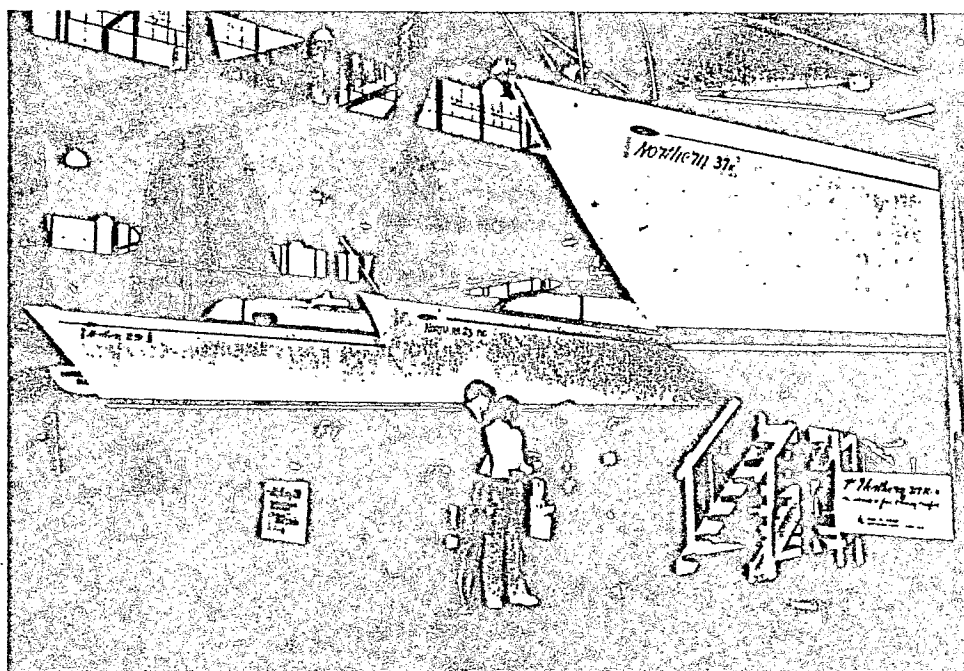
'Other' Weather Signs

Most sailors have learned to watch cloud formations for indications of what the weather will bring. Other indications, some much more intriguing, are all around and we have only to learn to recognize and watch for them.

1. When the morning is still and there is dew on the grass, the weather will be clear. If the morning is dry, without dew, the possibilities are that there will be rain.
2. When smoke rises straight up in the air, the weather will usually be clear for at least 12 hours. If the smoke does not rise, but hangs heavily, there will probably be rain.
3. When distant objects become unusually clear, wind and bad weather are on the way.
4. When sounds, like train whistles, carry unusually well, rain is coming.
5. A rainbow in the morning usually means showers, one in the afternoon often shows that the rain is over.
6. A ring around the moon or a 'red' moon indicates rain to come. A bright, clear moon is a sign of fine weather.
7. A ring around the sun means a change in the weather.
8. A black night with unusually bright stars might mean rain.
9. When high clouds are tinged with red at sundown there will be high winds.
10. When trees, especially maples, show the undersides of their leaves, an Indian woman described it as asking God for water, it will soon rain.
11. When flies bite and seem to be trying to get into the cockpit and under your clothes, rain is probably on the way.
12. When gulls fly high and, perhaps, tumble and pitch, a gale is likely on the way. When they stay low to the ground or water, there will usually be fair weather.
13. An hour or more after ants have built little ridges around their holes watch for rain. Activity usually ceases about an hour before the rain comes.
14. For 24 hours before a storm animals and birds are unusually active, larger animals feed heavily and smaller ones make for higher ground. Hawks circle the sky or perch on high lookouts, watching the increased activity of mice, toads and rabbits. Wolves do not howl during



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or a lighthouse, or a figment of my imagination. I had to find out. Even as I recall this, I feel again that rising panic. Keep cool. Act slowly and methodically, more easily said than felt.

Slowly we manoeuvred closer to the light. It was raining now. Even through the rain I made out the indistinct form of a structure. The glasses, rain fogged and unsteady, were of no use. Again closer. The depth sounder showed 10 to 12 fathoms, but these rocks rise, like needles, from the bottom.

Finally, through the heavy rain, I could make out the characteristics of a white lighthouse-like structure with a horizontal red stripe sitting on a rock, with surf breaking all around, within a hundred feet of us.

Maintaining just enough way to keep control, I went below to get the Light List. The water dropped into my eyes and onto the paper as I fumbled through pages. Encumbered and hot in sweaters and foul weather gear and safety harness, braced against the boat's motion, I finally got a match.

It was Red Rock Light. It had to be, even if the colour of the light was green and not the listed white. The chart showed the course to the channel, but also showed that we were in imminent danger of bottoming in twelve feet of water with waves to match.

Back in the cockpit I spun the boat onto a reciprocal course to get into clear water. I laid a course to Light Buoy 5.5P, Farr Rock Light. Through a break in the storm I could make out the buoy, but could not read its identification until we were within 30 feet. The problems weren't over, but a tremendous sense of relief cleared my head and renewed my strength. Even my sense of humor returned.

Slowly, tediously, charting from buoy to buoy and identifying each in turn, we worked our way up the channel. We had missed the target buoy by five miles; there wouldn't have been a hope of finding it anyway. There was no relief from the wind, rain and lightning, but as we moved under the protection of the islands to the south, the waves were less violent, less menacing.

The approach to Parry Sound is torturous, hidden rocks lie near the markers, and we still had fifteen miles to go. At reduced speed we climbed the marker numbers 16P, 20P, 23P, making our way into the sound.

As we moved along, we changed to the appropriate charts, which had been carefully arranged in sequence. Finally a small chart, No. 2227, Depot Harbour, was brought up.

Though we were now only eight miles out of Parry Sound Harbour, they were slow grinding miles. It would take over two hours. I was feeling the effects of the strain.

Here, at hand, was a clear, easy entry into a well protected harbour. At 10:38, in high winds and light rain, we made fast to a battered railway wharf at the east end of this abandoned port. No waves, no doubts, sheer relief, the boat was messy, but secure. The rest could wait. We slept the sleep of exhaustion.

The storm moved along, southeasterly, ravaging its way across southern Ontario, spawning a tornado which sucked up a small town near Woodstock and showed its ominous, black face to Toronto.

That was the night of the tornado.

I learned some important things from this voyage. I learned what I could take, what the boat could take and what my dauntless crew could take, very important lessons.

The weather forecasts were misleading. Even though at about 0800, Wednesday, a tornado and weather warning was issued by the Canadian Coast Guard, the storm was already passing Georgian Bay on its way to Woodstock.

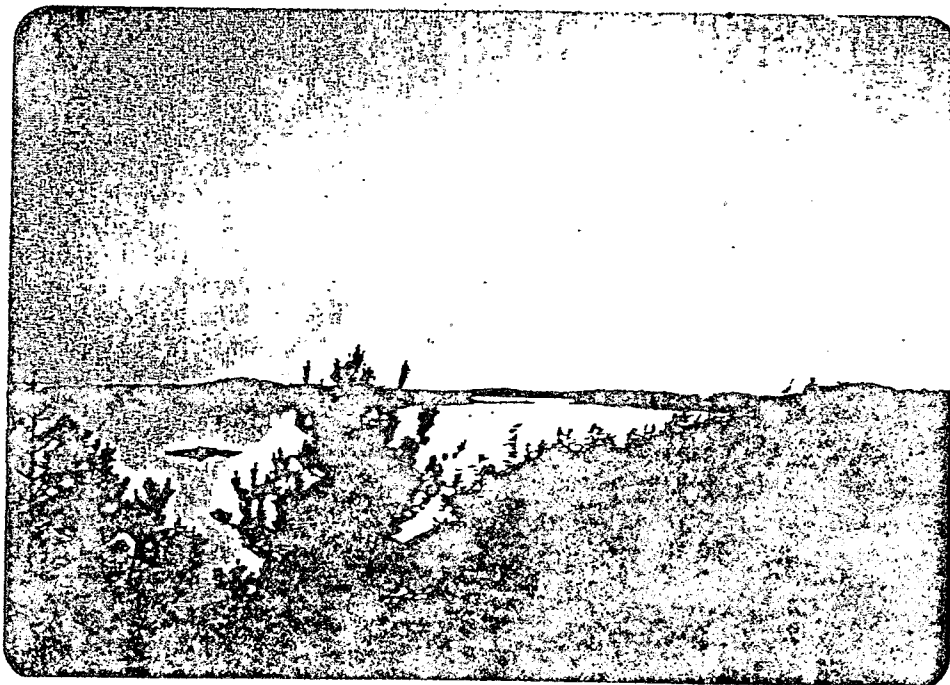
It was not a freak storm. Its potential was known to the U.S. Coast Guard hours before it was made known to Canadians of the water and the land. There is a lesson somewhere, but I do not know what it is.

I learned to read the fine print which says, on page VIII of the 1979 Inland Waters List of Lights, "Lights listed as "M.V." are Mercury Vapour lights and will, under certain atmospheric conditions, show a greenish hue, rather than white." Red Rock Light is "M.V.," and it wasn't greenish. It was GREEN, as in seasick.

I also learned that trials that don't actually kill you serve to make you stronger. Yes, indeed.

Georgian Bay

Photo by
Sid Turner



Say you saw it in GAM

The Night of the Tornado

Monday Aug 6, 1979

January issue

by Irvin Besen

Tuesday, August 7, 1979, Marine Forecast from Wiarton Station, Canadian Coast Guard, effective 1800 hours, E.S.T. Mafor Code

12900 12310 12420 19430 12536 19949

Using my still-to-be-patented MAFOR decoder, the above translated to 18 hours of clear weather, with winds increasing from calm to 27 knots and veering from southeast to southwest, followed by rain and occasional thunderstorms with winds up to 33 knots. Since my whole planned trip of 70-odd miles would take 17.5 hours (I figured on a minimum cruising speed of four knots) the forecast suited me fine. The boat would be on a close reach to a broad reach under clear skies. What could go wrong?

Just about everything!

We had spent the last few days in Tobermory, rafted up to the most congenial and interesting cruiser I've had the pleasure to be with. Tobermory wrapped up a weekend of festivities marking the 300th anniversary of the sinking of the Griffon. The fleet that had gathered for the celebration was dispersing. Now it was our time to leave. Our plan was to sail to Parry Sound and explore the fabulous maze of the 30,000 Islands which lie along the east coast of Georgian Bay.

The last 20 miles of this trip would involve threading-the-needle through the complex of offshore islands. Even though the channel is well marked, I wanted to do this in broad daylight.

The first leg of the trip from Tobermory would be clear sailing through unobstructed waters, a distance of 50 miles. Once past Wingfield Basin, a snug harbour on the northeast tip of the Bruce Peninsula, there would be no guiding landmarks or aids to navigation.

By leaving at 1700 hours we could sail the first leg through the night and arrive after dawn at the Seguin Bank Light, the leading marker of the entry to the main passage to Parry Sound.

With shoals all around, picking up that first marker five miles from the closest land, a small low group of the South Limestone Islands, would be tricky.

We spent a pleasant afternoon in the Little Tub of Tobermory Harbour getting supplies, diesel fuel, and saying goodbyes. At 1900 hours we slipped our lines. Clearing North Point Light, which marks the entry to Tobermory Harbour, we set the course, 48.3 miles, 087 deg. true to Seguin Bank Light.

Under full sail we ghosted along, the boat yielding rhythmically to the light swell. The evening sky was parading its most impressive sunset colours, and I took the time to record the display as the sun lowered on Flower Pot and Bear's Rump Islands. I rechecked the planning, the stowage and the general boat security, then settled down to a game of Scrabble in the cockpit in the fading light.

We were on a beam reach, the winds fairly steady and slowly rising, all as scheduled. The average speed was four knots. Just before it got black, I lowered No. 1 genoa so that we would sail through the night on main only. Even as we

lowered our sail the winds came up enough to maintain speed.

Under a full moon, scattered clouds, very clear visibility (a bad omen), we could see the Cabot Head Light on Wingfield Basin for miles. It promised to be an ideal night cruise.

Using our cruising system of one hour off and one hour on, I went below at 0200 hours, planning to take the watch again at 0300. Although vaguely aware of a change in the sounds, I was soon lulled by the boat's easy motion. Not to worry. I dozed off again, just a little uneasy.

Within a short time I was definitely uncomfortable with the changing sounds of the motion and came up to the cockpit. Our speed was up to 5.5 knots, the wind was up to 20 and the seas were increasing. This, a full six hours before its time, was not on schedule. Reefing the main, we still made four knots. Visibility was still good, but the overcast was complete, no stars, no moon, just blackness all around.

By 0330 hours the wind was gusting above 35 knots, the seas were mounting and, by dead reckoning, we were ten miles off our first marker. The main was double reefed and our speed was maintained at four knots. The boat was taking the seas easily.

By 0500 we should be able to see the marker. Ahead we could see some fixed green lights, but the Light List did not show any fixed green aids in our vicinity. Our target marker had a flashing green light, maybe the flasher was broken!

With the wind still mounting, we lowered the main. Thank God we had no foresail up. It was all I could do in those mountainous seas to unhand the main and get a rough furl into it. Under motor, beyond the point where we should have first have seen the marker, I had to fight a growing anxiety.

The anxiety was fed by catching the tail end of a weather warning on V.H.F. Going below, I called the Canadian Coast Guard. After a short lecture from the Wiarton Coast Guard on procedure (how nice it must feel to be in a warm, secure, shore station, giving advice), they said it was a weather warning from the U.S. Coast Guard, Sault Ste. Marie, covering eastern Lake Superior, and that there was no change in the Canadian forecast for Georgian Bay. I got no reply when I said the winds at hand were already gusting above fifty.

Decision time was at hand. I started to marshall the facts. The waves were so high that we would not see the marker unless we bumped into it. There are no ports of refuge on this coast. A single green light was still visible when we perched on top of a wave. We had probably made leaway north due to the wind and waves, but how much?

As the sky lightened, I would likely lose that one light. Due to bad atmospheric conditions, the R.D.F. wouldn't give a clear bearing. Calling Wiarton Coast Guard, I was asked to stand by. I didn't hear from them again.

Some small, rocky islands came into view as the light increased. What islands were they? They had no sign posts on them. The wind was now off scale, above 60.

Decision. Alter course southward, to 120°. Avoid the islands and get close to the green light. Maybe it was a boat

8971-V-79

8th., January, 1980.

Ontario Weather Centre
Box 159
Toronto A.M.F., Ontario
L5P 1B1

John Wilson,
Institute for Environmental Studies,
University of Toronto,
Toronto, Ontario.
M5S 1A4

Dear Mr. Wilson:

I have read through your summary of
our conversation of 25th October, and have found it contains numerous mis-
leading and inaccurate statements.

I suggest you await publication of
official Atmospheric Environment Service reports on the events of 7th August
or arrange a meeting to correct the errors in your summary.

Please call me at 676-4540, or Gord
Gee at 676-3513, to arrange a mutually convenient time.

Yours truly,

CEK/cf

(C. E. Klaponski),
Senior Meteorologist

cc: OAED
CEK



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O T T A W A
October 23, 1979

The Honourable John Fraser,
Postmaster General,
House of Commons,
Ottawa, Ontario.

Dear Mr. Minister: *John*

I would like to take this opportunity to thank you for your response to our request of August 14, 1979, regarding the inquiry into the weather forecasting on August 7th in Southwestern Ontario.

The report was very thorough and I appreciate having it. There are many people in my riding who will be interested in reading it.

I also might add that I most heartily agree with Mr. Pender's final remarks.

With kind regards.

Yours sincerely,

BH *Bruce*

Bruce Halliday, M.D.,
M.P. (Oxford)

BH:sg



Tornadoes - Southern Ontario

7 August, 1979

Here are some of my preliminary findings on the tornadoes in the Woodstock area.

There were two tornadoes, and I suspect each had double vortices at the same stage, (from as yet unconfirmed eye witness accounts, as well as ground evidence).

The first touched down southeast of Stratford at about 1820 lcl and moved southeast for about 15 miles before curving northeast. It continued on the ground for another 5 miles before lifting at about 1900 lcl.

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I am still tracking down eyewitnesses and attempting to get more precise times of sightings. Pictures should be back mid-week.

Mike and I intend to collaborate on a paper giving a brief documentation, but emphasizing impact of the warning system and effectiveness of:

- 1) the watcher network,
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- and
- 3) the communication system.

We will conclude with recommendations in those areas, as well as in the area of organizing future investigations of similar nature.

CEK/cf

Carole Klaponski.

13/8/79



MEMORANDUM

CLASSIFICATION

TO
A
OAED

YOUR FILE No.
Votre dossier

OUR FILE No.
Notre dossier 8971-2-Vol.2/
2000-K

DATE 13th., August, 197

FROM
De A/OAEM

SUBJECT
Sujet Preliminary Report
Events of 7th August 1979.

1. Carolé Klaponski of O.W.C. was despatched to the scene of the "Woodstock Tornado" on August 8 and 9, to conduct an aerial and ground survey of the events.
2. Her preliminary findings are enclosed.
3. Times indicated have been determined from bench marks established in destruction of hydro towers (courtesy Dave Aparrow). Time annotation of tornado tracks continues.

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

gwg/cf

Encl. 1

OAED

8971-W-79

A/OAEM

23rd., August,
1979.

7 August 1979 - Severe Weather

1. The following are some personal observations of the utility of the satellite and radar observations currently available to OMC in the identification and tracking of severe convective phenomena. While particular emphasis is placed on events of August 7th., it should be pointed out this was the third confirmed tornado touchdown over land surface experienced to date in the 1979 season. Since it is relevant to conclusions to be presented later, it will be stated initially that Exeter Radar did not detect the presence of "hook" echoes with either the Leamington Tornado of April, or the Brampton Tornado of June in this year. Indeed, in the case of the former, I could identify little if ~~any~~ thing which could have been readily identified as potentially severe.

2. On August 7th., Satellite Imagery disclosed the presence of two very large and distinctly separate (both in space and time) thunderstorm complexes. The first developed in the very early morning hours over northern Michigan, travelled eastward across northern Lake Huron, then more southeasterly over Georgian Bay, and eventually crossed western Lake Ontario into New York State by 2:30 pm. Widely separated events associated with this complex testify to its huge sphere of influence -

severe thunderstorms and boats driven onshore at
Sault Ste Marie around 6:00 a.m.,

heavy thunderstorms and hail around the Bruce
Peninsula at 11:00 a.m.,

a suspect tornado at Powassan 9:00 a.m.,

and

a funnel sighting at Toronto just before 1:00 p.m.

These events were too widely separated to be linked with any particular portion of the complex as viewed by the satellite. The second complex developed almost explosively after 6:00 p.m. to the west of Lake Ontario, and moved on a general southeast course over eastern Lake Ontario during the next two hours. Again while associated with the Woodstock to Waterford tornado track, little specific information as to where and when severe events were occurring could be readily deduced.

3 Despite lack of precise knowledge as to what was happening under the first severe thunderstorm complex, as portrayed in Satellite Imagery, measured CB tops of 63,000 feet on Al-pena Radar Summaries prompted the issue of a Severe Thunderstorm/Tornado Warning for Algoma and later northern Georgian Bay Public Weather Regions. An overly large area for a tornado warning; but, commensurate with our ability thus far to discriminate on the basis of Satellite Imagery alone. These warnings lapsed at 10:00 a.m.

4. All Warnings and Watches issued at OWC after 10:00 a.m. were in direct response to radar and visual observations. When Satellite complex no. 1 took a more southern course, Exeter Sceptre exhibited a well-defined line echo wave pattern "LEWP" in an east-west oriented squall line from the base of the Bruce Peninsula to extreme south-eastern Georgian Bay. The 1510Z Exeter output is enclosed to illustrate. A similar, but north-south oriented LEWP, was observed in June on the day of the Brampton tornado. In each case, tornado development took place 1 to 2 hours later (Brampton 7:30 a.m. - Toronto funnel sighting 12:50 p.m.), and not during the period when the LEWP was most readily identifiable. However, weather watcher reports of peculiar sky colouring (green) and hail storm at Warton prompted immediate action for warnings to Simcoe, Grey, Dufferin, and Southern Bruce counties. These were extended a little later to Peel, York, Durham counties, and Metropolitan Toronto.

5. A hiatus in activity occurred from 1:00 p.m. until 6:00 p.m.; but, based on dynamic assessment, a general Watch for Southern Ontario was issued at 3:40 p.m. About 6:00 p.m. when Satellite complex number 2 developed explosively west of Lake Ontario, OWC radar measured tops of cloud east of London increased from 36 thousand to 42 thousand and shortly thereafter to 48 thousand. This sudden development of tops resulted in warning of severe thunderstorms for Perth, Oxford, and Waterloo counties at 6:15 and an hour later for Hamilton-Ventworth, Haldimand, Norfolk and Niagara Regional Municipalities. Reports of hydro tower destruction arriving at OWC prompted an upgrade in the severe thunderstorm warning for R.M. of Haldimand-Norfolk to tornado warning.

6. A more leisurely examination of Exeter radar data has allowed identification of some features which were not identified or could not practically be put to use in the hectic hours of 5 to 9 p.m. on August 7th., 1979.

- (1) A small line formation of cells "A" in accompanying Exeter output 2210, 2220, 2230Z moved eastward to merge with much larger southward moving-complex "B" at about the time and place tornado development followed.
- (2) A "hook" is identified on 2320Z Exeter Sceptre (rotate page slightly compare for size and shape with "hook" identified on Carp output of 27 June 1979).

Annotated diagrams are included.

Regarding the "hook" displayed on Exeter Radar, it can only be readily identified on the 2320Z Sceptre output which arrives at OWC at 2330Z (more than 30 minutes after known tornado development). It should also be noted that in both Carp and Exeter displays the radar views the phenomena from a most favourable position - i.e. on the backside of the main echo clutter which would probably obscure such phenomena if viewed from another vantage point. Although I haven't had an opportunity to view Woodbridge output, I doubt either it or the YZ-C Band would disclose this feature.

7.
preceding discussion:

A number of points emerge from the pre-

- (1) Since reliable pattern recognition techniques have not yet emerged from OWC application of Satellite Imagery to Severe Weather Forecasting, the degree of discrimination required to identify and track tornadoes simply does not exist. Based on experience to date, it cannot be assumed that the most severe event is or will be under highest satellite indicated tops. However, in areas without radar coverage, particularly if some "ground-truthing" is possible, crude areal warnings are possible.
- (2) All tornadoes do not display "hooks".
- (3) When tornadoes exhibit "hooks", they may only be displayed when the phenomena is viewed advantageously by the radar.
- (4) First appearance of the "hook" on a radar scan can by no means be construed to be the first appearance of a tornado. Conversely, disappearance of a "hook" does not necessarily mean disappearance of a tornado. (all of points (2), (3), and (4) must be recognized as serious impediments in radar capability to detect and track tornadoes).
- (5) The ten minute processing time in the Sceptre system is a major obstacle in the path of real time identification and tracking of severe convective phenomena. The thirty minute turn around time for Satellite Imagery while not overly crucial to synoptic scale phenomena is crippling in small scale severe events.
- (6) Radar disclosure of LEWP or merging echoes can be important precursors of severe events. While merging echoes might assist in pinpointing tornado initiation, such is not the case with LEWP.

7. In conclusion, it must be stated that although the efficacy of radar systems is probably highly overrated by the public and some meteorologists in severe weather situations, it is our most reliable tool at the moment. There is much need in training both meteorologists and technicians in the recognition of severe and potentially severe weather manifestations on radar. Turn around time of our Satellite and

Satellite and -

Radar systems coupled with human delays in identifying and manually tracking small scale severe events presents a powerful case for pursuing automation of all steps now carried out by humans.

Original Signed by

G. W. GEE

GNG/cf

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

Atts. 6

CAPPT 240KM
1.5KM LO/INTS

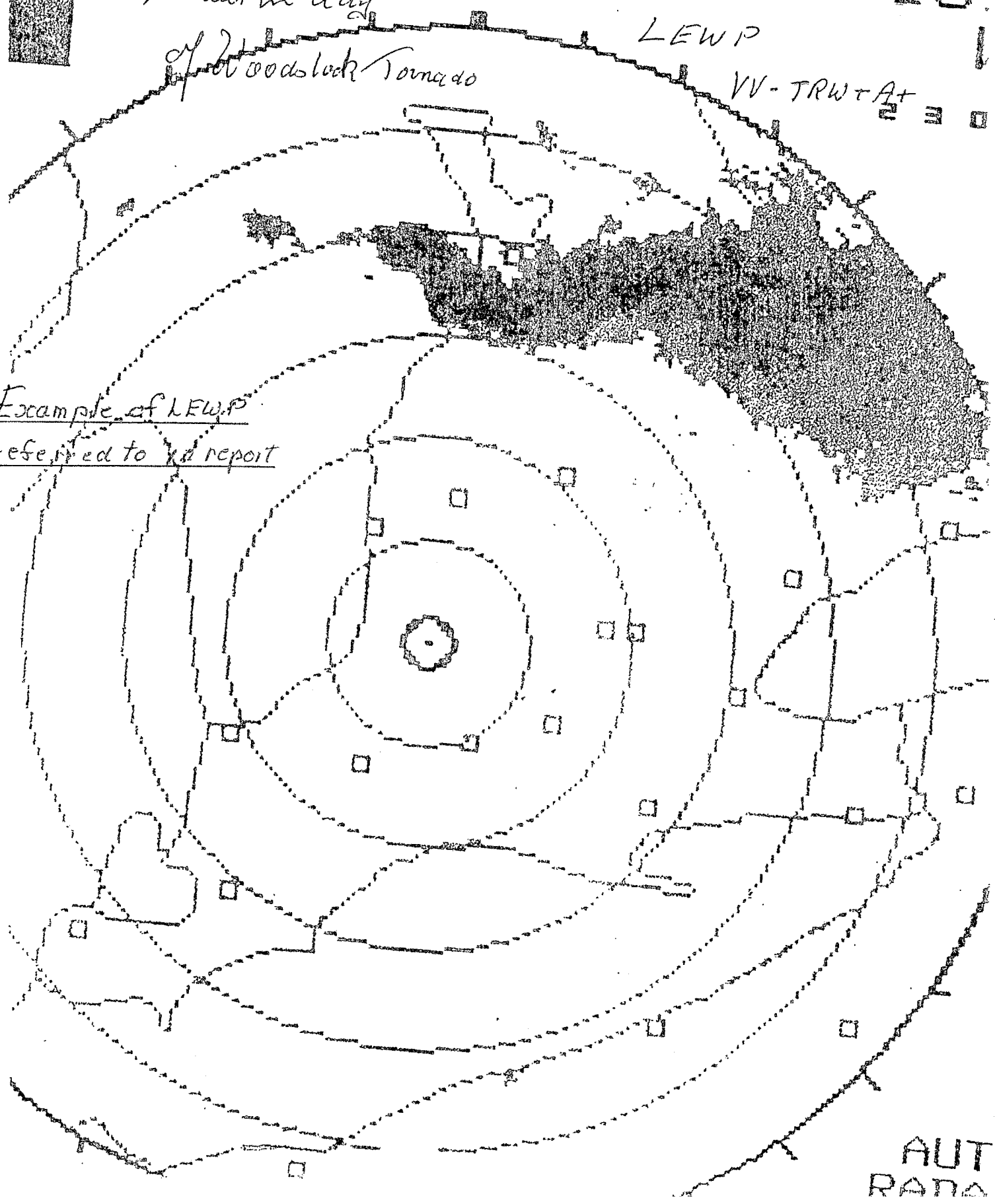
AUG 07
1510Z 15

Earlier in day
of Woodstock Tornado

LEWP

VV-TRW+At

Example of LEWP
referred to in report



AUT
RANG

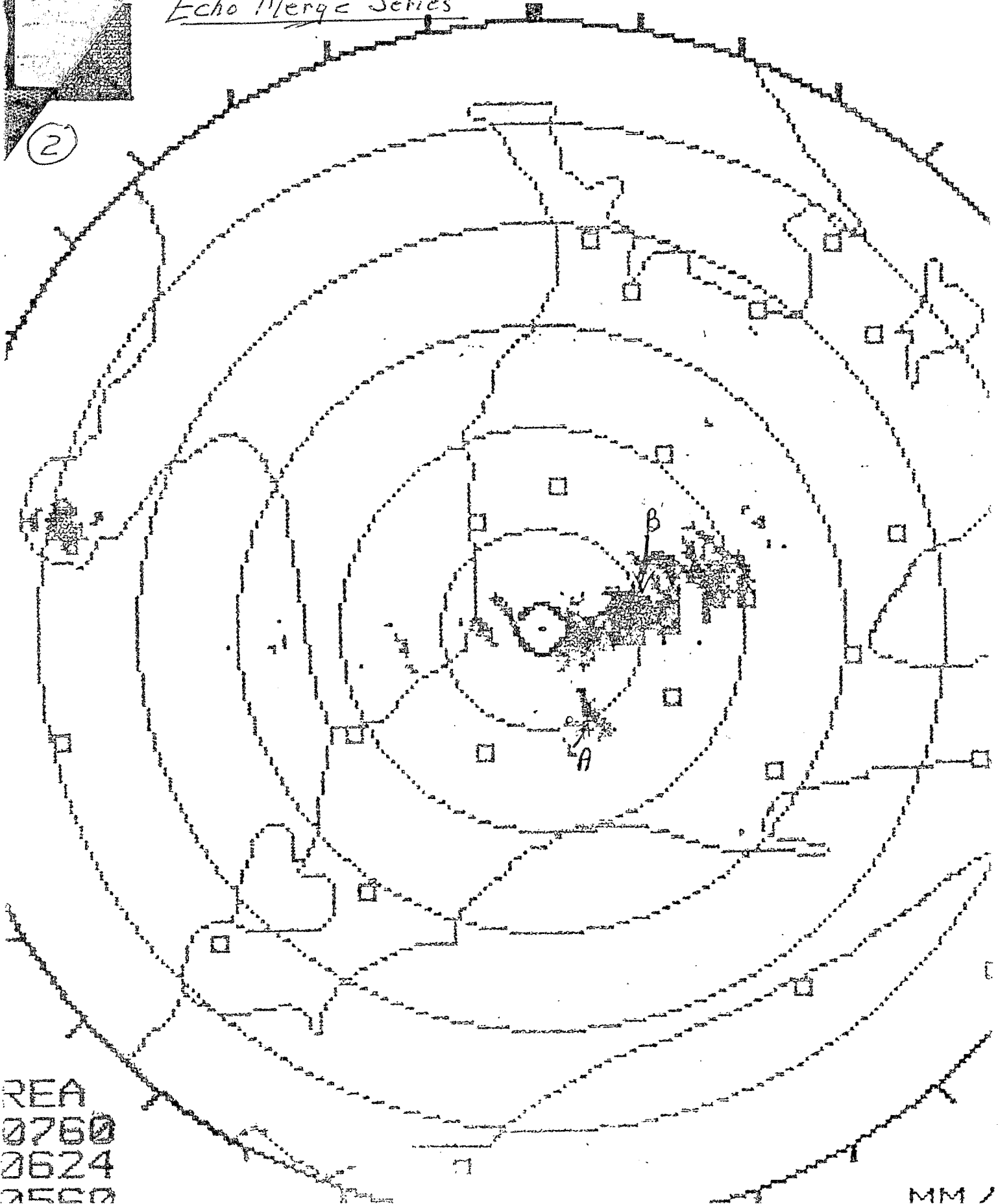
APPL 240KM
1.5KM LO/NTS

JG 0
2

2210Z

Echo Merge Series

(2)



REA
0760
0624
0500

MM /

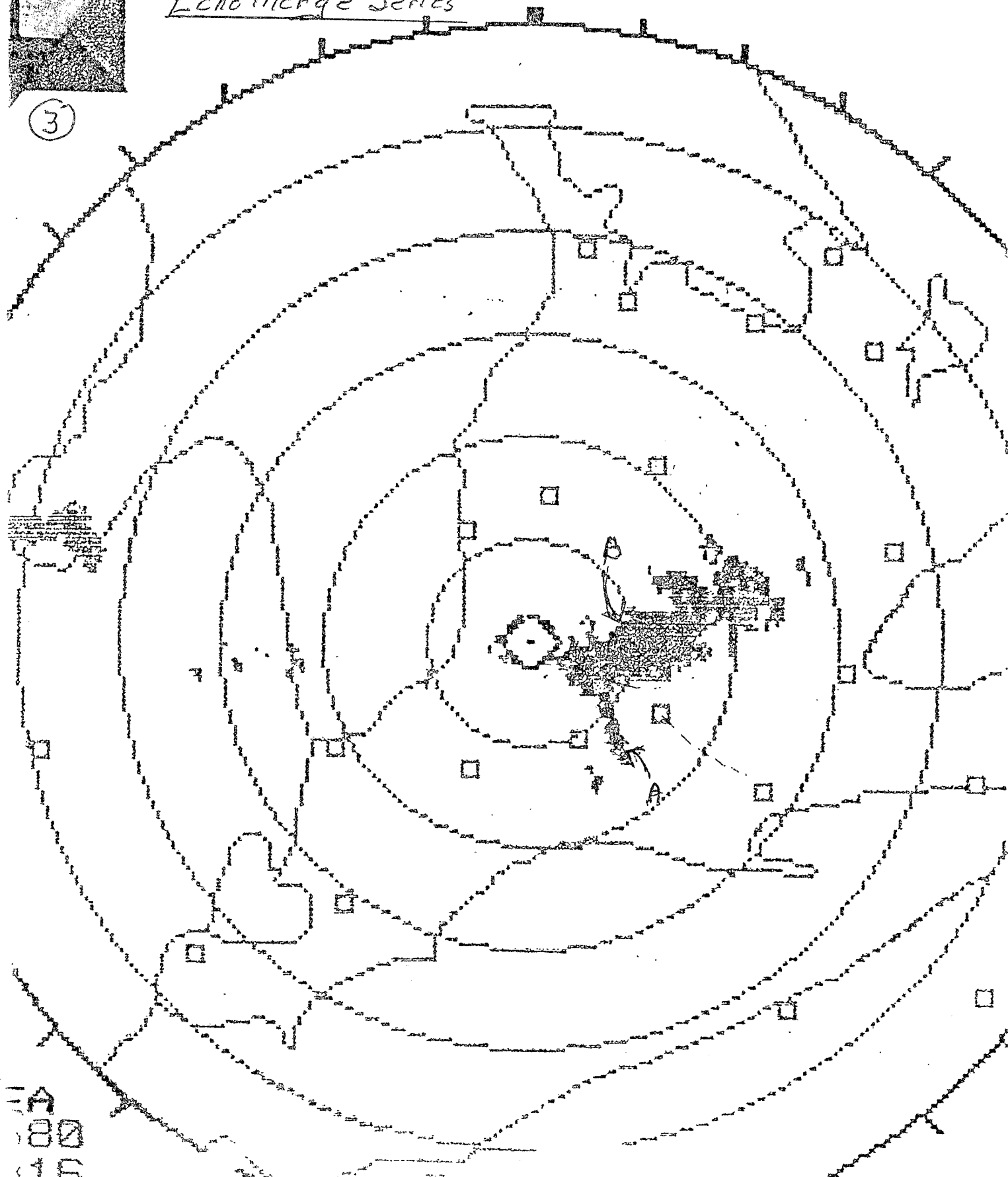
APPI 240KM
1.5KM LO/INTS

AUG 01
21

Echo Merge Series

2220Z

3



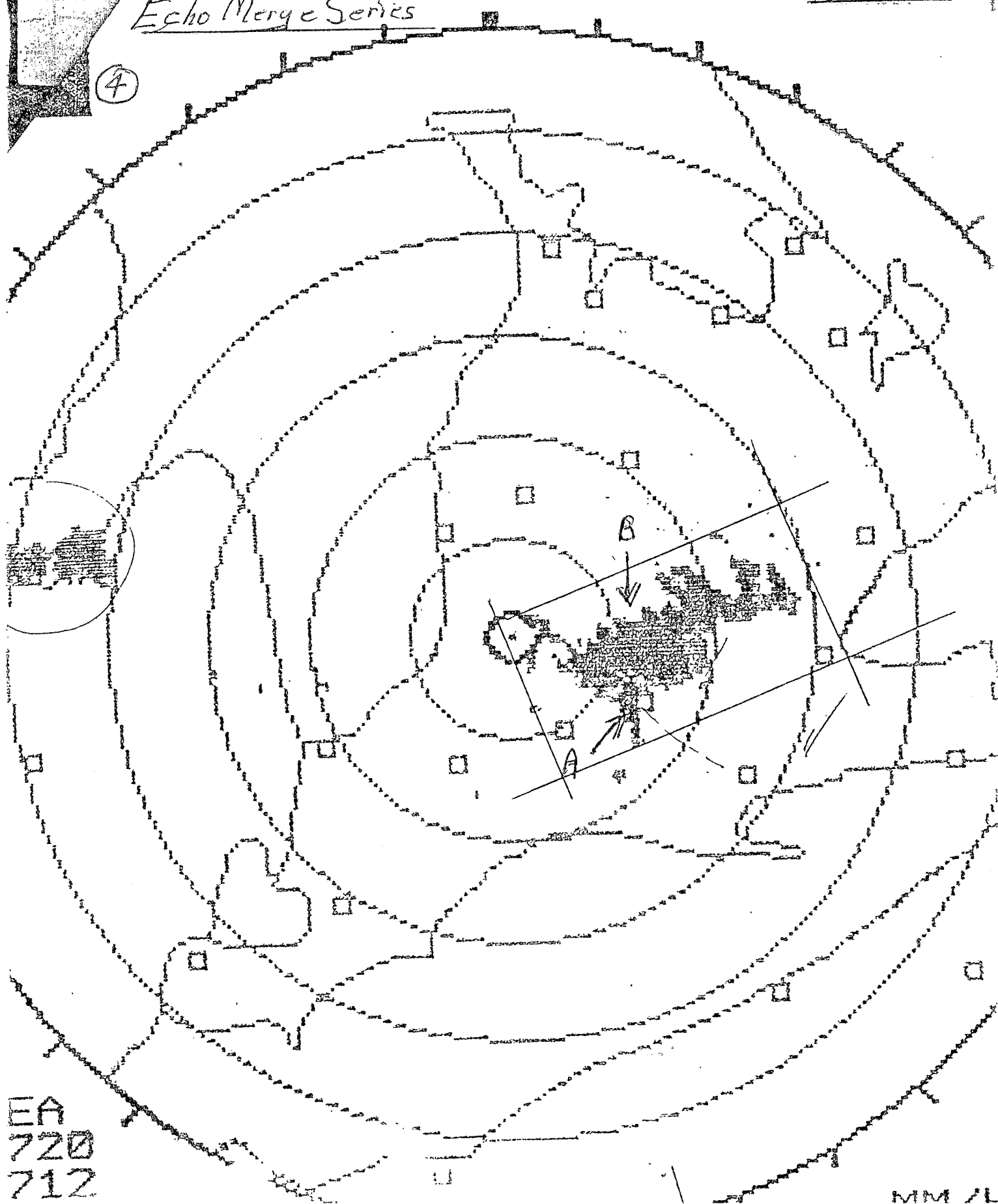
FA
80
15

APP 1 240KM 1.5KM 07.
LO/INTS 22.

Echo Merge Series

2230Z

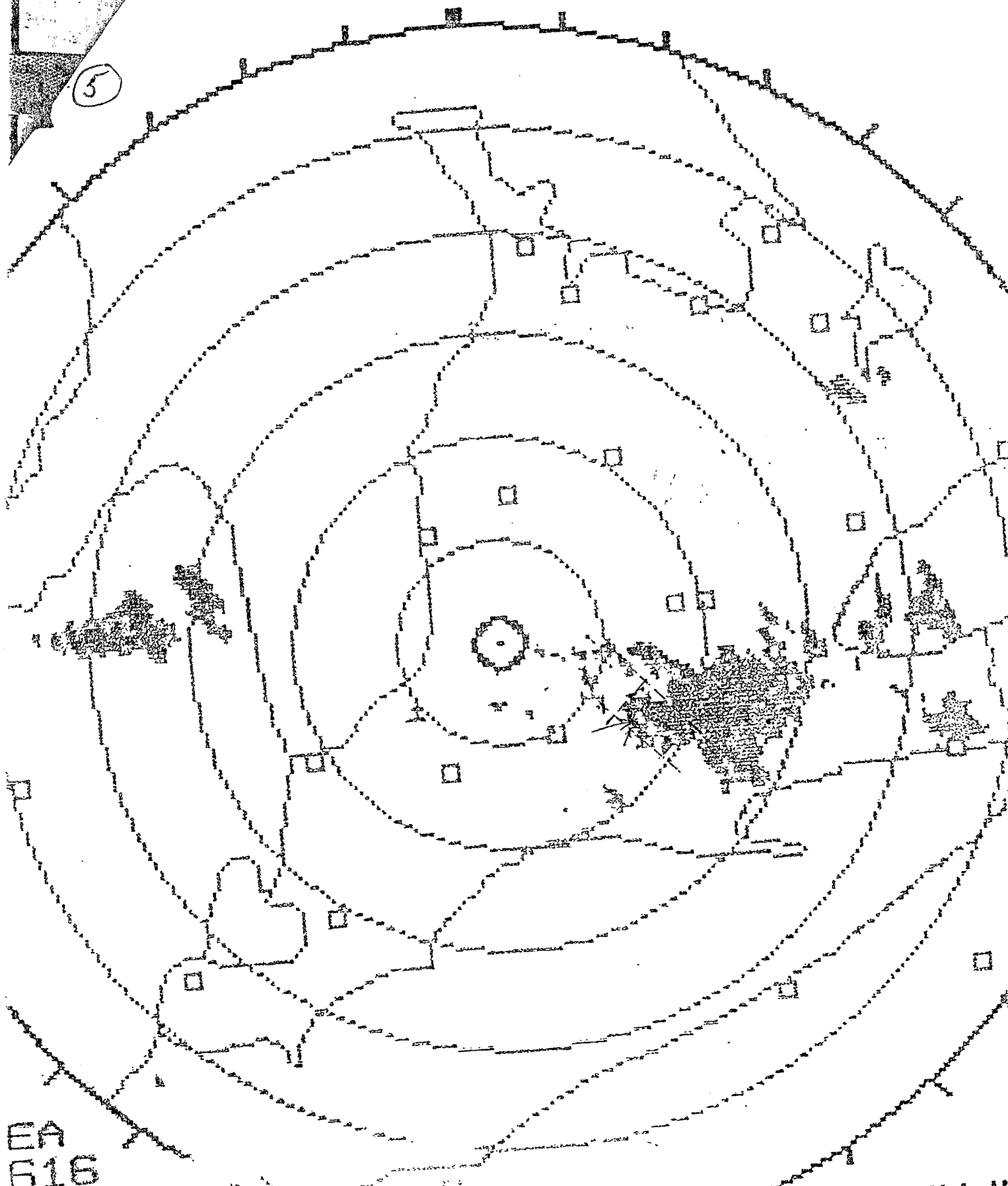
④



EA
720
712

MM /L

PI 240KM AL 077
5KM LO/INTS 2321
W



AKM

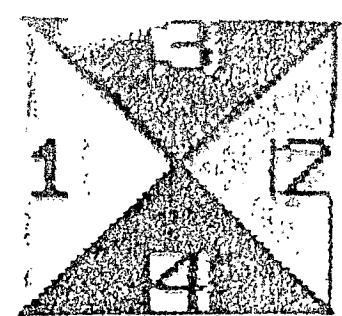
JUN

27/77

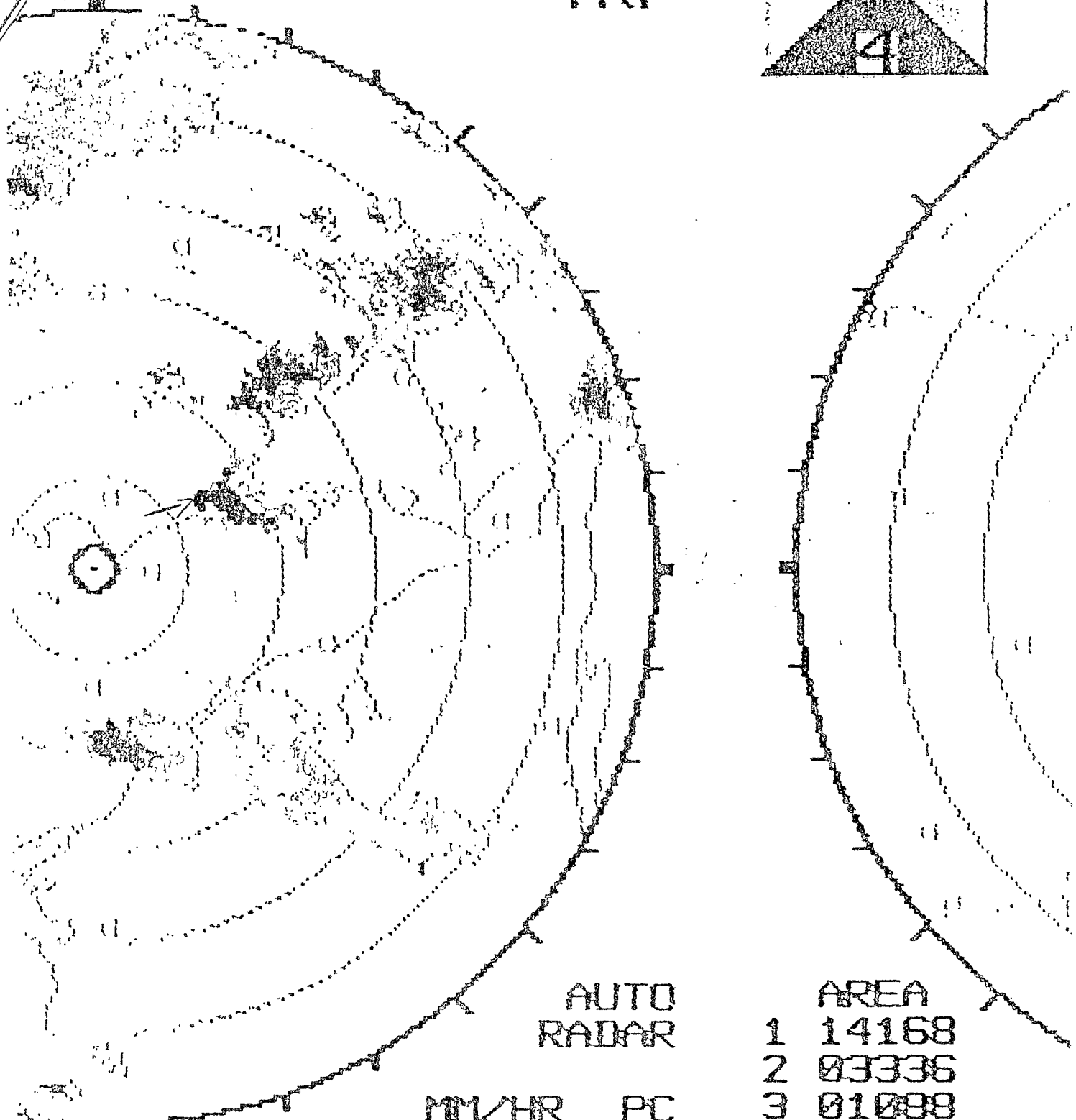
NORM

2130

YRP



C1
1



AUTO
RADAR

AREA

700 0000
700 0000
700 0000

	MM/HR	PC
1	0.25	08
2	0.50	02
3	0001	.60
4	0002	.48

1	14168	
2	03336	
3	01088	
4	00708	T+2
5	00172	H 2
6	00004	MT0
7	00000	MT1



Government
of Canada

Gouvernement
du Canada

MEMORANDUM

NOTE DE SERVICE

8750-D
8720-16
8971-W

TO
A

AFWC

FROM
DE

A/OAED



SECURITY - CLASSIFICATION - DE SECURITE
OUR FILE - N/RÉFERENCE 8750-1 (A/OAED)
YOUR FILE - V/RÉFERENCE
DATE August 27, 1979

SUBJECT
OBJET

Performance of Severe Weather Detection Systems -
August 7, 1979

*Incidental report re
equipment*

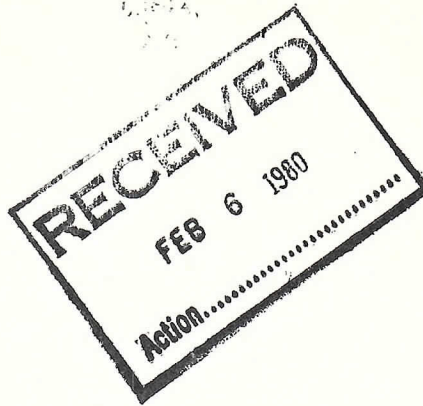
1. Reference is to your memorandum of August 14, 1979 (8750-1 AFWC) on the above noted topic.
2. Attached is a fairly detailed report by A/OAEM comparing the performance of GOES imagery, the Exeter SCEPTRE radar and the TIA C-Bond radar during the events of August 7. In summary, the report indicates that:
 - the three systems in combination contributed to the success of the warning program, but no single system in itself is sufficient to define the presence of a tornado
 - GOES imagery does not have sufficient resolution to detect single severe convective cells
 - the information concerning rapid cloud top growth obtained by manual RHI scans with the C-Bond radar located at TIA was likely the key information resulting in the issue of Weather Warning #79
 - time delays resulting from computer image processing with GOES and SCEPTRE seriously limit their usefulness in preparing timely warnings for "short fuse" severe weather phenomena.
3. Please feel free to contact G.W. Gee, A/OAEM at 676-3019 for any further information you might require.

P.J. Pender
A/Regional Director
AES, Ontario Region

Attach.

b.c. A/OAEM ✓

INSTITUTE FOR
ENVIRONMENTAL STUDIES



8971-N-79
This was labelled 'Confidential'
UNIVERSITY OF TORONTO
TORONTO, CANADA
M5S 1A4

19th December, 1979.

Mr Brad Finch,
Supervisor,
London Weather Office.

Dear Sir,

Please find enclosed a copy of the summary I prepared from our conversation re the Woodstock tornado. This summary was prepared for circulation to other members of the group and forms part of the bases for our subsequent report.

I would appreciate any further comments, suggestions and corrections which you think are appropriate. Let me also take this opportunity to thank you in advance for your time and trouble.

Yours sincerely,

John Wilson.

(4) Brad Finch Supervisor
London Weather Office
Conducted November 21

Mr Finch was rather surprisingly not particularly happy about being interviewed. In preparation Mr Finch had compiled a list of things he thought I might cover and decided which areas he would answer questions about. Further, much of the material we talked about he had set out in written reports, which although I was able to see, I was not permitted to record details from. The interview covered four main areas around which his replies are organised.

(a) The official job of the London Weather Centre ^{office}

Mr Finch described himself and his staff as presentation technicians ^{Centre}. Their job is to take forecasts put out by the Ontario Weather Office at Malton and adapt and refine these for the particular needs of callers. In other words, they tailor the briefing for the consumer. Although technically they do not issue forecasts, they can call Toronto and ask them to either justify their forecast or amend it because of conditions they witness at London. Mr Finch did not say how often this occurred, but did admit that in deciding whether or not to do so, his staff considers who issued the forecast. ?

In addition, the London Office may make a number of calls when a weather watch or a weather warning is issued to ensure that certain agencies are aware of the situation and the weather forecast in particular. Although I could not write down the written instructions at the time, I tried to memorise the agencies listed. However the lists are not complete. The agencies are:

(1) for a weather watch (which was issued in this case)

Ministry of Natural Resources.

Relevant Police force (i.e.) force in area expected to be affected

OPP

PUC

St Thomas Engineering Department?

The instructions also indicated which agencies should be called in different events or circumstances

(2) for a weather warning

All of the above, plus radio and television stations in the area. *[That he knew - ONE]*

Mr Finch would not tell me how many staff were on duty on the night of August 7, although I got the impression that only one person was. Mr Finch indicated that his staff made several attempts to call the 'likely' affected agencies, including the radio station. Mr Finch confirmed his staff could not get through to the radio station.

(b) Specific details about the day in question

The London Weather Office has a relatively 'primitive' radar facility, which indicated nothing before the event. Radar phenomena were recognisable after the fact. The tornado was caused by the convergence of two low pressure cells near Woodstock. ?

This didn't matter though, because according to Mr Finch, everybody should have got their 'warning' from the series of weather watches issued by Malton on the afternoon in question (#78 - 82). From information (described in more detail shortly) Mr Finch compiled personally, everybody should have received weather watch #78 (see Oliver's description) by 4.00 p.m. that afternoon. As noted, the staff did try at the time to confirm that affected agencies in the area had received these 'warnings'. The staff also tried to call the Ontario Weather Centre at Malton. They tried four times on an unlisted number and finally got through at 8.45 p.m. The woman who answered said they were on top of the situation and that they had a weather warning out covering the situation (note, only one female forecaster, Carol Klaponski, is employed at Malton). *not true.*

Mr Finch said also that Tuesday August 7 was a particularly busy day, since there was also a severe weather disturbance in the vicinity of Owen sound which his staff had had to watch closely. This event and the Woodstock tornado were reflected in the number of contacts recorded that day. Contacts with the public were approximately 10 times the normal number, while there were twice as many contacts with radio and television stations. Again, I was not shown the actual record although Mr Finch examined it.

(c) Mr Finch's other activities

On August 8 Mr Finch called up all the radio stations in the area and the ³four OPP detachments and attempted to find answers to each of the following questions:

- (1) did they get the forecast (#78)?; before 4.00 p.m.?
- (2) could they read it?
- (3) did they broadcast it?

Mr Finch compiled this information in a report which he sent to his Supervisor in Toronto. He would not show it to me, but suggested I call his supervisor and ask him for the information. I will do this before Tuesday.

With regard to the ³four OPP stations, Mr Finch talked to one officer who had all the information and who said his station received the forecast before 4.00 p.m. that afternoon. The other ~~three~~ ² claimed they never got it. Mr Finch assumes that if one got it, all ³four would. With respect to the radio stations Mr Finch did not answer any questions. However he did say that the Woodstock radio station has a generally low priority towards relaying weather information to the public. Two to three years ago the Woodstock station changed hands and changed its emphasis from one which was orientated to serving a rural based adult population to one serving a younger teenage population. This transformation has been accompanied by a change from generally good forecasts ^{coverage} to infrequent 10 second 'blurbs' between songs. Finally Mr Finch thought that the T.V. station had broadcast a ticker tape warning across the screen on the afternoon in question.

(d) Other information

Mr Finch was asked about the performance of the forecasters at Malton on the day in question. He said there was no reason to suspect a tornado was going to occur, before or when it did. However, the potential was known as early as 10.00 a.m. ^{FNT report} that morning for severe weather, although it was too early to forecast it then (since it was a clear sunny day, which would make it difficult for the public to accept). Mr Finch thought that the OWC at Malton played their forecasting role particularly well that day, although he ^{has been} ~~was~~ critical of them on other occasions.

I also asked Mr Finch why his attitude varied from those of

→ re what?
 Carol Klaponski and Mike Newark at Malton. He attributed it entirely to ^{our} their different personalities. While this is almost certainly true in part, I do not believe it is the whole story, because of two facts: SEC *

- (1) at the outset Mr Finch indicated how McMurtry and Parrot were involved, in non-complimentary terms and ^{head-hunting.} → Thanks!! trying to get me a liable suit?
- (2) because he sent a report covering his staffs' actions on the day in question to his superiors. → normal action in such cases.

Mr Finch thinks nothing has happened since the event and said that his superiors had not been in touch. The EMO officer for the City of London had called him, but had never called back. Also he, Mike Newark and other interested 'experts' had made numerous T.V. and radio appearances. Finally more severe weather watchers had been signed up in the area and he knew of a Mr McCardy who was trying to set up a communications network with radio hams in the area (his office was not directly involved in discussions though).

The last section of section D is vague and confusing.

* As stated in your first sentence I was "not particularly happy about being interviewed." You were told from the start that only certain information would be made available and that if you wanted more details to contact my Regional Office.

- This letter based on his feelings & facts (little based on facts.)
 Credability & usefulness minimal.



19th December, 1979.

Ms. Carol Klaponski,
Severe Weather Forecaster
Ontario Weather Centre.

Dear Madam,

Please find enclosed a copy of the summary I prepared from our conversation re the Woodstock tornado. This summary was prepared for circulation to other members of the group and forms part of the basis of our subsequent report.

I would appreciate any further comments, suggestions, and corrections which you think are appropriate. Let me also take the opportunity to thank you in advance for your time and trouble.

Yours sincerely,
John Wilson.

P.S. Apologies re our double interviewing, midnight calling etc.

OAEM

8971-W-79

OAEMM

1st., November,
1979.

Reprints
Woodstock Tornado Pictures

1. You are undoubtedly aware of the circumstances which led to the ordering of the enclosed pictures.

2. These are being forwarded to you for your files and when the invoice is received we will send it along.

Original Signed by
G. W. GEE

GNG/cf

(G. W. Gee),
Chief Meteorologist.

Encls.

cc: OAED

Tornadoes - Southern Ontario

7 August, 1979

Here are some of my preliminary findings on the tornadoes in the Woodstock area.

There were two tornadoes, and I suspect each had double vortices at the same stage, (from as yet unconfirmed eye witness accounts, as well as ground evidence).

The first touched down southeast of Stratford at about 1820 lcl and moved southeast for about 15 miles before curving northeast. It continued on the ground for another 5 miles before lifting at about 1900 lcl.

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We will conclude with recommendations in those areas, as well as in the area of organizing future investigations of similar nature.

CEK/cf

Carole Klaponski.

13/8/79