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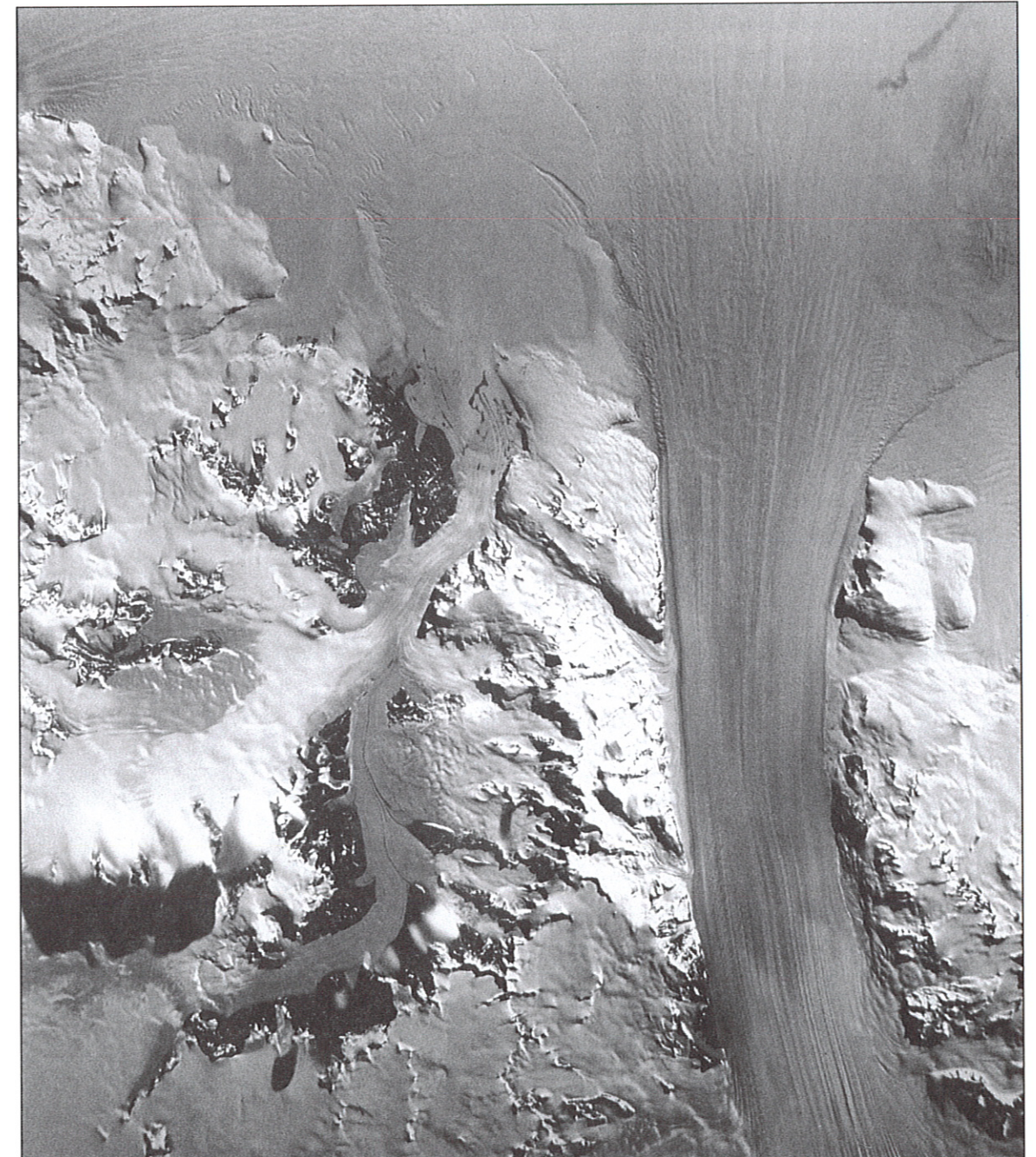
Jet News

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MAY 2002

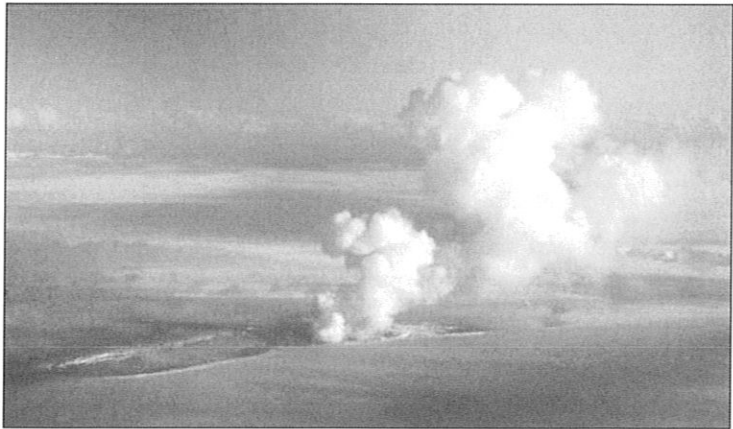
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Flowing Ice



Satellite Image (LANDSAT 1 MSS) of the Byrd Glacier where it joins the Ross Ice Shelf in Antarctica.
Note the flow lines in the ice. Photograph courtesy of Richard S. Williams, Jr., Ph.D., U.S. Geological Survey.

Volcanic Eruption Under A Glacier



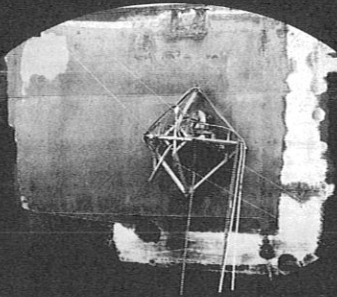
Volcanic eruption under the Vatnajökull glacier.
Photograph courtesy of Freysteinn Sigmundsson, Ph.D., Nordic
Volcanological Institute, Grensasvegur 50, 108 Reykjavik, Iceland.

On September 30, 1996, a volcanic eruption occurred under the Vatnajökull Ice Sheet in Iceland. The ice in this part of the glacier was 400-600 meters thick. The ice above the volcano melted and the water accumulated in a lake under the ice.

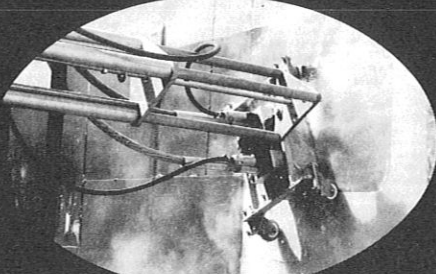
On November 5, 1996, at 8:30 a.m. the water reached the edge of the glacier and a glacier outburst flood (jökulhlaup) occurred. As the melted water discharged from the glacier, the water stream was 3-4 meters deep and 500-600 meters across. The peak discharge was estimated at 50,000 meters per second. The flow was over by 4:00 p.m. on November 6. The flow cut a canyon (1 km long, 250 m wide and 40 m deep) into the ice margin. The flood destroyed a bridge (see page 13) and carried icebergs at least 15 km from their source.




Satellite image (LANDSAT 1 MSS) image of Iceland's largest (8,200 square kilometers) glacier, Vatnajökull. Photograph courtesy of Richard S. Williams, Jr., Ph.D., U.S. Geological Survey.



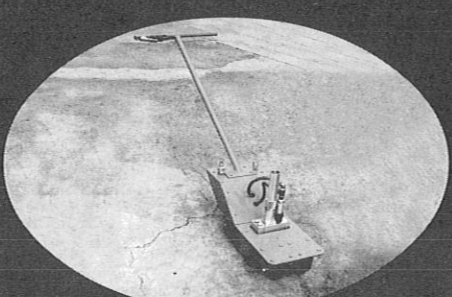
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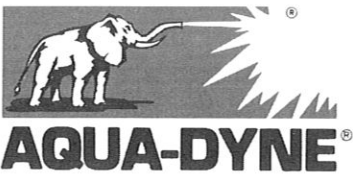
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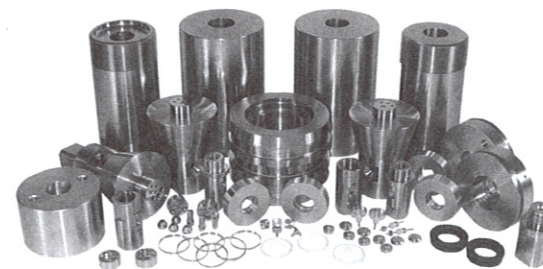
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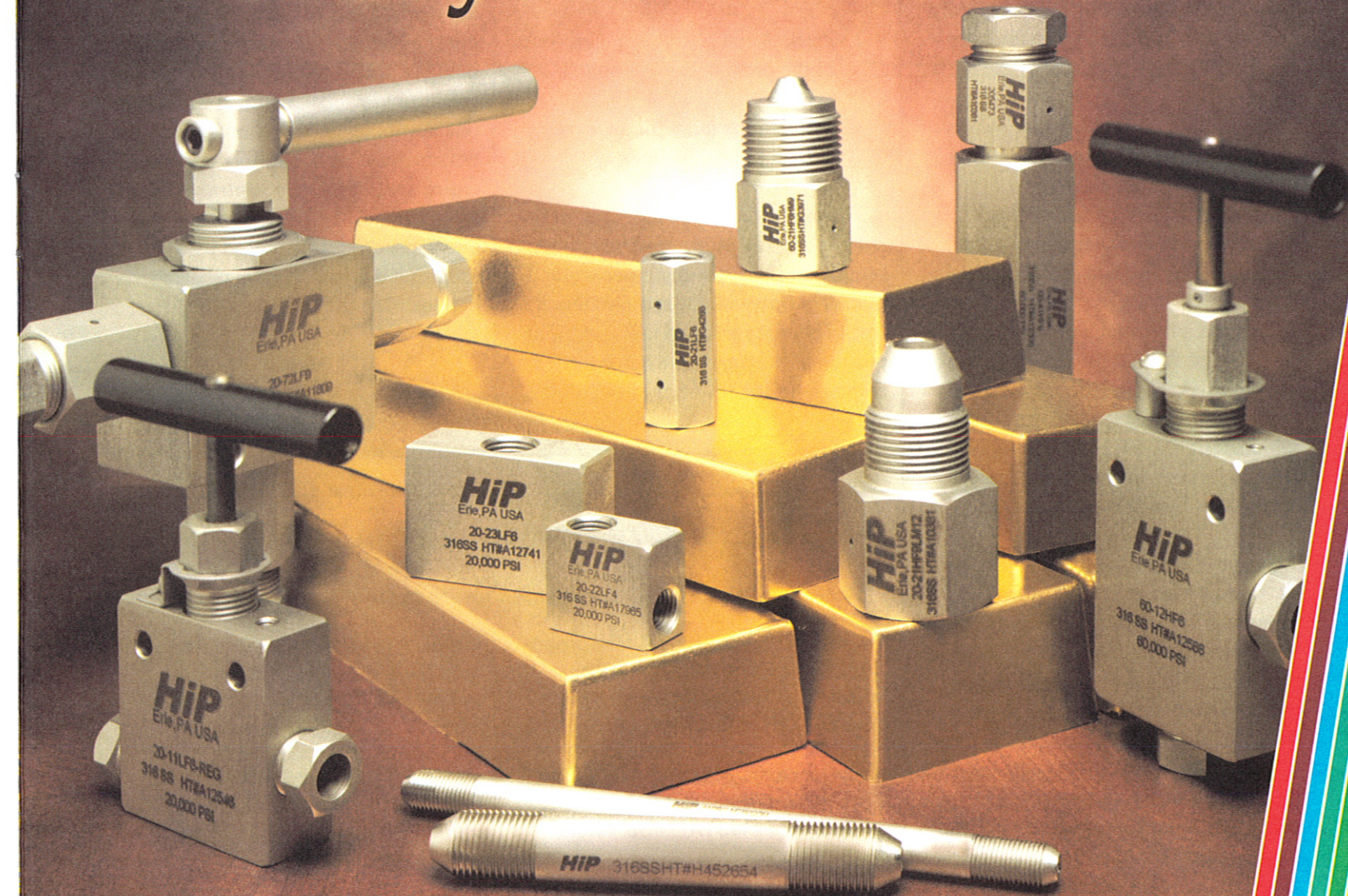
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Line Moleing In The Vicinity Of A Tee: A Caution

On a recent line moleing incident, a mole reversed direction inside a pipeline as the mole propelled itself past a tee in the pipeline. Fortunately nobody was injured but the situation was extremely hazardous to the crew.

The incident is hereby analyzed in order to point out the existence of a hazard which is frequently encountered during line moleing operations but which is usually not recognized by the line moleing crew.

This hazard is that a mole, even if it is equipped with a stinger whose length is as long as the pipe diameter, can turn around in the area of the pipeline which contains a tee even though it cannot reverse directions inside a straight portion of the pipe.

Stingers, with a length at least equal to the diameter of the pipe, are mandated in line moleing operations. If a mole starts to turn around in a straight section of the pipe, a proper stinger will become wedged in the pipe thus preventing the mole from turning 180 degrees and propelling itself out of the pipe entrance. However, the space available for a stinger to turn is much greater in that portion of the pipeline that contains a tee as compared with a straight portion of the pipeline.

In the mole-reversal situation described herein, a self-propelled mole equipped with a 12-inch stinger was operating in a 12-inch diameter pipeline. The mole reversed direction inside the tee in the 12-inch diameter pipeline.

It is not known what caused the mole to deviate from moving in the axial direction just as it passed the tee in the pipeline. The following are three possibilities:

1. The operator might have momentarily stepped off and then back onto the foot valve.
2. Perhaps the retrojets on one side of the mole became clogged.
3. Perhaps the mole hit an obstruction in the line.

The expulsion of the mole out of the entrance of the pipe could have been prevented if a second stinger were placed in line with the mole so that it would become wedged in the straight portion of the pipeline when it turned in response to the reversal of the mole.

This incident also pointed out another hazard that might not be recognized by line moleing crews. Lance retention devices affixed to the pipe entrance do not prevent a pressurized mole from being expelled out of the pipe. A lance retention device constrains the hose at one point but since the lance retention device does not normally cover the entire area of the pipe entrance, the mole can pass out of the pipe in the open space left uncovered by the lance retention device. That is what happened in the case described herein.

— George A. Savanick, Ph.D.

WJTAListServ Now Available To Members

Take advantage of prompt e-mail interaction with your colleagues!

WJTAListServ is an e-mail broadcast system developed by the WaterJet Technology Association (WJTA). WJTAListServ is designed to help you communicate and network with other WJTA members.

How does WJTAListServ work?

Forward your question, comment or request via e-mail to WJTAListServ. Your e-mail will be forwarded to other WJTAListServ participants who then have an opportunity to respond. Everyone on

the WJTAListServ receives the questions, comments and/or requests made by other participants. You are not required to submit questions and/or comments in order to participate in the WJTAListServ. WJTAListServ is a benefit of WJTA membership and is FREE to members in good standing.

To participate in WJTAListServ, simply fill in the information requested below and return to the WJTA office.

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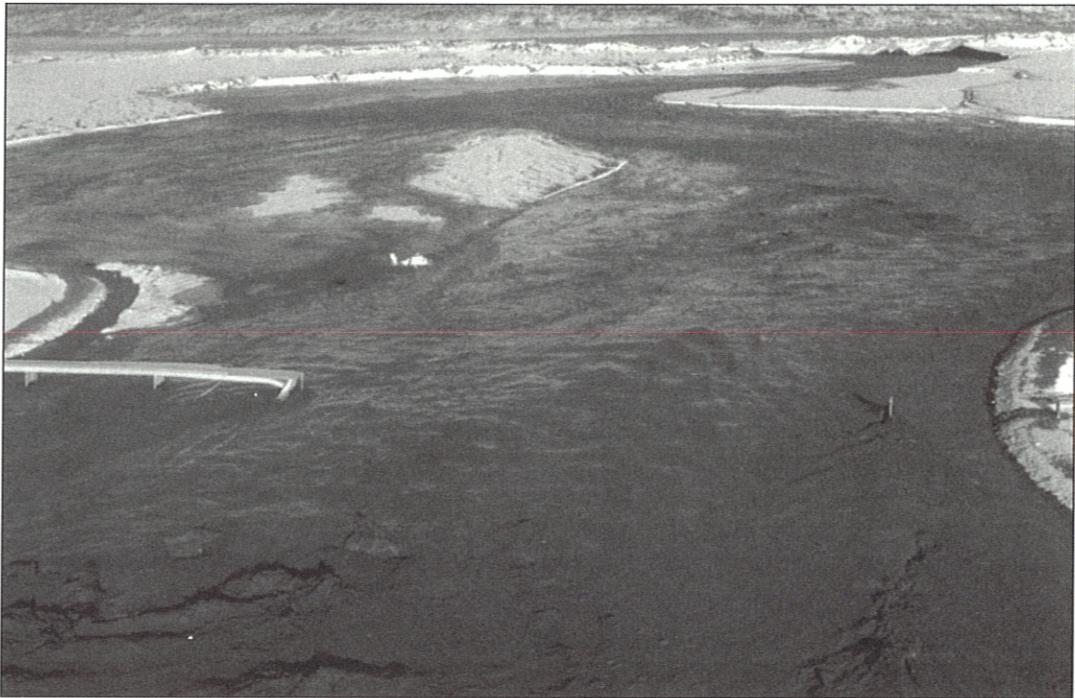
Fax the completed form to WJTA: (314)241-1449, or mail to: WJTA, 917 Locust Street, Suite 1100, St. Louis, MO 63101-1419.

Volcanic Eruption Under A Glacier

A bridge destroyed by a glacier outburst flood caused by a volcanic eruption under the Vatnajökull glacier in Iceland.

Note the helicopter hovering over the collapsing bridge.

Photograph courtesy of Magnús T. Gudmundsson, Associate Professor of Geophysics, dðsent Science Institute, Raunvísindastofnun Háskólans University of Iceland, Hofsvallagata 53, 107 Reykjavik, Iceland.



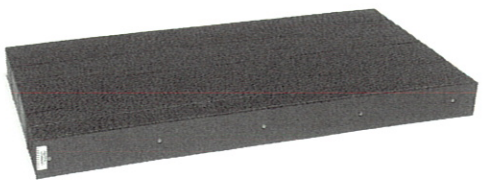
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Barton Now Sells Waterjet Components

Barton Mines Company, LLC, the supplier of HPX, HPA and CG waterjet abrasives has expanded its product offering to include a new line of waterjet components. Barton now offers quality waterjet components for OMAX®, Flow™ and Ingersoll-Rand® waterjet systems.

Barton has teamed up with three proven suppliers to the waterjet industry to offer the most frequently required components. Barton now offers:

- ♦ Boride® Products ROCTEC® 100 and BP5000 nozzles for Flow™, Ingersoll-Rand®, AccuStream™ and OMAX® cutting heads

- ♦ AccuStream™ replacement components for Flow™ and Ingersoll-Rand® pumps, valves and cutting heads
- ♦ OMAX® factory original components for OMAX® pumps, valves and cutting heads.

Orders for abrasives and components may be placed simultaneously. Barton offers same day shipment of component orders and next day shipment of abrasives from seven North American locations.

Complete information can be found in Barton's 2002 Waterjet Products Catalog and on Barton's web site. Call 800-792-5462 or visit www.barton.com

Gardner Denver Complimentary Equipment, from page 6

- ♦ Upgrade to 25 hp hydraulic system
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- ♦ Wind screen for operator's station

Gardner Denver Water Jetting also offers the Jetting Systems brand line of Rotary Line Cleaners. These ingenious devices combine the benefit of rotating the nozzle for more thorough cleaning with the versatility of flex lancing. The RLC rotates the hose in the same direction to both extend and retract, thereby eliminating dangerous hose uncoupling.

The Line Cleaner reliably combines operator safety with cost effective operation. It eliminates the need for a person to handle the hose as it is retracted, and virtually eliminates operator exposure to hose failure or live high pressure jets. It also preserves expensive hoses. The Guide Hose permits hand-held operation and control or use with a fixturing device. Independent remote rotation, speed and feed controls allow for greater ease of use.

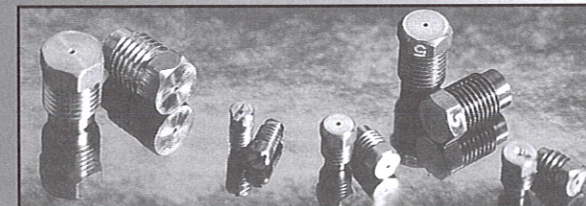
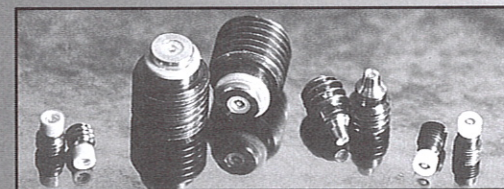
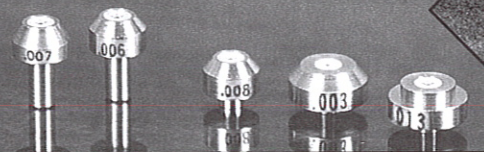
Contact Gardner Denver Water Jetting for news on more ways to maximize both safety and productivity. Call 800-231-3628 or visit www.waterjetting.com.

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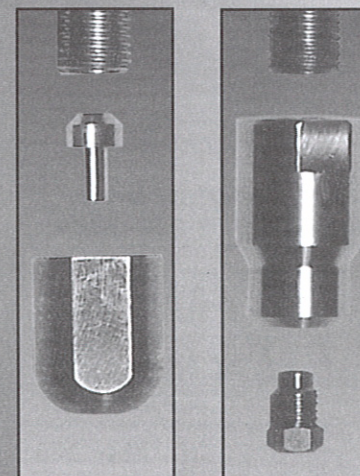
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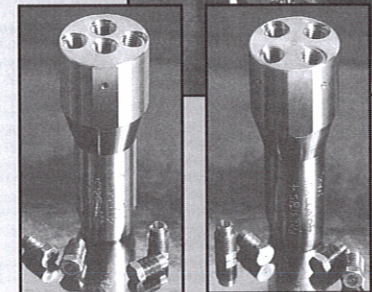
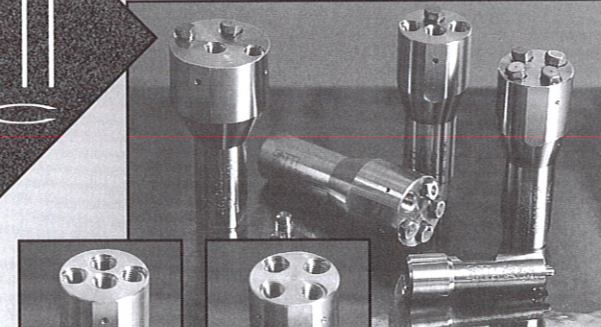
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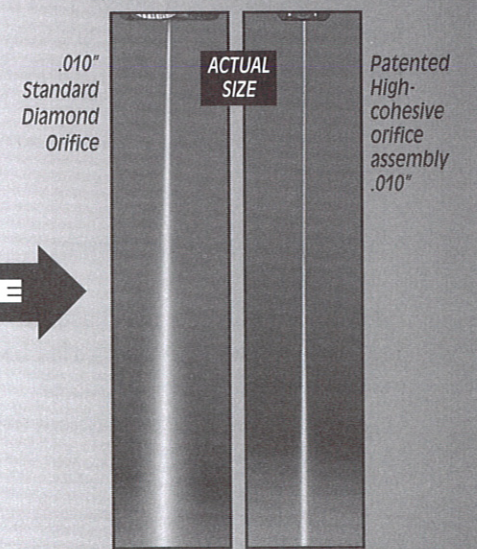
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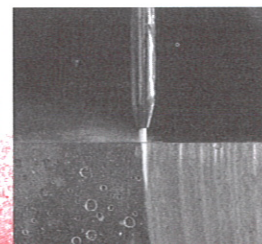
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Gardner Denver Consolidation Complete

In May 2001, Gardner Denver Water Jetting Systems successfully completed the integration of its CRS Power Flow acquisition into its new facility at 12300 N. Houston-Rosslyn Road in Houston, Texas. This integration completes the consolidation of its waterjetting businesses that also include the former Butterworth Jetting Systems, Inc. and Jetting Systems & Accessories, Inc.

Gardner Denver, Inc. based in Quincy, Illinois, acquired the three companies over the past 18 months to significantly expand its presence in the waterjetting industry and to leverage its extensive pump capability. Gardner Denver's broad product offering, which includes engineered pumping units, bare pumps, cleaning and cutting systems, and a complete line of parts and accessories, capable of pressures up to 40,000 PSI, is one of the most extensive and competitive in the industry.

"Our employees have worked diligently over the past six months to bring three independent business together into one operating unit. There were able to implement significant change while continuing to operate the day-to-day business. The teamwork, cooperation, and dedication demonstrated by our employees have been outstanding, and we are very excited about the potential within this newly consolidated operating unit," states Frank Wierengo, the director of operations.

Complimentary Equipment

Gardner Denver's purchase of Jetting Systems & Accessories has given Gardner Denver a line of specialized tools and equipment that

compliments the Partek pumps and Liqua-Blaster water jetting units, most notably the Jetting Systems Model "AASS" Series Shellside Tube Bundle Cleaner.

While the AASS2D30 can be effectively used with smaller pumps, it has no problem handling the high discharge pressure and flow of the Partek pump line. The concept behind the use of mechanized equipment is to safely handle more horsepower at the nozzle. The AASS2D30 can handle flows in excess of 100 GPM and nozzle reaction forces in excess of 1,000 pounds.

This unit was designed with both reliability and serviceability in mind. All powered functions are direct acting hydraulics with no electronic or pneumatic pilots used.

The articulated boom-arm that supports the rotary cleaning nozzles is also used to off-load and reload the powered and idler rollers. This feature permits total set-up with only two people.

The simple but rugged boom-arm design permits operator efficiency with a minimal "learning

curve." The operator's console, mounted on the neck of the trailer, gives the operator a full view of the cleaning process.

Dual side capability permits cleaning to take place on one side while an exchanger on the other side is replaced or the inside of the tubes are being cleaned. The standard unit handles heat exchanger bundles from 24" to 60" in diameter and weights to 50,000 pounds.

Options include:

- ♦ Four-jet manifold in lieu of two-jet version.

(continued on page 12)

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Rampart Construction Changes Name To Rampart Hydro Services

Rampart Construction Services, also known as RCS, has changed its name to Rampart Hydro Services.

The RCS name was a carryover from the days when the company was a division of Flow International, manufacturer of the ultra high pressure hydrodemolition equipment used by Rampart.

"Although many people in the construction industry know us as

Rampart Construction Services, or RCS, we believe that the name change is important in order to better describe what we do," says President Beth Newbold when announcing the change. "Although we used to be a general contractor, our focus is, and has been for years, the development and application of ultra high pressure hydrodemolition and hydrocleaning technologies."

Rampart Hydro Services is a leader in this very specialized field. The

company owns and operates one of the largest fleets of hydrodemolition units in the world and has the capability to customize its proprietary equipment to suit different types of projects.

"Though we have a new name, we still have the same experienced personnel, still offer unsurpassed, customized services, still operate the best hydro equipment, and still hold ourselves to the highest industry standards," adds Newbold.

Rampart Hydro Services is a leader in UHP hydrodemolition and hydrocleaning. With many years at the forefront of this field, Rampart has the technical expertise it takes to solve the toughest concrete removal problems. Recognized for the ability to customize equipment to suit the needs of the job, the company is constantly seeking and finding new applications and new markets for its exceptional UHP hydroservices.

Rampart provides UHP hydrocleaning for the removal of rubber and paint from airport runways. UHP hydrocleaning also offers the unique ability to remove bonded or adhered coatings without damaging concrete surfaces.

Some of Rampart's UHP hydrocleaning projects include removal of concrete from Commodore Barry Bridge in Delaware, Peace Bridge in Buffalo, NY, Jersey City Viaduct, Carson City Secondary Wastewater Treatment Facility, and parking garages at John F. Kennedy Center for the Performing Arts and the University of Michigan. UHP hydrocleaning projects include runway projects at O'Hare and Midway Airports in Chicago; La Guardia, Kennedy and Newark Airports, serving New York; and Tinker Air Force Base in Oklahoma.

For more information about the company, call 412-262-4511 or visit www.rampart-hydro.com.

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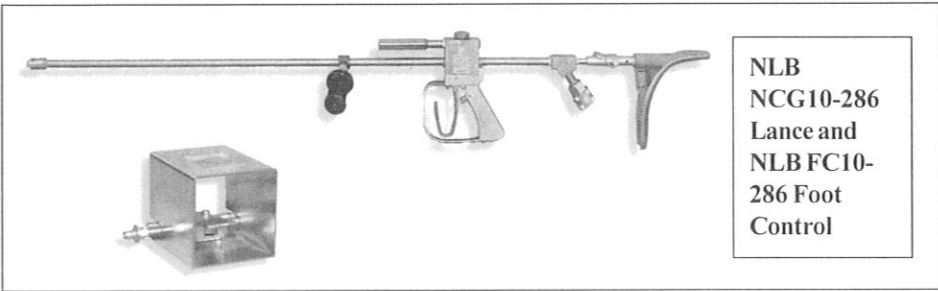
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New NLB Lance And Foot Control



A new high-pressure waterjet lance and foot control valve from NLB Corp have a unique combination of features to increase operator protection while reducing downtime. The NCG10-286 lance and FC10-286 foot control are rated for pressures up to 10,000 psi (700 bar) and flows up to 25 gpm (95 lpm). Both feature NLB's quick-change cartridge seal, which can be replaced in the field in less than 60 seconds.

The NLB NCG-10-286 lance is the first to combine the quick-change cartridge with NLB's patented trigger design, which allows an operator to immediately dump pressure by simply pushing the trigger forward. The lance requires just 8-12 pounds of trigger pressure, and has a one-finger latch to prevent accidental actuation. The shoulder stock and hand grip are adjustable for operator comfort.


NLB's FC-10-286 foot control valve introduces a new pedal design that lets an operator dump pressure by simply rocking the pedal forward. Dump ports on both sides help the valve maintain stability when pressure is dumped. This lightweight, yet durable unit is constructed exclusively of non-corrosive materials.

NLB, a leader in high pressure and ultra high pressure waterjet technology, manufactures a full line of quality waterjetting systems and accessories for contractor and

industrial uses, including surface preparation, paint removal, tank cleaning, concrete hydrodemolition, concrete and pipe cutting, and more.

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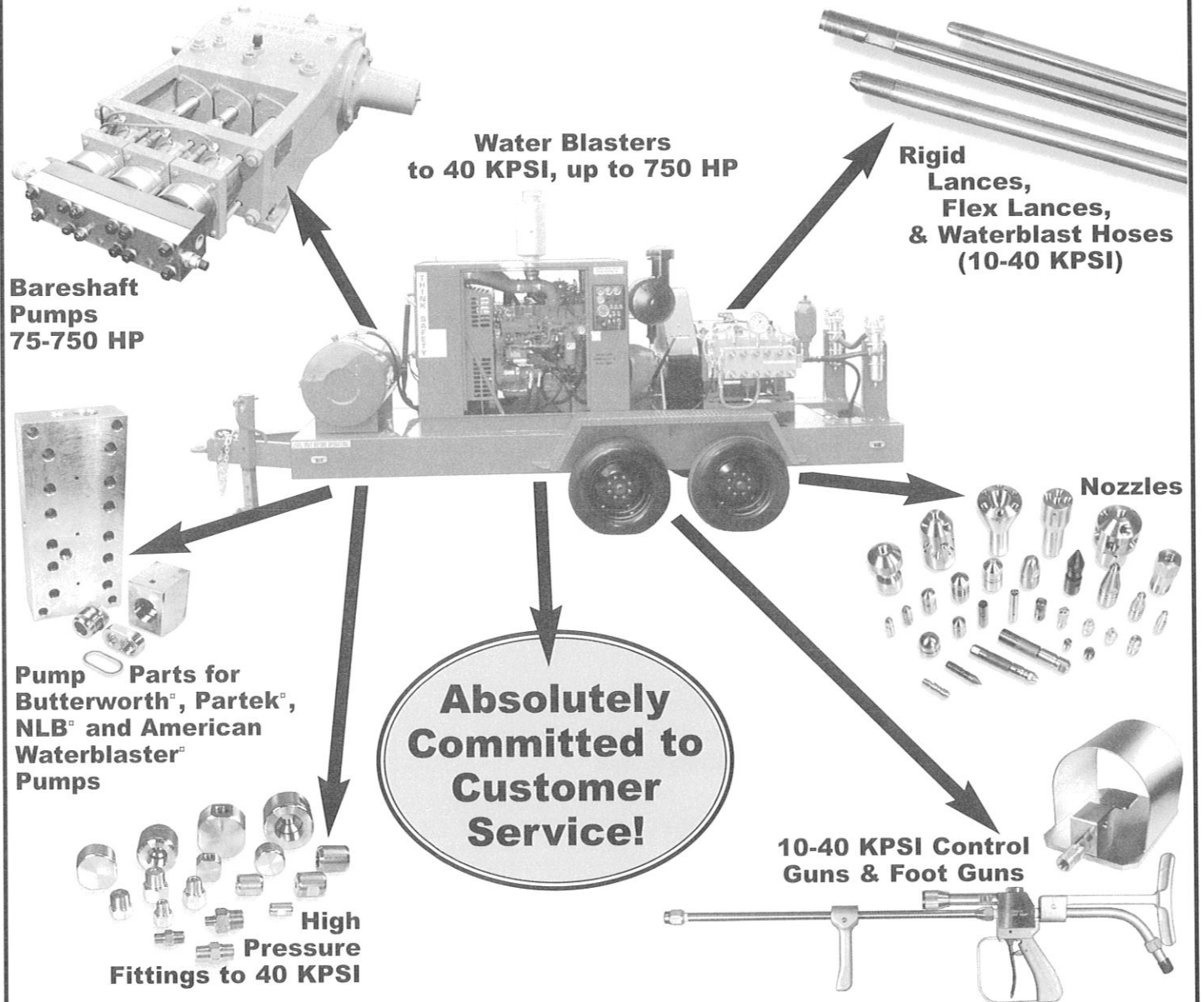
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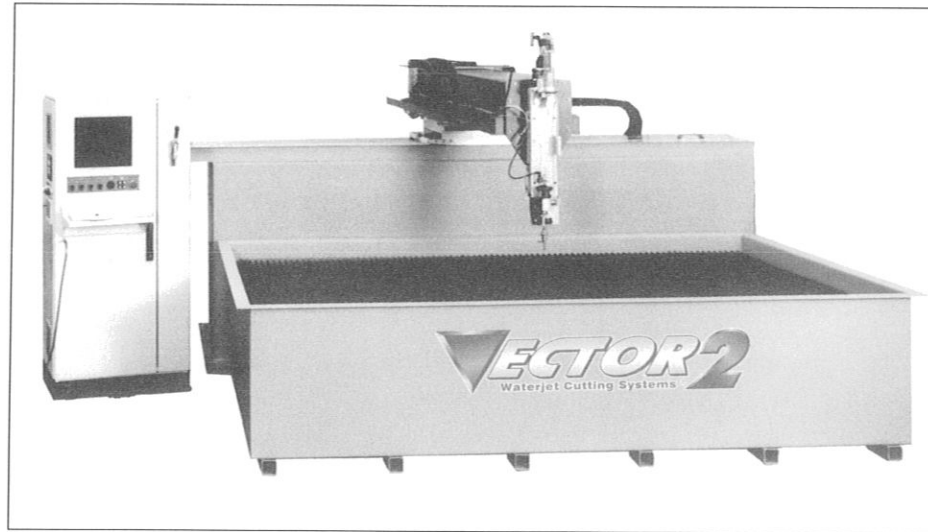
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www.waterjetting.com • E-mail: mktg.wjs@gardnerdenver.com
12300 North Houston-Rosslyn Road • Houston, Texas 77086

PaR's New High Precision Waterjet Cutting System



Vector2™ System

PaR Systems, Inc., an industry leader in overhead high precision processing systems, has introduced its latest waterjet cutting system, the Vector 2™. The Vector 2™ system complements PaR's 2-1/2, 3 and 5 axis gantry style waterjet cutting system, but is designed specifically for the 2-1/2 axis market. The Vector 2™ features an integrated 50 hp intensifier pump and is designed for high production volume, precision waterjet cutting.

Additional features include

- ♦ Robust industrial design for high demand production and performance.

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- ♦ +/- 0.005" precision ball screw accuracy with +/-0.001" repeatability across the entire work envelope
- ♦ Retractable cutting arm for unrestricted access to the cutting table
- ♦ Windows NT controller with absolute positioning, automatic point adjustment transforation and motorized Z
- ♦ Standard integrated 50 hp intensifier pump with garnet delivery system
- ♦ Adaptable for multiple cutting heads
- ♦ System operation training, maintenance training and PaR installation is included.

For more information, call 651-484-7261 or visit www.par.com.

Upcoming Events

2002

October 16-18, 2002

BHR Group 16th International Conference on Waterjetting: New Developments, Applications, Technologies, Centre de Congres, Aix-en-Provence, France. Technical papers and case studies are invited for presentation on all aspects of waterjetting in a variety of areas. Contact Emma Abson, Conference Organizer, BHR Group Limited, The Fluid Engineering Centre, Cranfield, Bedfordshire MK43 0AJ, UK, phone [44](0)1234-750422, fax: [44](0)1234 750074, e-mail: eabson@bhrgroup.com, web: www.bhrgroup.com

November 3-7, 2002

SSPC 2002, the Industrial Protective Coatings Conference and Exhibit sponsored by The Society for Protective Coatings, Tampa Convention Center, Tampa, Florida. Visit www.sspc.org, call 412-281-2331 or write 40 24th Street, 6th Floor, Pittsburgh, PA 15222-4656.

2003

May 18-22, 2003

7th Pacific Rim International Conference on Water Jetting Technology, Seogwipo KAL Hotel, Jeju, Korea. Abstracts are now being accepted for the program. Contact Conference Chairman Prof. Chung-In Lee or Conference Secretary General Dr. Wan-Mo Kim, The Korean Society of Water Jet Technology, Research Institute of Energy & Resources, Seoul National University, San 56-1 Shilim-Dong, Gwanak-Gu, Seoul, 151-742, Korea, phone +82-2-880-7233, fax +82-2-873-2717, e-mail: kswjt@kojet.org, web site: www.kojet.org

August 16-19, 2003

WJTA American Waterjet Conference, Adam's Mark Hotel, Houston, Texas. **Celebrating the 20th Anniversary of the WaterJet Technology Association.** Visit www.wjta.org, e-mail wjta@wjta.org, call (314)241-1445 or fax (314)241-1449.

Technical Support Via The Internet

Flow International Corporation is harnessing the power of the internet with FlowLINK, an innovative technical support option that delivers an enhanced level of customer service.

FlowLINK allows Flow's service technicians to remotely access customers' waterjet machines using a standard telephone line and modem. Using FlowLINK, technicians perform real-time diagnostics, remote troubleshooting, data analysis, software updates, and periodic maintenance to waterjet machines around the globe.

"Flow is constantly seeking new ways to provide better, faster service to customers, and FlowLINK gives us

the ability to do just that," says Dave Fuller, aftermarket director for Flow International.

FlowLINK features:

- ♦ Remote interactive technical support to reduce maintenance cost and downtime.
- ♦ Data sent over a standard phone line to increase machine accessibility.
- ♦ "Plug and play" technology access with no internet service provider needed. Customers simply plug the machine into a phone line, and use a separate line for live.

communication with Flow's technicians.

"FlowLINK is the logical next step in providing superior service to our customers," says Michael Ruppenthal, director of marketing at Flow International. "Our customers will derive tremendous benefit from being able to receive real time assistance in a particular waterjet cutting application from one of our worldwide technical support centers. FlowLINK allows us to provide the ultimate 'whole product solution' and really give our customers the value-added service they need to be competitive."

For more information, call 253-850-3500 or visit www.flowcorp.com

Request the Best...

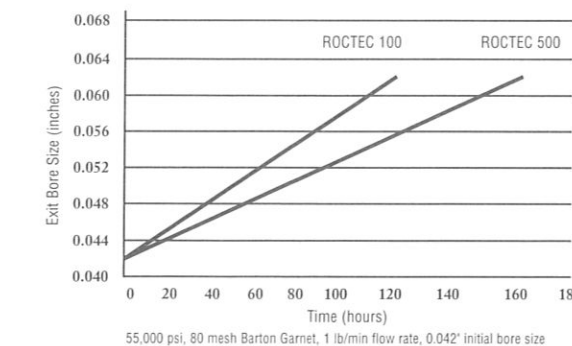
Roctec® 500

Abrasive Waterjet Nozzles!

Roctec 500 nozzles are the industry's most wear-resistant, long-lasting nozzles. Tests prove Roctec nozzles perform up to 30% longer than competitive brands.

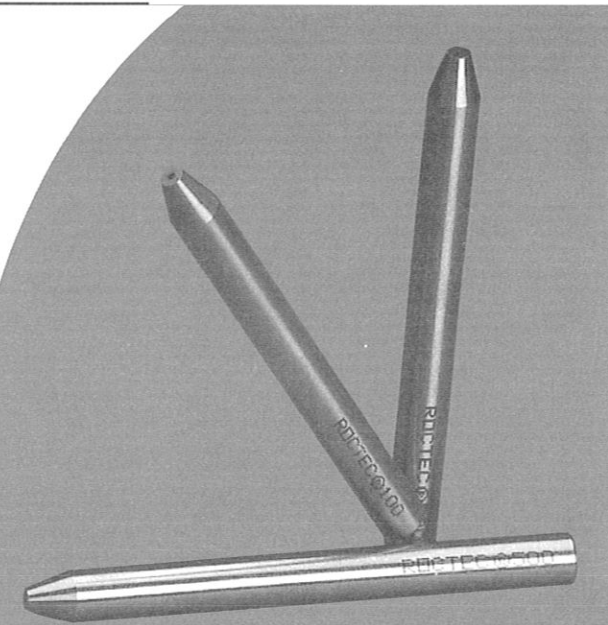
Reduce system downtime, increase cutting speed and maintain cutting precision with Boride Roctec 500 nozzles.

Abrasive Waterjet Nozzle Performance



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For details, contact:

Boride Products
2879 Aero Park Drive
Traverse City, MI 49686
Phone: 800-662-2131 or 231-946-2100
FAX: 800-662-2132 or 231-946-3025
www.boride.com