598403 ✓ A F=1

TORNADO PROJECT SUMMARY SHEET

1. DATE AND TIME July 15, 1984. 5/1600 EST EDT

2. LOCATION OR PATH (attach map) Rolphton

3. PATH LENGTH ☐ NOT KNOWN ☐ <1mi; ☐ 1-4mi; ☐ 5-10mi; ☐ 11-50mi; ☐ LENGTH IF>50mi

4. PATH WIDTH ☐ 5. TORNADO PART OF SQUALL LINE? ☐ YES; ☐ NO; ☐ UNKNOWN:

6. ANY UNUSUAL COLORATION? ☐ YES; ☐ NO; ☐ UNKNOWN

7. ANY UNUSUAL SOUND? ☐ YES; ☐ NO; ☐ UNKNOWN

8. IF ANSWER TO 6 OR 7 YES, ELABORATE;

9. LIST ANY ASSOCIATED PHENOMENA
(Such as hail, vivid lightning heavy rain, no rain, etc.)

10. TOTAL DAMAGE ESTIMATE $ 11. TOTAL DEATHS

12. TOTAL INJURED 13. TOTAL HOMELESS

14. LIST ALL REFERENCES

15. SUMMARIZE REMARKS PERTAINING TO (a) FUNNEL; (b) INTERESTING OR CAPRICIOUS EVENTS.

b) Trees down, power lines down, horse stable destroyed, siding off houses, chimneys damaged.

T.D. 18298375 10000 L.O. 18364750 25000

51|4750 51|24750

Bertrand.

~~4540 7451~~

~~4555 7642~~

~~4617 7517~~

~~4619 7643~~

~~4638 7524~~

~~4653 7220~~

~~4954 7914~~

~~4658 7200~~

~~4711 7427~~

4725 7618

4757 6914

4658 7201

4621 7643

...Weather
Mostly sunny
Tomorrow. High 26C.
Details, A2

THE TORONTO STAR

Established 1892

Monda...
July 16, 198...
25 CENT...
June/84 Monday-Frid...
paid circulation 491,3...

AFTERNOON EDITION

#2

T.S. Mon July 16/84 A1

...l dead, 35 hurt as tornado sweeps through Quebec towns

PEMBROKE, Ont. (CP-Special).— One person died and at least 35 were injured as a tornado packing 160 kilometre (99.2 miles) per hour winds touched down yesterday in eastern Ontario and western Quebec.

The winds and an accompanying rain storm knocked out power and damaged property in several towns and villages in the two provinces.

Quebec Provincial Police said one person died in Blue Sea Lake, Que., 75 kilometres (46.5 miles) northeast of here.

Sixteen people were sent to hospital near there in Maniwaki, Que., but most were quickly treated and released. The name of the victim, believed to be a woman, was being withheld pending notification of next-of-kin.

An official at the Maniwaki hospital said other people were missing from the lakeside village of 500, which serves as a vacation spot mainly for residents of the Ottawa-Hull area.

About 15 cottages were destroyed. Some were tossed into the lake.

Quebec Provincial Police Sgt. Hubert Reiter said eight people were injured and several cottages and a church were destroyed in the Campbell's Bay area.

More than 100 provincial police and volunteers were set to comb the Blue Sea Lake area when it was light, Reiter said.

"There are people missing and we'll be sending out divers as soon as it is light," Reiter said.

Eleven people with cuts and broken bones were brought earlier to Pembroke General Hospital from Nicabong, Que., 15 kilometres (9.3 miles) north of here, where the tornado struck earlier in the evening.

It destroyed six houses and lifted the roof off the Holy Ghost Catholic Church in Nicabong, a village of 200 people.

Bertha Nephin, 50, was making sandwiches for a farewell party in the church basement when the tornado struck. No one else was there, but 100 were expected for the party an hour later.

"When the storm started, I was all by myself. Then the roof left the church in a big breeze of wind.

"I ran to one door and I couldn't get out. I ran to a second and I couldn't get out."

"I don't remember what happened next, but the next thing I remember...the roof of the church had been lifted off and was lying beside the foundation of the building."

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"It crossed the highway near Lance... Rd. and widened out as it went down t... wards the river where it ripped apart M... (William) Inch's horse stable," Rabisha... told The Star. "It ripped off a large tr... and it landed across Lionel Ritter's truc... and flattened it right to the ground."

He said trees were twisted from the... roots, siding and chimneys were tor...

See TORNADO/page A4

U.K. may use troops to break dock strike

LONDON (AP-Reuter) — Prime Minister Margaret ...hatcher has hinted she's ready to call in thousands of troops to ...eak a week-old strike by dock workers.

Faced with spreading disruption that is choking trade, forc...g down the country's currency and threatening chaos in tour...m, Thatcher called a top-level cabinet meeting for today to ...nsider whether—and when—to invoke emergency powers.

Government officials stressed that no immediate state of emergency was likely to be declared.

Thatcher has a deadline of about

Turner stole ...n policy



CP PHOT...

Massive damage: The twisted wreckage of a mobile trailer home in Nicabong, Que., lies upside down in the wake of a tornado that swept across the Ontario-Quebec border near Pembroke and touched down in three Quebec communities. One person die... and at least 35 were injured as the tornado wreaked havoc alon... its 193-kilometre (120-mile) path.

variety of
d her tiny

Take your pick. Anyone wanting a unofficial souvenir of the Pope's September visit to Metro can spend 50 cents to over $400 on the myriad of items, as shown above, being offered in all types of stores. Most of the official souvenirs haven't even gone on sale yet.

Protestant church group attacks public spending for Pope's visit

MONTREAL (CP) — An association of 2,000 Protestant churches has attacked the use of government money for the coming visit of Pope John Paul II, as well as the sale of souvenirs to raise money.

"I object to the granting of government funds to any religious leader whose visit is to promote his religion, be he from Rome, London or Iran, be he Billy Graham or the Pope," said Rev. Brian Stiller, executive director of the Evangelical Fellowship of Canada.

There has been little criticism of public spending on the $50 million visit for the spiritual leader of the Roman Catholic church, although the federal government alone has allocated $30 million for the visit.

Of that, the Canadian Broadcasting Corp. has a budget of $12 million and the other $18 million is mostly to pay for space for the media and the Pope's personal security, on the grounds that the Pope is also a head of state.

More public money is being spent by provincial and municipal governments for crowd security and papal appearances.

Some 17 denominations belong to the Evangelical Fellowship, including the Salvation Army, Pentecostal, Christian and Missionary Alliance and some Baptists, but not such major churches as United and Anglican.

"The Pope junk is offensive," Stiller said. "Memorabilia is one thing but the blatant merchandising to pay for his trip is surely a commentary on the lack of interest by members of his own church, especially when almost half of Canadians claim to be Catholics."

Most Rev. John Sherlock, Roman Catholic bishop of London, Ont., and president of the Canadian Conference of Catholic Bishops, defended federal involvement.

Tornado kills 1 in Quebec town

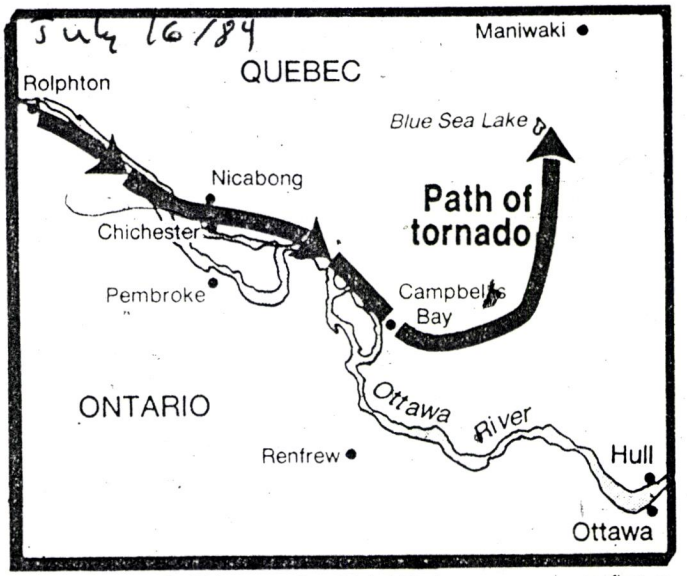
Continued from page A1

from houses, electrical and telephone poles felled and lines ripped loose, but he did not know of anyone injured in that area.

Officials at the weather station at CFB Petawawa in Pembroke said winds reached speeds of 160 kilometres (99.2 miles) per hour.

Ontario Provincial Police said the first report of the tornado came at 5.40 p.m. from Rolphton, Ont., 50 kilometres (31 miles) northwest of Pembroke. It later crossed the Ottawa River to Chichester, Que., touching down sporadically along a 193-kilometre (120-mile) path as it headed northeast.

Damage estimates were not immediately available from area police, who were pressed into action with volunteers to rescue the injured.



Tornado's path: The tornado which killed one person was first reported at Rolphton. It crossed into Quebec at Chichester and touched down at Nicabong, Campbell's Bay and Blue Sea Lake.

paralyzed trade.

Talks between employers and dock workers' leaders have broken down twice and no further meetings are scheduled.

Thatcher's catalogue of woes began 19 weeks ago when two-thirds of the country's 183,000 coal miners went on strike to protest government plans to shut down 20 unprofitable mines and reduce the work force by 20,000. The miners have idled three-quarters of Britain's 175 coal mines, but officials say ther are enough coal stocks to last well into fall.

High unemployment

The dock workers' strike was called last Tuesday, officially to protest of the use of non-union labor to unload iron ore at a steel plant but unofficially in sympathy with the miners.

The labor unrest has hit the British pound, which slumped against the American dollar last week, making investors nervous about putting money into Britain.

Coupled with the bruising economic news is the fact that Britain's unemployment stands at 12.7 per cent or 3 million people — one of Europe's highest.

Declaring a state of emergency against this backdrop could prove a fateful step for Thatcher.

Such a step was last taken by the previous Conservative government of Edward Heath in November 1973 and three months later he was thrown out of office in a snap election.

James Gilligan, secretary of the 1.5-million-member Transport and General Workers Union's Scottish section, said mobilizing troops would cause "total disaster."

"Mrs. Thatcher must think she is fighting the Falklands war again if she considers bringing in troops," he added.

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— Two-way shuttle search
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No interest

Metro Weather
Mostly sunny
Tomorrow. High 26C.
Details, A2

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Monday
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June/84 Monday-Friday
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"It crossed the highway near Lance's Rd. and widened out as it went down towards the river where it ripped apart Mr. (William) Inch's horse stable," Rabishaw told The Star. "It ripped off a large tree and it landed across Lionel Ritter's truck and flattened it right to the ground."

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See TORNADO/page A4

Tornado kills 1 in Quebec town

Continued from page A1

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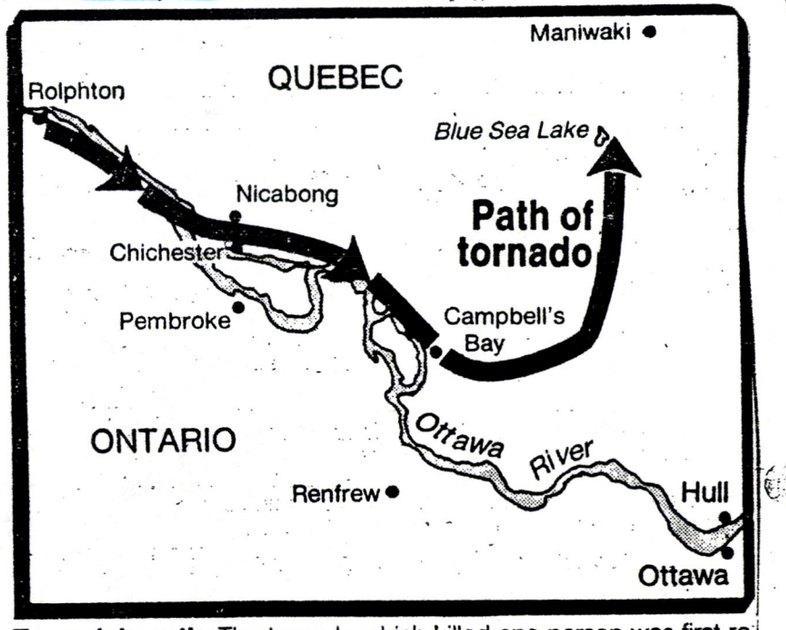


Tornado's path: The tornado which killed one person was first reported at Rolphton. It crossed into Quebec at Chichester and

One dead as tornado hits Valley

PEMBROKE, Ont. (CP) — At least one person died and 28 were injured — some of them seriously — as a tornado touched down yesterday in eastern Ontario and western Quebec.

The accompanying wind and rain storm knocked out power and telephone services and damaged property in several towns and villages in the two provinces.

Quebec provincial police said one person died in Blue Sea Lake, Que., about 75 kilometres northeast of Pembroke, where damage was most serious. Sixteen people were sent to hospital in Maniwaki, Que. A hospital spokesman said other residents were missing at Blue Sea Lake, a lakeside village of 500.

Eleven others with cuts and broken bones were brought earlier to Pembroke General Hospital from Nickabong, Que., about 15 kilometres to the north.

Ontario Provincial Police said the first report of the tornado came from Rolphton, Ont., about 50 kilo-

TORNADO — Page 2

● From Page One

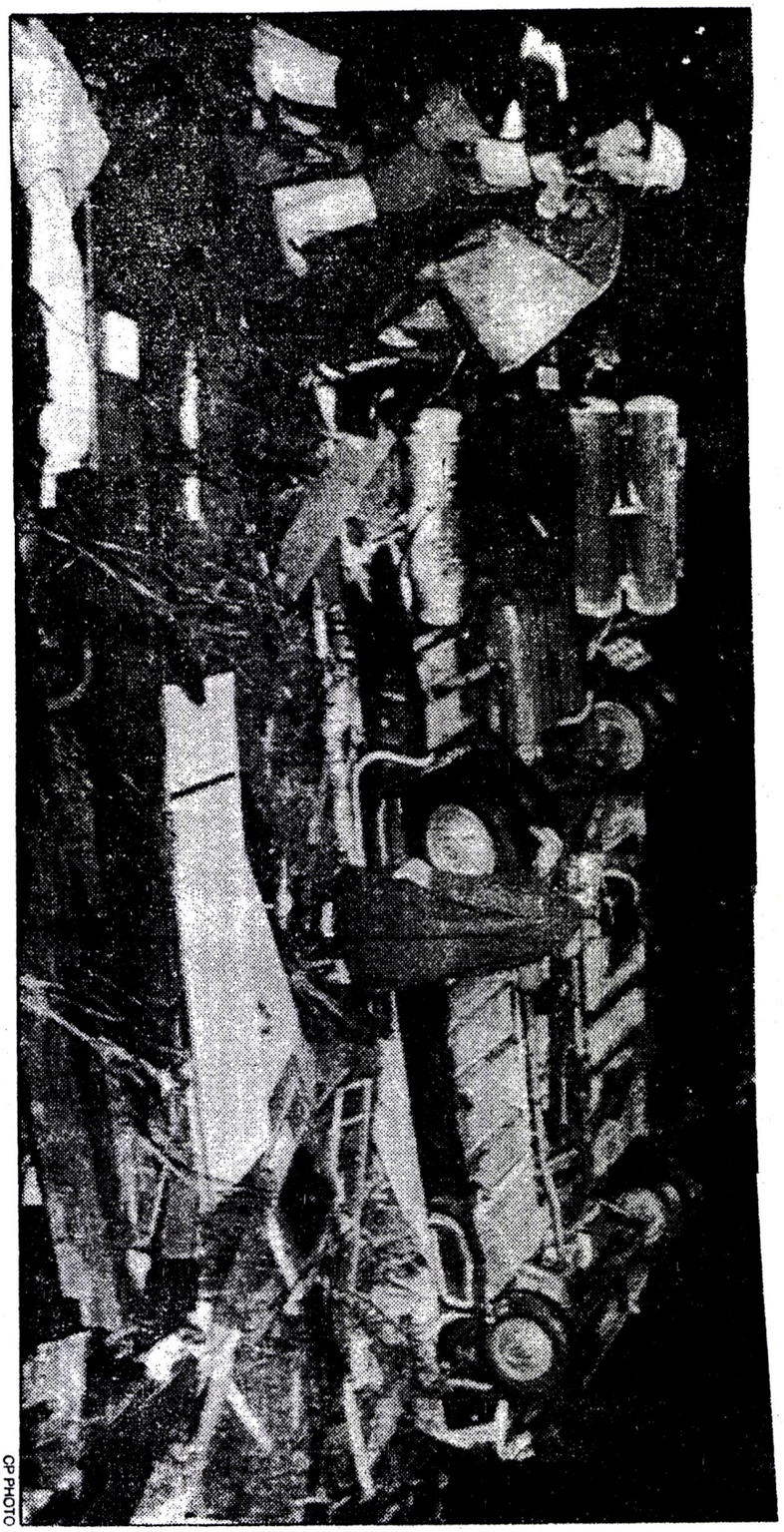
metres northwest of Pembroke. It later crossed the Ottawa River to Chichester, Que., early yesterday evening.

The tornado touched down sporadically on a 100-kilometre path in largely unpopulated areas of Ontario and Quebec, heading northeast. In Nickabong, a village of about 200 people, it destroyed six houses, toppled large trees and lifted the roof off the Holy Ghost Catholic Church.

Bertha Nephin, 50, was alone in the church basement making sandwiches for a farewell party when the tornado struck. A hundred people were expected for the party an hour later.

"'When the storm started, I was all by myself. I ran to one door and I couldn't get out. I ran to a second and I couldn't get out," she said.

"The next thing I remember ... the roof of the church had been lifted off and was lying beside the foundation of the building."



CP PHOTO

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July 16/84

LE DROIT, OTTAWA, MERCREDI 18 JUILLET 1984

$3 millions de dommages

MIS/SEA

par Michel Gauthier

MANIWAKI — La tornade meurtrière de dimanche soir, qui a balayé l'Outaouais d'ouest en est et semé la terreur dans trois petits villages du Pontiac et de la vallée de la Gatineau, a probablement laissé derrière elle pour plus de $3 millions de dommages.

La Sûreté du Québec estime à environ $1 million les dommages à Blue Sea Lake, selon une évaluation sommaire faite sur les lieux.

A Nicabong, dans le Pontiac, petit hameau de la municipalité de Chichester, le sergent Jean-Claude Cadieux de la SQ de Campbell's Bay estime lui aussi que la tornade a causé pour $1 million de dégâts, probablement davantage. Les citoyens de l'endroit sont ceux qui souffrent le plus de la tornade et des problèmes de logements engendrés par la destruction. Aux deux autres endroits touchés, ce sont surtout des chalets qui ont été ravagés et les vacanciers pouvaient tout simplement retourner chez eux.

A Lac-Cayamant, où il n'y a eu que deux blessés, le maire croit que les dommages s'élèvent au moins à $500,000.

Ces estimations sont très sommaires et souvent elles ne tiennent pas compte des dommages causés à des fermes, à de l'équipement agricole et aux forêts privées. Ainsi, à Lac-Cayamant, des lots peuplés d'essences commerciales ont été ravagés par la tempête.

A Guénette, dans la région de Mont-Laurier, c'est aussi dans la forêt que la tornade a fait des ravages.

Blessés de Blue Sea

Le directeur général du Centre hospitalier de Maniwaki, M. Donald Langlais, a précisé hier que cinq personnes blessées dans la tornade à Blue Sea Lake étaient encore hospitalisées. Aucun n'est toutefois grièvement blessé et tous devraient bientôt pouvoir quitter l'hôpital.

Cet afflux de blessés, il y en a eu 30 en tout, a forcé la direction de l'établissement à rappeler du personnel supplémentaire dimanche et lundi. L'urgence, le service d'admission, les premier et deuxième étages et le service opératoire ont vu leur personnel augmenté.

«Tout s'est finalement bien déroulé et des patients ont félicité notre personnel pour sa promptitude, son efficacité et son esprit humanitaire», a souligné M. Langlais.

— Lire en page 13

3

Pour les secteurs dévastés

Un statut spécial est réclamé

par Michel Beauparlant

BLUE SEA LAKE — Le préfet de la Municipalité régionale de comté de la Gatineau, M. Réjean Lafrenière, a demandé au ministre de la Justice, hier, de décréter «zones désignées» les secteurs dévastés par la tornade de dimanche.

Rejoint par téléphone, le préfet a dit que l'étendue des dommages n'était pas assez considérable pour réclamer un statut de «zone sinistrée», compte tenu des normes gouvernementales.

Néanmoins, a-t-il expliqué, le statut de zone désignée permettrait aux municipalités touchées, soit Blue Sea et Lac Cayamant, d'engager des fonds publics afin de pourvoir aux urgences quitte à être remboursée subséquemment par Québec.

A ce sujet, le maire de Blue Sea, M. Yvon Bélanger, a pour sa part déclaré au DROIT que la municipalité doit reloger ses bureaux administratifs et reconstituer ses archives dans les plus brefs délais.

Car la maison qui abritait les bureaux, soit une partie du domicile du secrétaire-trésorier, a été déplacée de ses fondations et son toit a été tellement endommagé qu'elle n'est plus étanche. Elle serait une perte totale, aux dires du maire.

Quant aux archives, la remise que la municipalité possédait à cette fin «est quelque part dans le lac», a dit M. Bélanger qui précise que la municipalité a parachevé hier les premiers travaux d'urgence qui consistaient à déblayer les routes.

M. Bélanger a par ailleurs dit espérer que le statut de zone désignée permettra à la municipalité de se faire dédommager pour le manque à gagner qu'elle subira du fait de la transformation en débris du Camp Bellevue, propriété de M. Raymond Lacroix, «notre plus gros payeur de taxes».

Selon le maire, la tornade a détruit le plus important secteur touristique de la municipalité. «Et on dépend du tourisme», devait-il ajouter en précisant que les 12 chalets de M. Lacroix, loués à l'année, représentaient d'importantes retombées économiques.

D'autre part, le statut de zone désignée assurerait aux victimes un dédommagement égal à la différence entre leurs pertes réelles et l'indemnité d'assurance, selon le préfet Lafrenière.

Justement en ce qui concerne les assurances, le Bureau d'assurance du Canada émettait un communiqué, hier, pour informer les sinistrés que les dommages attribuables aux tempêtes de vent ou à la grêle sont couverts par les polices d'assurance. S'agisse-t-il de dommages à la résidence ou à l'automobile.

Le communiqué précise que cela s'applique aux propriétaires-occupants ou aux locataires et qu'une franchise s'applique.

Le Bureau invite les sinistrés à communiquer avec leur assureur ou courtier d'assurance «qui verront à faire effectuer les réparations d'urgence et à évaluer l'ampleur des dommages».

(cont J)

AS/SEA

10

Tornado cuts deadly swat through Quebec, Ontario

BLUE SEA LAKE, Que. (CP) — One person died and 38 others were injured Sunday evening when a tornado ripped through eastern Ontario and western Quebec communities levelling homes, uprooting trees and ripping down telephone and power lines.

The tornado touched down sporadically on a 100-kilometre path in largely unpopulated areas of Ontario and Quebec, heading northeast.

Hit worst by the heavy rain and winds reaching 160 kilometres per hour was this vacation village about 100 kilometres northeast of Ottawa, a cottage area of about 2,000 people that was hammered by a terrifying blast of wind and rain at 7:40 p.m.EDT.

Quebec police said Rose Dufour, of Vanier, Ont., was killed, 30 others injured and four homes and 16 rental cottages destroyed.

Forty-three persons were in the cottages and homes hit by the tornado. Some of the cottages were lifted by the winds and dumped a kilometre away in a bay at the edge of the village.

Sixteen people were sent to hospital in nearby Maniwaki, Que., while medical crews and volunteers searched through the rubble. Police divers and a helicopter were to sweep the area early again early today after calling off a night search at about 2 a.m.

Eight others with cuts and broken bones were taken earlier to Pembroke General Hospital from Nicabong, Que. across the Ottawa River from Petawawa when the tornado struck about 5:30 p.m.

CANADA

Almost every home in the tiny village and the Holy Ghost Roman Catholic church were destroyed when the storm hit.

With medical crews and volunteers at the site, some residents were sifting through rubble for belongings well past midnight while others slept in their cars beside their splintered homes.

Work crews were called to clear roads of 30-metre tall trees that prevented rescue workers from reaching the village.

Ontario Provincial Police said the first report of the tornado came from Rolphton, Ont., about 50 kilometres northwest of Pembroke at about 5 p.m. where it toppled trees and knocked down power lines but injured no one.

The storm then crossed the Ottawa River to Nicabong, about 30 minutes later before moving on to hit the Blue Sea Lake area.

La Beauce et les grandes fermes touchées

Les récoltes échappent à la pluie

par Florent PLANTE

Sauf pour les fourrages, les pluies abondantes de la fin de semaine n'ont pas nui au cycle agricole normal dans la grande région de Québec.

Encore là, il faut nuancer en ce qui a trait aux grandes cultures, expliquait-on, hier, au bureau régional de l'UPA.

Ceux qui possèdent des fermes moyennes ou petites et qui font deux coupes de fourrage sont heureux des dernières pluies accompagnées dé chaleur, lesquelles ont activé la pousse. Plusieurs agriculteurs commenceront la deuxième coupe de foin cette semaine, dès que le terrain se sera suffisamment raffermi.

Pour les fermes plus grandes où coupe, la température pluvieuse et humide des derniers quatre ou cinq jours n'a pas aidé. Le foin fauché depuis quatre ou cinq jours mais qui n'a pu être engrangé sera de piètre qualité.

De plus, la floraison est avancée. Chaque jour perdu diminue sensiblement la valeur nutritive des fourrages non encore fauchés et récoltés.

En Beauce, par exemple, la situation est pire concernant le fourrage puisque les pluies ont été un peu plus abondantes, depuis quelques semaines, que dans la région immédiate de Québec. Un bon nombre de champs sont détrempés et la machinerie ne pourra s'y rendre que dans quelques jours.

M. Denis Lacasse, du bureau régional de l'UPA en Beauce

nombre de basses terres du bassin hydrographique de la Chaudière et de certains de ses affluents ont été inondées dimanche et lundi. Les agriculteurs pourront probablement récolter le foin non encore coupé dans les basses terres. Par contre, celui fauché depuis plusieurs jours a disparu avec la crue ou sera simplement irrécupérable.

Fraises

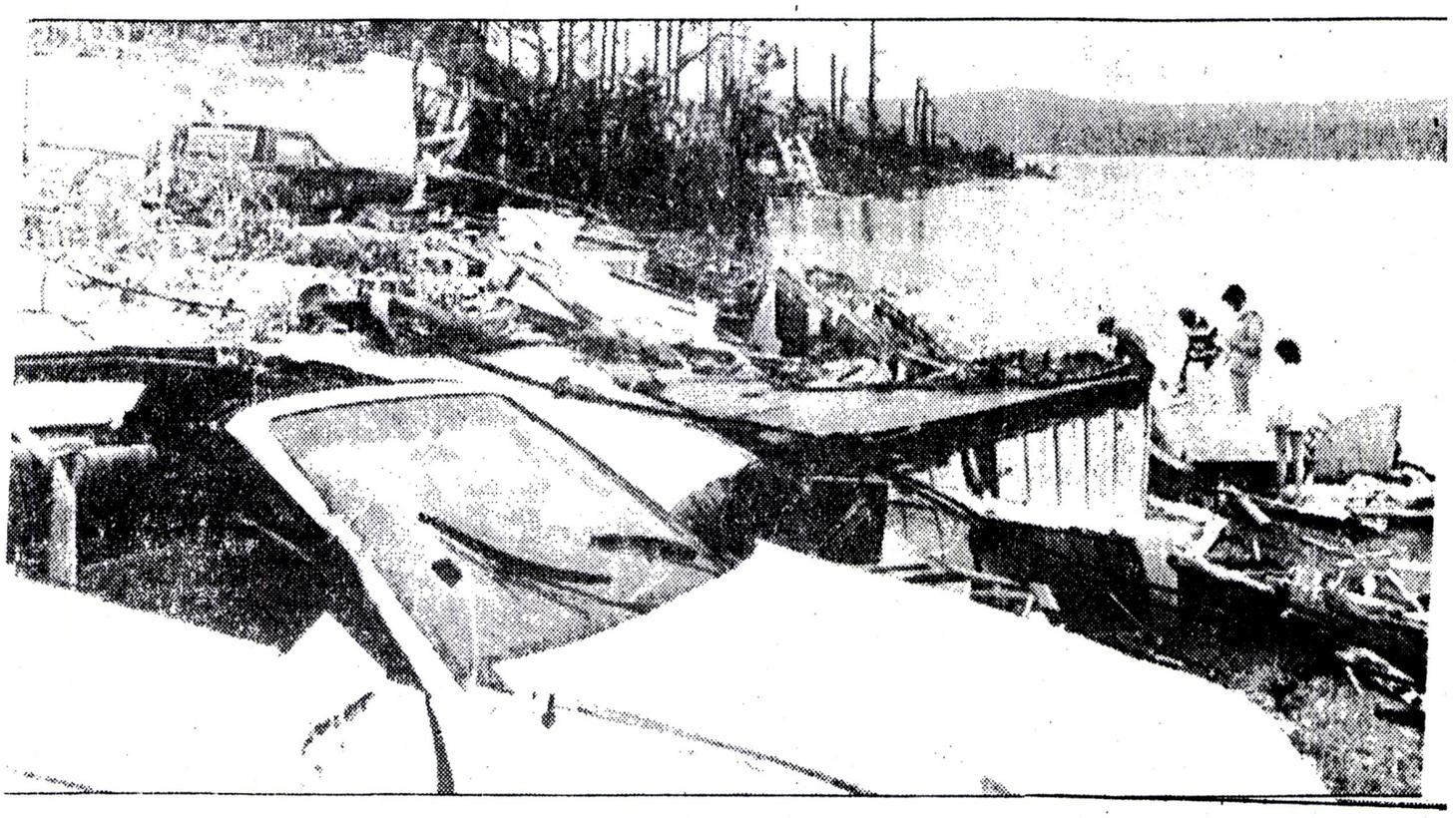
Seuls les champs où la cueillette a tardé et où les fruits ont vieilli avant les dernières pluies diluviennes montrent un peu de pourriture, a dit hier au SOLEIL, Jean-Roch Turcotte, du service de la mise en marché à l'UPA, bureau de Québec.

Par contre, les

cueillir leurs fraises avant les nières pluies, constatent qu'i ces jours-ci d'excellentes cueil à faire, et les fruits sont de bonne qualité.

Pour les autres produc comme la framboise par exe fruit qui exige beaucoup d'eau les semaines qui précèdent la lette, la récolte promet dava avec les récentes pluies.

Selon Jean-Roch Turcot situation est identique pour d'a productions comme la pomn terre, ou encore les propriétair vergers. Dans plusieurs sec comme à l'île d'Orléans, sur la Sud ou encore le secteur de neuf, on voit hélicoptères et a légers effectuer les arrosage guliers, une technique de pl



Damaged car and wrecked cottages attest to ferocity of a tornado that struck Blue Sea Lake, Que., north of Otta

Woman killed, 38 injured by tornado

BLUE SEA LAKE, Que. (CP) — When Gerard Cote saw the dark funnel of a tornado approaching his cottage, he linked arms with his wife and daughter and they huddled on the kitchen floor, thinking they were about to die.

The cottage shook violently before being levelled by high winds, which threw the Cotes 12 metres onto a nearby beach.

Residents of small communities in eastern Ontario and western Quebec felt lucky to be alive yesterday after a devastating tornado struck Sunday, killing one person and injuring at least 38.

Heavy rain and winds reaching 100 kilometres an hour flattened cottages, uprooted trees and knocked out power lines in sparsely populated areas of Ontario and Quebec.

Worst hit were Blue Sea Lake, about 100 kilometres north of Ottawa, and Nickabeau, Que., across the Ottawa River from Petawawa, Ont.

The tornado reached Blue Sea Lake, a cottage area of about 2,000 people, about 7:40 p.m. Four houses and 16 cottages, with a total of 43 occupants, were hit. Winds lifted some of the buildings and dropped them half a kilometre away in the bay at edge of the village.

Quebec provincial police said Rose Dufour, 63, of Vanier, Ont., was found dead, floating in the water of Blue Sea Lake about 75 metres from the cottage she and her husband had rented since they were married 10 years ago.

Her husband Andre, 49, remains in hospital with only minor injuries despite being plucked from his cottage by the twister and dumped in the lake. His sister, Rollande Bourdon, said Mr. Dufour described watching helpless as the tornado snatched his wife from his arms and lifted her along with the cottage roof.

She said the next thing he recalled was regaining consciousness far out in the lake. Mr. Dufour climbed onto a floorboard and clung to it until he was rescued.

Blue Sea Lake Mayor Yvon Belanger, 56, suffered a heart attack in the midst of the storm and was taken along with 16 others to hospit nearby Maniwaki, Que.

George Turnbull, a village resident visiti friend's cottage, said that, soon after rai gan, his van "started bouncing up and dowr all the windows shattered."

Fifteen minutes after the tornado hit, N beau's west end was in ruins, with win smashed and the contents of homes strewn side. Three houses and a church were destro

Blue Sea Lake Council passed a resolu yesterday requesting emergency funds fron provincial Government. Michel St-Pierre spokesman for the Quebec civil protection reau, said the area will be declared a design zone, allowing the Government to provide fi cial assistance.

Although all residents have been accou for, Louis Lefebvre, a spokesman for Qu provincial police, said divers continued sea ing the lake yesterday as a precaution.

AES/SEA

No one can predict exactly when or where a tornado will hit

By Hugh Adami
Citizen staff writer

Meteorologists say the Ottawa area is still one tornado short of its summer average of three.

Sunday's twister, which cut a 110-kilometre path through the Ottawa Valley, killing a Vanier woman and injuring 38 people, was the area's second tornado in four weeks.

June 18, a tornado struck Westport, a cottage town on the Rideau Lake, about 70 km northeast of Kingston.

Although Environment Canada meteorologists say the Ottawa area gets three tornadoes a summer, they concede it's only a rough estimate. They also say that other tornadoes could have already struck, but went unnoticed because they hit uninhabited areas like forests.

Other severe tornadoes in the Ottawa area in recent years include one that killed two people in Maniwaki in 1972, another that devastated the West Quebec town of Masson, near Buckingham, in 1978, and one two years ago near Kazabazua, Que., which ripped several cottages off their foundations. Beachburg, Foresters Falls and Snake River, small communities near Pembroke, were hit by a small series of tornadoes in August, 1980.

In the U.S., where tornadoes occur frequently and with much more ferocity because of hotter and more humid conditions, the atmospheric storms are easily detected because there are fewer unpopulated areas in their paths. Almost 900 tornadoes struck the U.S. in 1965.

While meteorology equipment can detect characteristics in a thunderstorm that can lead to a tornado, weather officials say one of the most reliable ways of identifying a tornado is by actually seeing the rotating funnel-like cloud.

A tornado is formed when a thunderstorm, brought on by a cold front, hits an area where a layer of warm, dry air is lying atop moist or humid air.

As the warm moist air rises it is replaced by a downward stream of fast-moving cold air and as the process repeats itself it causes the swirling motion.

The fast moving air causes partial vacuums where the tornado hits, so that a house is literally blown apart because the pressure from within is greater than outside.

While severe weather warnings can be issued, a tornado warning is usually very difficult to give, because twisters often strike suddenly, says Montreal meteorologist Denis Bachand.

Environment Canada officials were still trying to determine if there was more than one tornado Sunday that blew from the Ottawa Valley town of Rolphton through the West Quebec village of Blue Sea Lake, south of Maniwaki. The department was also trying to determine the exact path of the devastation.

The Emergency Measures Organization says the safest place to be in a house when a tornado strikes is in the basement and lying beside the wall being approached by the tornado.

If there is no basement, one should crouch under a doorway in the lowest level of the house, nearest the side of the house being approached by the tornado. The EMO says another safe area is under a heavy workbench or table.

Any windows on the opposite side from where the tornado is approaching should be opened to cut down on the vacuum effect of the twister.

Motorists caught in a tornado should leave their cars

Le Devoir, mardi 17 juillet 1984

Un mort et 33 blessés à Blue Sea Lake

Les vents ont atteint 75km/heure

Au nord de Montréal, dans les basses Laurentides, les services météorologiques (Environnement Canada) ont enregistré hier midi des vents atteignant 75 km/heure. Ces vents s'accompagnaient d'une pluie abondante: près de 30 mm en 30 minutes.

Une « veille météorologique » avait été décrétée à 11h, hier matin, parce que les conditions étaient alors favorables à des « orages violents », à de grosses grêles ou à de fortes pluies. Dans la plupart des régions, on invitait les gens à être attentifs, à surveiller l'émission de « veilles » subséquentes, le cas échéant. Si le temps violent devenait imminent, Environnement Canada décréterait alors une « alerte météorologique ».

Entre-temps, la situation revenait peu à peu à la normale à Blue Sea Lake (Québec), à 100 km au nord de Hull, où une trentaine de policiers de la Sûreté du Québec équipés pour la plongée ont passé quelques heures à fouiller le lac pour confirmer que seule Mme Rose Dufour avait péri noyée, dimanche soir, lorsqu'une tornade a frappé le petit village de la Haute-Gatineau, détruisant une quinzaine de chalets et projetant dans l'eau celui où se trouvait Mme Dufour.

33 personnes avaient été légèrement blessées lors du passage de cet ouragan qui a provoqué des pannes de courant et de téléphone.

Un porte-parole de la Protection civile, M. Michel Saint-Pierre, a déclaré hier être dans l'impossibilité d'évaluer les dégâts causés par la tempête. Les autorités de Blue Sea Lake ont demandé au gouvernement québécois de leur venir en aide.

Les responsables des services météorologiques affirmaient, vers 16h, hier, que la possibilité persistait que la région de Québec se situe dans la trajectoire de forts vents et d'une pluie abondante; la situation ne justifiait pas qu'on alarme les citoyens. Normalement, au cours d'un orage « fort », la précipitation atteint de 10 à 15 mm. Les orages violents d'hier, au nord de Montréal, ont atteint, en quantité de pluie, des niveaux qui doublent (ou davantage) la quantité normale de pluie, avec comme conséquences le reflux inévitable de certains conduits momentanément surchargés, l'inondation de certains sous-sols et des routes submergées dans les terres basses.

Disaster aid slated for area hit by tornado

By Cal Millar Toronto Star

BLUE SEA LAKE, Que. — Several Ottawa Valley communities devastated by a tornado are expected to be declared a disaster scene today by Quebec Premier Rene Levesque.

Municipal officials had urged Levesque to take such action so emergency funds will be available to the storm's victims.

The tornado cut a path of destruction from the Ontario community of Rolphton, about 200 kilometres (120 miles) northwest of Ottawa, to this resort area late Sunday afternoon.

One woman was killed and 38 people injured.

Scores of homes were flattened by the 160-kilometre-an-hour (99-mile-an-hour) winds.

Damage is estimated at more than $1 million.

Community officials met yesterday at the Blue Sea Lake municipal hall to decide how to cope with the disaster.

Torrential rain

All available emergency equipment as well as Quebec provincial police reinforcements — some from as far away as Montreal — were sent to the Blue Sea Lake area, south of Maniwaki, and Nicabong, just across the Ottawa River from Pembroke.

Those two areas were the hardest hit by the funnel cloud, accompanied by torrential rain.

Rose Dufour of Vanier, Ont., drowned when her cottage was swept into Blue Sea Lake.

Robert Lacroix, 44, saw the woman's husband floating on a piece of the cottage floor seconds after the storm hit.

"I grabbed a boat that had been tossed near my cottage and went with my son to get him," Lacroix said. "He was crying and shouting."

Lacroix and his son, Martin, 13, saw the man's wife floating in the water, but brought him to shore before going out to get her. "We went back for her . . . (but) there was nothing we could do."

Lacroix then barricaded himself and seven other adults and three children, including a five-month-old baby, in his log-style cabin to ride out the storm.

Like warfare

"Three of us kept the door closed . . . while the women were on the floor with the kids. That's what saved us."

Among those injured were Michael Dunn and his girlfriend, Colleen McDonald, who were in a pick-up truck that winds flipped end over end along a road for 90 metres (300 feet).

Both are in serious condition in Pembroke Hospital.

Lacroix called the storm an unbelievable experience.

"You would think it was some kind of a war," he said. "I can't think of any other way to describe the noise."

The roof of his cottage was blown off, and his brother's seaplane, which had been moored at the shore, was reduced to scrap. Not a tree was left standing on his property, Lacroix said.

Insurance adjuster Pierre Lacombe said he just returned from a two-week vacation when he was dispatched to assess storm damage. Cottage owners with insurance on their properties will be covered under wind-damage clauses, he said.

Gilles Latremoulle, who was visiting relatives near the lake, said he is amazed more people weren't killed. "Those homes and cottages were full of people. It's a miracle there wasn't a greater loss of life."

Latremoulle was on a hilltop overlooking the lake when the weather suddenly changed.

"It became very, very black, and we ran to take cover in a truck," he recalled. "When I stuck my head out the window, I saw houses and trees flying through the air."

No panic

A line of waterfront cottages disappeared, and a tree-covered point of land was stripped bare, he said. Trees "looked only three inches long (7½ centimetres) they were flying so high in the sky."

"It lasted 30 seconds . . . and that was it," he added. "It was really something. It sounded like a train coming 150 miles an hour."

Area residents pitched in to help after the disaster, he said. "No one panicked, and no one got out of hand."

The local church was turned into an emergency centre to house tornado victims, and volunteers worked through the night preparing coffee and sandwiches.

Police sealed off the Blue Sea Lake area and ordered an evacuation from damaged homes because of the danger from fallen hydro wires. Residents spent yesterday picking through debris. Many people found property of neighbors who lived several kilometres away.

Most of the injuries occurred among the 500 residents of the Blue Sea Lake area, but eight people were hurt when the tornado slammed into Nicabong to the southwest.

Burton Ranger of Nicabong told how the community was planning a dinner to say goodbye to the priest of Holy Ghost Church, but the storm struck 30 minutes before guests were to arrive.

The church was nearly levelled by the winds. Ranger said 50 or 60 people could have been killed or injured if they had been in the two-storey building at the time.

The church's organ was tossed into the air and landed atop the front wall, which remained standing.

Volunteer firefighters from the nearby community of Chapeau helped dig through the debris to rescue religious artifacts.

About a dozen other buildings in Nicabong were destroyed as the tornado raced along the main street.

Ranger's cousin, Donat Ranger, lost his home, but escaped injury because the family was away on a camping trip at the time.

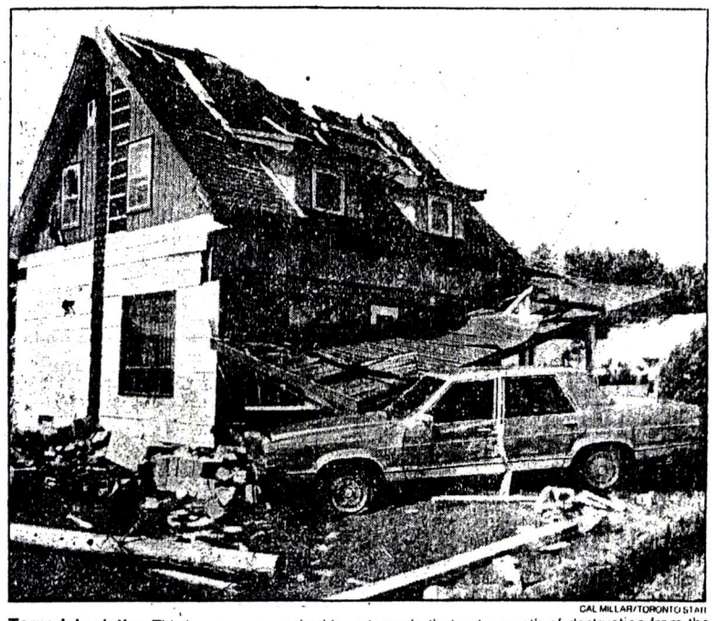
"That's what saved our lives," said Donat as he, his wife, Doris, and their two young sons surveyed the damage. "We would have been killed if we were at home.

"There's nothing left. We're just going to have to rebuild."



PHOTO FEATURES

Nothing left: Donat and Doris Ranger survey the rubble of their home of 16 years in Blue Sea Lake, Que., in the wake of Sunday's tornado, which killed a woman and injured 38 when it cut a swath of destruction from Rolphton, Ont., to Blue Sea Lake. Several Ottawa Valley area communities were hit and are expected to be declared disaster scenes today.



CAL MILLAR/TORONTO STAR

Tornado's victim: This house was wrecked by a tornado that cut a swath of destruction from the Pembroke area across the Ottawa River to the cottage country of Blue Sea Lake, hardest hit by the twister. "You would think it was some kind of war," a survivor said.

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BUILDING RESEARCH NOTE

TORNADO DAMAGE AT BLUE SEA LAKE AND NICABONG, QUEBEC, JULY 1984

by

D.E. Allen

ANALYZED

Division of Building Research, National Research Council of Canada

Ottawa, November 1984

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NO 222

TORNADO DAMAGE AT BLUE SEA LAKE AND NICABONG, QUEBEC, JULY 1984

by

D.E. Allen

A tornado followed a path about 150 km long from near Deep River, Ontario, to near Mont Laurier, Quebec, causing severe damage at Nicabong (pop. 90) and Blue Sea Lake (pop. 280), Quebec, and also caused damage at Lac-Cayamant (pop. 260) near Blue Sea Lake. One person died and thirty were injured at Blue Sea Lake, eight people were injured at Nicabong and two at Lac-Cayamant. There was approximately $2 million damage. Maximum wind speeds of 160 km/h were estimated by Environment Canada. The following describes some impressions of a one-day visit to Blue Sea Lake and Nicabong.

Blue Sea Lake

As it approached the lake from the southwest, the tornado touched down near the town of Blue Sea Lake and caused the following damage:

(1) six small cottages (4 m × 4 m × 2.5 m) and a mobile home were picked up and landed in or near the lake (Fig. 1), with one person drowning and approximately 10 injured;

(2) three cottages (7 m × 7 m × 2.5 m) lost everything but the floor (Fig. 2), with approximately five people injured;

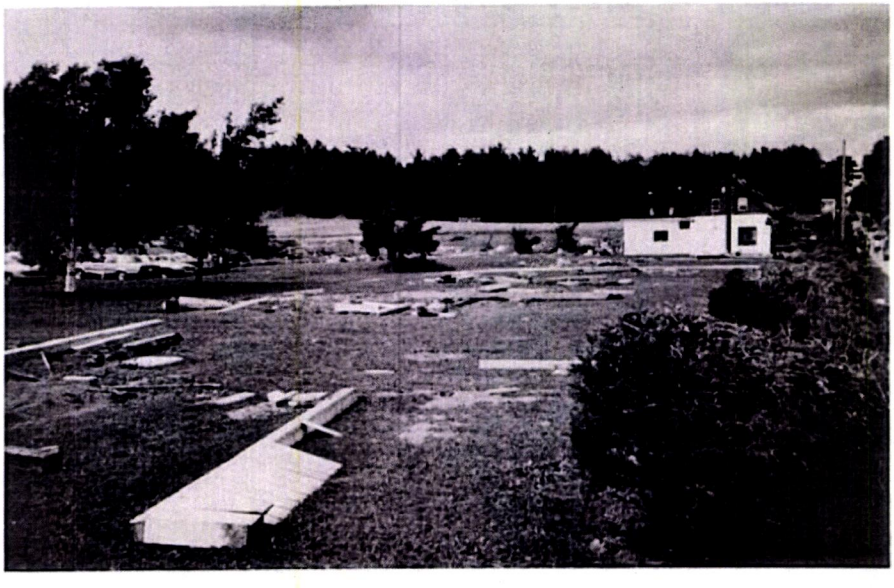

Figure 1. Blue Sea Lake. Only the foundation sills remain of small cottages swept over the hedge and into or near the lake.



Figure 2. Blue Sea Lake. Only the floors remain of cottages swept into the lake.

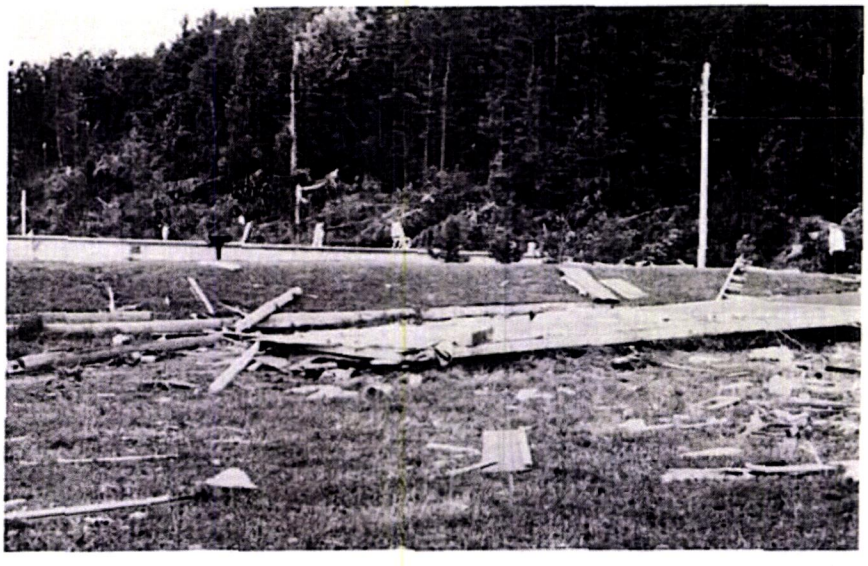

Figure 3. Blue Sea Lake. Floor of a light frame home deposited downwind of its block foundation.

(3) on the hill approaching the lake two light homes and their contents were picked up and scattered over a distance of about 30 metres downwind (Fig. 3), with at least one person injured;

(4) a number of cottages and a home lost their roofs and rear walls (minor injuries to approximately 10 people) while other cottages suffered damage from falling trees (Figs. 4 and 5);

(5) there was evidence of flying debris breaking windward windows or becoming lodged in walls;

(6) some parked cars were moved by the wind;

(7) a truck travelling along the road overturned three times, injuring two passengers;

(8) a moored seaplane was lifted and crashed into a hill or tree, folding in two (Fig. 6);

(9) large trees were either uprooted or broken at mid height, while smaller trees were bent over.

The tornado created a damage area about 80 metres wide by 1 km long. All the debris, including fallen trees, was strewn in the direction of the moving tornado, except some trees at the bottom of a hill beside the lake which fell at approximately 120° windward to the tornado path.

It was not surprising to see that the cottages and mobile homes were removed or destroyed by the wind; they are light and not anchored to the ground. Also, standard nailing in cottage construction is often weak in tension. One older two-storey log house, although badly damaged, survived the brunt of the tornado (Fig. 7).



Figure 4. Blue Sea Lake. Roofs and leeward walls of cottages swept into the lake.



Figure 5. Blue Sea Lake. Typical damage from falling trees.



Figure 6. Blue Sea Lake. Seaplane lifted up and damaged on impact.

What is surprising, however, is that there were not more people killed or seriously injured in the 12 buildings that either flew off or were completely destroyed. Approximately 25 people were in these buildings when the tornado struck. Only one died and that was from drowning, a few suffered severe (e.g. spinal) injuries, but most of the remainder suffered only broken bones and cuts. Apparently the woman who died was swept away when the roof of the cottage took off and landed in the lake 25 metres away, whereas her husband was carried into the lake by the cottage floor. In another case, people lying on the floor ended up in the lake. In a third case the family lay on the floor while nearly all of the house and its contents flew away. It is difficult to find out exactly what happened because most people were unconscious during the incident.

Nicabong

The tornado approached from the west parallel to the road and touched down in the small village of Nicabong and caused the following damage:

(1) the wood roof of a small church (about eight metres wide, 20 metres long and three metres high) was lifted off and 200 mm block walls collapsed, with only framed small rooms and the concrete foundation remaining (Fig. 8). The roof landed upside down about 10 metres downwind. The roof did not appear to be anchored to the wall. (This was not checked because visitors were forbidden to enter the immediate area.)

(2) approximately three small light frame houses were swept off their foundations, with only the floors remaining (Fig. 9);



Figure 7. Blue Sea Lake. Two-storey log house survives tornado which destroys light buildings on either side.

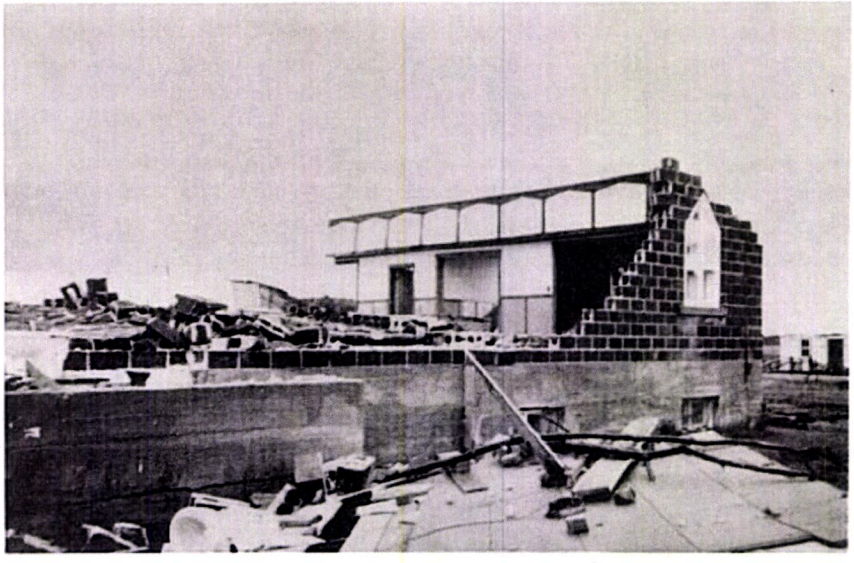

Figure 8. Nicabong. Block wall of church collapsed inwards after roof lifted off.



Figure 9. Nicabong. Only the floor remains of a light frame house destroyed by the tornado.

(3) a garage facing the tornado collapsed sideways, while the adjacent home was not damaged (Fig. 10);

(4) a number of trees were blown over in the direction of the moving tornado while some larger ones were broken off at mid-height.

The tornado created a damage area about 30 metres wide by 1 km long. All the debris, except for a few trees, was strewn in the direction of the moving tornado.

As in the case of the Blue Sea Lake damage, the homes and garage that were removed by the wind were light and not well anchored to the floors nor anchored to the ground. Two log houses withstood the brunt of the tornado (Fig. 11) and a frame school down the road from the church was undamaged, apparently because the tornado was only beginning to touch down there.

Eight people were injured at Nicabong, none seriously. Fortunately there were no people in the main hall of the church (one person in another part of the church was injured). If the tornado had struck later that evening, when more than 100 people were expected, a number of these people would have died or been seriously injured when the windward block wall collapsed inwards (see Fig. 8).

Estimated Maximum Wind Speeds

It is useful to estimate wind speeds required to overturn an unanchored cottage, mobile home or camper or lift off a roof with very little anchorage to the walls. Calculations given in the Appendix indicate that the necessary wind speeds range from 85 km/h to overturn a camper to 130 km/h to overturn a cottage or blow off a roof, whereas it would require wind speeds



Figure 10. Nicabong. Garage facing wind collapsed sideways; tornado less severe at this location.



Figure 11. Nicabong. Small log house survives tornado which destroys light frame houses nearby.

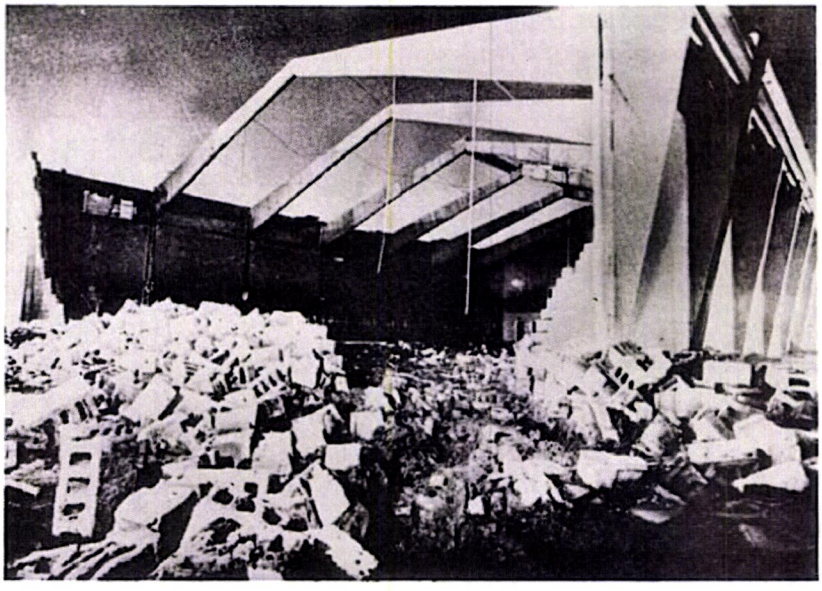

Figure 12. Windsor curling rink after tornado damage.
© The Toronto Star. Reproduced with permission.

of approximately 170 to 180 km/h to overturn a log house. Thus it appears from the damage at Blue Sea Lake and Nicabong that the maximum wind speeds were of the order of 160 km/h, which confirms the wind speeds, obtained from Environment Canada, reported in the newspapers.

The NBC design 30-year return velocity pressure (for wind speed averaged over one hour) is 0.29 kPa for towns near Blue Sea Lake. Applying the NBC gust factor of 2.0 results in an NBC design gust velocity pressure of 0.58 kPa. The velocity pressure for a tornado wind speed of 160 km/h is 1.28 kPa, i.e., approximately twice that required by design. The tornado therefore represented an ultimate load condition that most engineered structures should be able to survive.

Structural Safety

The probability of being struck by a tornado is small but not insignificant. Roughly three tornadoes a year occur in the Eastern Ontario/Western Quebec region. Approximately once every two years, these tornadoes cause extensive property damage, injuries and sometimes loss of life. Previous tornadoes in the area producing severe damage include Winchester (1984), Messines (1980), Masson (1978), Chesterville (1973), Maniwaki (1972) and Sudbury (1970), altogether resulting in eight people being killed, approximately two hundred injured and approximately $20 million damage.

Most of the people killed by these tornadoes were inside a light mobile home or frame cottage that became airborne, with death occurring upon impact with the ground. One or two were killed outside when a light structure or wall overturned, crushing them. People inside frame houses whose roofs and leeward walls have disappeared have not been killed. Even people inside

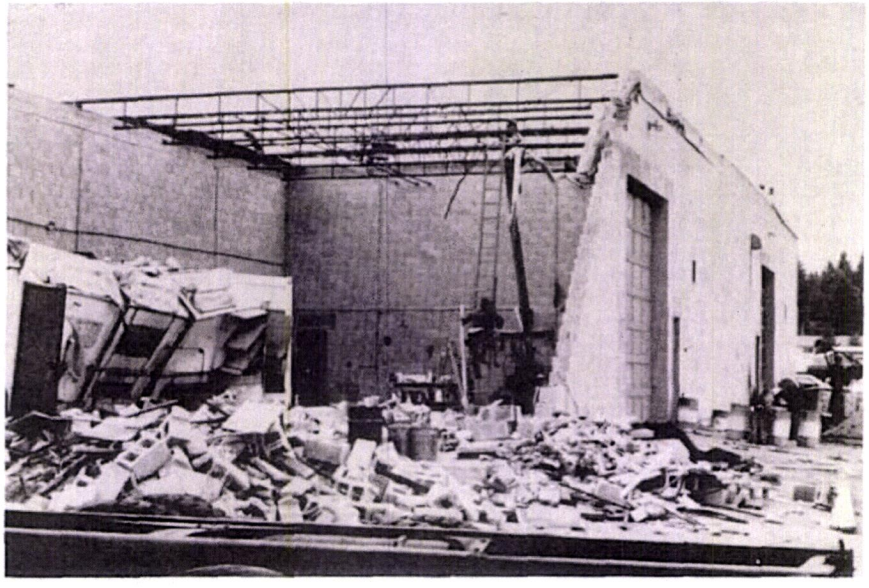

Figure 13. Tornado damage at Maniwaki 1972. Note tensile crack in masonry below roof anchor.

frame houses which lost everything but the floor survived although a few suffered severe injuries.

The Blue Sea Lake tornado damage therefore provides additional evidence to support the requirement in CSA Standard Z240.2.1 that permanent mobile homes be anchored to the ground. Exposed cottages would appear to be in a similar category; however, owners are more unlikely to tie cottages down to the same extent as required by CSA for mobile homes. Possibly less drastic measures than a full-tie system should be used for cottages exposed in the westerly direction. For example, emergency planning and/or minimum anchorage might be considered. Further studies in this area are indicated.

The collapse of the church in Nicabong, however, strongly indicates the need for improved tie-down requirements in the case of light roofs supported on unreinforced concrete block walls in buildings containing large open assembly areas. A similar collapse occurred in the 1974 Windsor tornado, when the roof of a curling rink lifted off and the unsupported block wall collapsed, killing eight people inside (Fig. 12). Previous tornado damage at Maniwaki indicates that tying the roof down to the top few courses of blockwork is not sufficiently reliable (Fig. 13). Therefore either the ties should extend down through the block wall into the foundation or the wall without roof support should be designed to resist NBC wind loads, e.g. by means of lateral supports.

Acknowledgements

The author would like to thank Mr. Roland Michaud, Directeur, Service d'incendie, Ville de Hull, for providing information on what happened to the people inside the cottages destroyed by the tornado at Blue Sea Lake. Mr. Michaud arrived at Blue Sea Lake 10 minutes after the tornado and directed emergency measures. He was also surprised that more people inside the cottages were not killed or seriously injured.

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