

LEVICRAFT



Levitek International Inc.

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The Surface Effect Boat is a boat-like vessel consisting of a catamaran hull with inflatable side walls enclosed front and back by a hovercraft type skirt at front and modified air seal in back. This creates a hollow chamber under the deck, which can be pressurized using an air fan. The resulting air bubble underneath can lift the craft easily, reducing the water draft of the catamaran side wall pontoons and creating a hover effect. This effect lowers the water drag significantly, making it possible to move over very shallow water without the danger of running aground. Because the craft has constant contact with the water by the side walls, it is easy to maintain direction and execute sharp turns without danger of sliding and losing directional control. On ice and snow, the side walls perform like a sled and do not require the air cushion effect.

The major-breakthrough was the development of the boat's puncture resistant skin for the inflatable structure, which gives it the ability to move over various terrains without damage. Unlike any other boat on the market, the air propelled Surface Effect Boat is fully capable of operating on water, ice and broken ice, all with the same ease of directional control and stopping ability, and without the possibility of hull damage in high speed operation.

The Surface Effect Boat was developed to meet a complex set of requirements in order to serve the needs of river and ocean rescue as well as Arctic transportation. Those requirements are as follows:

- Range up to 350 kilometers
- Capacity of up to 30 persons or 6600 lb. (3000 kg) of payload
- Speed on water, ice or snow of up to 100 kilometers per hour
- Cruising speed over water exceeding 70 kilometers per hour when fully loaded
- Capability of moving over hard and soft surfaces such as ice, ice ridges, ice slopes, marshlands . gravel and sand bars and shallow water
- Easy conversion from passenger to cargo
- High impact resistance at low temperatures
- Ease of maintenance and repair with off the shelf" components
- As controllable as a conventional boat yet retaining versatility of a hovercraft























Rapid river runner

Layne Millard turned on the speed while trying out the Calgary Fire Department's new hovercraft. Holding on as the bow caught some air was Keal Prince.

Rescue boat wins praise

- **The issue:** River rescues.
- **What's new:** Calgary fire department testing locally-developed craft.
- **What's next:** Marketing the vessel.

DARYL SLADE

Calgary Herald

Lives could be saved with a locally designed and produced amphibious vessel which will make difficult river rescues quicker and safer.

The city is committed to purchasing the motor-propelled surface effect boat, developed by SEB Enterprises and currently being tested by the Calgary fire department.

It will enable rescuers to remain on board and pull victims — people or pets — from their predicament.

The fire department responds to eight or 10 life-threatening situations on the river every year, most often with its jet boats or deck — a vessel with ladders attaching two float devices.

But the \$60,000 surface effect boat will add another dimension to those rescues.

"If we save one life, it justifies the equipment," said Harold Stewart, captain of the downtown No. 1 fire hall,

from where the vessel is currently deployed.

"People get trapped on ice floes and this makes it easier to get to them than by other means."

The 5.5-metre long by 2.6-metre wide hovercraft-like boat, with a catamaran hull, can enter the river just about anywhere and its inflated pontoons can easily handle almost all conditions, from shallow water to snow to ice to thick plant growth.

Treacherous conditions now on the Bow River, and expected to worsen in the spring thaw, are going to make it a valuable rescue device, the department says.

About the only thing over which the multi-surface rescue vehicle's pontoons can't manoeuvre is huge jagged ice packs like those near downtown along Memorial Drive. It can, however, turn on a dime and is more mobile than the cumbersome hovercraft.

"Any craft that can go on the ice is 100-per-cent better than sending somebody out there on foot," said Bob Brooks, the fire department's B shift aquatic rescue co-ordinator, who has been working closely with SEB in

the design of the boat.

"If somebody was in a predicament (before), we'd have to get one of our men to crawl out on the ice at the end of a rope ... it's dangerous."

Another appealing factor is that anybody can learn to drive the boat very quickly, whereas one needs almost the equivalent of a pilot's licence to propel a hovercraft. Already, 40 Calgary firefighters have trained on the vehicle.

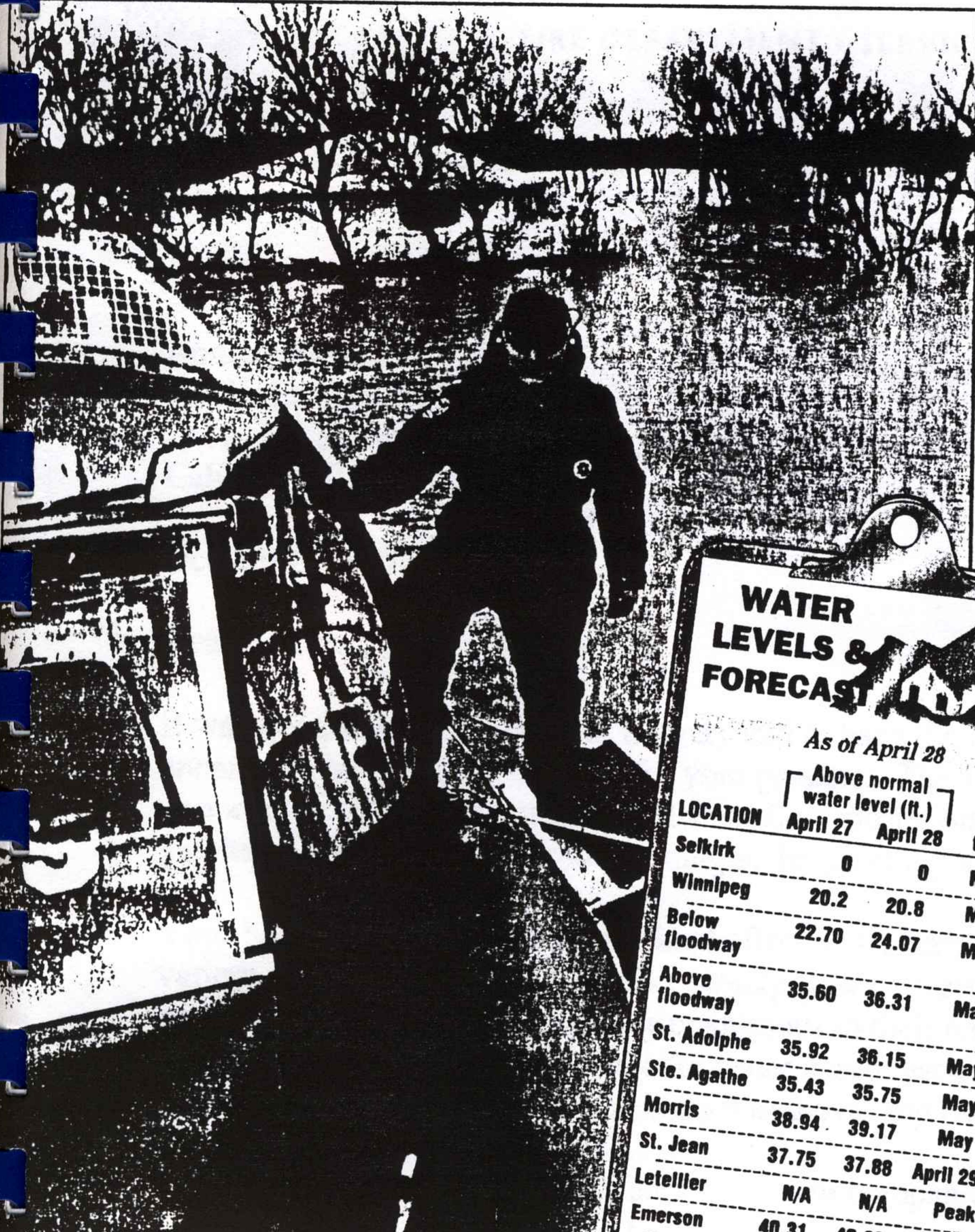
Andrew Pankalla, manager-director and part owner of SEB, said the fire department's highly-trained rescue team is a perfect match to iron out any bugs in the prototype. What they do in their training is crucial to the final marketable design.

At least 10 other fire departments — including one in the United States — already are keenly interested and keeping a close eye on the situation. Edmonton fire department officials were here last week for a first-hand look and were impressed.

"We are the first in the world with this kind of design," said Pankalla, whose company has spent about \$1 million in research and development of the boat over the past decade.

Flood of the century

We're on the scene



— CARLOS AMAT, Calgary Sun

N ON MISSION
McNeice arrives in Winnipeg with his hovercraft to help.

LOCATION	WATER LEVELS & FORECAST		
	As of April 28 Above normal water level (ft.)		Peak forecast
	April 27	April 28	
Selkirk	0	0	May 7
Winnipeg	20.2	20.8	May 5
Below floodway	22.70	24.07	May 5
Above floodway	35.60	36.31	May 5
St. Adolphe	35.92	36.15	May 4
Ste. Agathe	35.43	35.75	May 3
Morris	38.94	39.17	May 2
St. Jean	37.75	37.88	April 29/30
Letellier	N/A	N/A	Peak
Emerson	40.31	40.28	Dropping
Drayton	44.66	N/A	Dropping

Losing battle

By PETER SMITH
Calgary Sun

WINNIPEG — The battle against the Red River raged on yesterday with sandbaggers losing the latest fight as winds threatened to wash away dikes.

Winds reaching 60 km/h washed waves against sandbag dikes and officials estimate 25% of individual house sandbag-dikes in southern Manitoba have begun to fail.

The flood crest is expected to hit Winnipeg next Monday, as it moves down the valley where more than 17,000 people have already been forced from their homes.

Inside the southern city limits, Kim Norfoot, a sandbag expert, was building a dike at a friend's home as floodwaters lapped over the road.

Earlier, Norfoot had helped rebuild failing dikes because they were badly constructed.

"If you lay the sandbag in the wrong direction, the water simply runs through the gaps," he said.

"If you put the polystyrene sheeting in wrong, that doesn't keep the water out."

Manitoba Premier Gary Filmon arrived by helicopter to see the vital 24-km-long dike southwest of Winnipeg — the city's main defence against the bulk of approaching flood water.

As a precautionary move, about 4,200 people in St. Norbert, a southwest Winnipeg subdivision, were ordered to evacuate last night.

The province and city are building the Brunkild dike, a second major line of defence along a primary highway on the southern edge of the city.

"The secondary line of defence is an abundance of caution," said Filmon.

Workmen were also strengthening Winnipeg's vital floodgate which directs excess water into the diversionary floodway.

Look what's joined the fight now!



PETER
SMITH

WINNIPEG — Ed Zylema thought he'd seen everything the Winnipeg flood could throw at him.

That was until the noisiest engine he'd ever heard heralded the approach of the oddest craft he'd ever seen yesterday — a hovercraft.

And Zylema, who has already been humbled by super-human efforts of strangers to help him save his home, was surprised it had come all the way from Calgary to join the arsenal of weapons against the flood.

Zylema is in trouble — just the sort of person that Calgary firefighter Vern McNeice was hoping to help when he brought the Calgary Fire Department's hovercraft to this flood-ravaged city.

Zylema's home just outside the Winnipeg floodway has been targeted by nature's latest onslaught — 60 km/h winds and driving rain that slammed the floodwaters against his precious dike.

The dike is leaking, water is in his basement and his pumps aren't holding it out.

It just so happened that McNeice, the skipper of the hovercraft now crewed by Winnipeg firefighters, had chosen Ed's backyard for a crash course.

There is something extraordinary about this terrible flood to see a Calgary fire vehicle unload a hovercraft where a Winnipeg road has slipped under the floodwaters.

With a noisy blast and a cloud of spray, the hovercraft skittered above the water past submerged road signs indicating where the road once ran.

McNeice was teaching Winnipeg firefighters how to drive the machine.

It's fast, traverses water, land and small obstacles where a boat can't go as if it was designed with the Winnipeg flood in mind.

Winnipeg firefighters who can't wait to get their chance at driving the machine are hankering for one of their own.

"Ideal," "perfect" and "exactly right" are descriptions they use for it.

"If there comes a time for a fast-water rescue in some

place where a boat cannot reach, we will get there," said McNeice.

His task now is to train enough Winnipeg firefighters to drive the hovercraft so it can be placed on 24-hour alert.

It has already performed its first useful job for Zylema — firefighters brought back an urgent request for some suction hose and pump equipment for Zylema's basement.

Winnipeggers are getting used to seeing amazing things during the flood.

There have been army personnel carriers, coast guard boats parked in the street, Premier Gary Filmon landing in a helicopter on top of a temporary dike and Prime Minister Jean Chretien surveying the damage.

But you haven't seen surprise on people's faces in a big inland city until you drive down the streets towing a hovercraft.

And you haven't seen gratitude on a man's face until you pull up at his flooded home in the machine and offer him another lifeline in the fight of his life.

Zylema is going to see this look on a lot more faces before he's finished.



AirCat 10 can travel with high speed over any body of water. Its maneuverability is outstanding and it is as easy to control as normal watercraft. The craft can take aboard as many as 10 people and travel up to 62 Mph (100 Km/hr) on water and even faster on ice. On big flat body of snow it is far more comfortable to operate than a snowmobile. AirCat 10 can easily operate on mud and marsh.

The craft capability is superior to average hovercraft. Very high buoyancy of the side pontoons and the floor makes it unsinkable and almost impossible to capsize. The fuel consumption is comparable to a hovercraft on calm water but is much lower in rough. The craft can also handle high seas without endangering passengers and crew. Driver training is minimal and handling of the craft is similar to a jet boat.





Advance propeller blade - 72 Db mesured from 30ft



Transport
Canada

Marine Safety

Canada Building
344 Slater Street
Ottawa, Ontario
K1A 0N7

Transports
Canada

Sécurité maritime

Édifice Canada
344, rue Slater
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Our file Your reference

Our file Note reference

AMS 9800-1

June 6, 1997

Orest Andre
Levitech International Inc.
suite 510, 10053 - 111 St.
Edmonton, Alberta,
T5K 2H8

Dear Mr. Andre,

This is to confirm our telephone conversation yesterday, that Transport Canada is the certification authority for air cushion vehicles in Canada. The surface effect boat of which you speak will be inspected under the Light Air Cushion Vehicle Standard plus the construction standards for inflatable boats. Although air cushion vehicle technology has been around in Canada since 1968, this is the first application of incorporating an inflatable boat as the main hull.

I had the pleasure of operating the SEB Enterprises craft, in Calgary, this spring and I was impressed with its operational simplicity while retaining the main advantages of a full air cushion vehicle. Conventional air cushion vehicles require considerable training and experience before an operator can confidently manoeuvre the craft. This depth of experience does not appear to be necessary with the SEB craft which makes it ideal for rescue facilities where operators may have limited marine experience.

The simplicity of the SEB craft combined with the years already devoted to product development and market focus work strongly in favour of success. Transport Canada will do our part to encourage adequate operator and maintenance training.

Sincerely,

M.W. Robertson
Acting Superintendent,
High Speed Ships

Calgary Fire Department
Training Academy
5727 23 Ave. SE
Calgary, AB
T2B 3E2



February 25, 2011

To Whom It May Concern,

The Calgary Fire Department first became involved with Levitek International Inc., formerly S.E.B. Enterprises Inc, in 1995 when they created a Surface Effects Boat (S.E.B.) tailored to our personal needs. A couple of years later, Levitek also created The Weir Rescue Raft specifically for our needs associated with the low head dam in central Calgary.

The S.E.B. performed extremely well in our unique climate of cold winters, interrupted with warming Chinooks which create dynamic waterways through the heart of the city. Open water, lake ice, swift water and the transition from water to ice were all managed extremely smooth by the S.E.B. The craft was straightforward to operate, easy to maneuver and would power up or down in all conditions. This craft was utilized in front line operations for ten years by many different operators in numerous training exercises and rescue situations.

The Weir Rescue Craft is a unique low head dam rescue device. The design and engineering of the craft has made our weir training and rescues much, much safer than any other craft in the industry. In the twelve plus years of front line use, we have not encountered any major maintenance issues or any safety issues with this craft.

Please feel free to contact me with any inquiries.

Sincerely,

Shea Tritter
Aquatic Training Officer
Calgary Fire Department
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LEVITEK™ International Inc.

