WJTA Jet News

WaterJet Technology Association

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The Berger Fountain, Minneapolis, Minnesota

Photograph by Chris Niesen.

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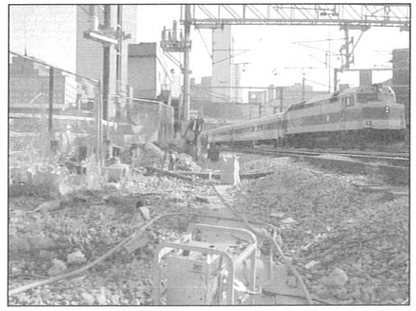
Low Profile Abrasive Jet Cutter At Work In Boston's "Big Dig" Project

AK Services of Everett, Massachusetts, was contracted by *freezeWALL*, a division of Monotrench America Corp. to fabricate a unique abrasive jet cutter and employ it to cut steel refrigeration tubes used to freeze ground in a railroad yard as part of Boston's "Big Dig" project. The refrigeration pipes (three-inch schedule 80 and four-inch schedule 40 insulated steel pipes), located in and around the tracks, are being cut off four feet below grade and removed. This process is to be completed without disrupting the operation of the railroad.

The abrasive jet cutting tool has a low profile—a height below the level of the top of the rail. A rotatable abrasive jet cutter is inserted into the pipe. This device cuts through the three-inch and four-inch freeze pipes and insulation during a single cut in a 15-minute revolution. This cutter uses a 36,000 psi, 5 gpm waterjet (generated by a Jet Edge pump) and garnet abrasive.

This remote-controlled low profile abrasive jet cutter was chosen over other methods of freeze pipe removal (oxygen-acetylene cutters, electrical-plasma cutters, electrical-pneumatic cutters, mandrel-driven cutter and jacking systems) because it was safer, less troublesome and did not disrupt the operation of the railroad.

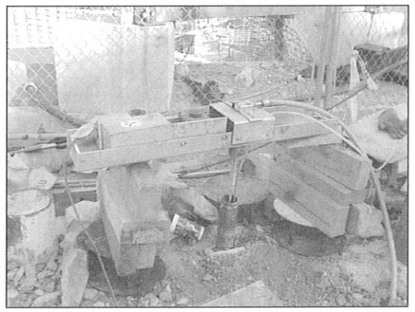
Work site at I-90/I-93 interchange in Boston.



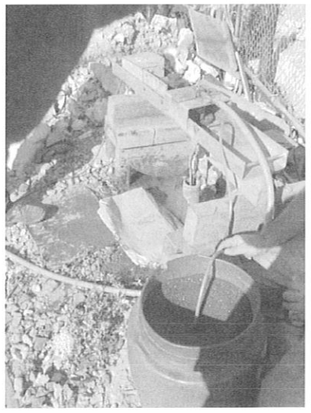
Work site adjacent to active tracks.

Working adjacent to the active tracks.

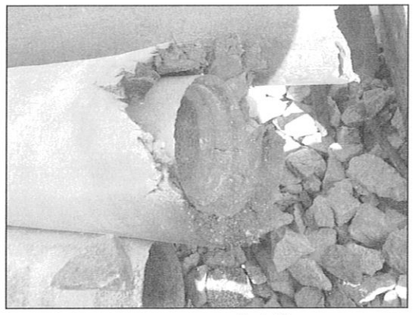
Worker on site.



Nine-sixteenths-inch Autoclave tubing inside a three-inch schedule 80 freeze pipe.



Feeding garnet abrasive into pipe cutter.



Cut-off insulated pipe. Black rubber insulation shown on the outside of a four-inch pipe. Three-inch pipe shown inside of four-inch pipe. The presence of the rubber insulation ruled out the use of thermal cutters on this job. Waterjet cutting being a cold-cutting method was the superior choice for this application.

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A limited supply of the 6th and 7th Conference Proceedings are available for the cost of shipping (varies depending on destination). Contact WJTA for details.

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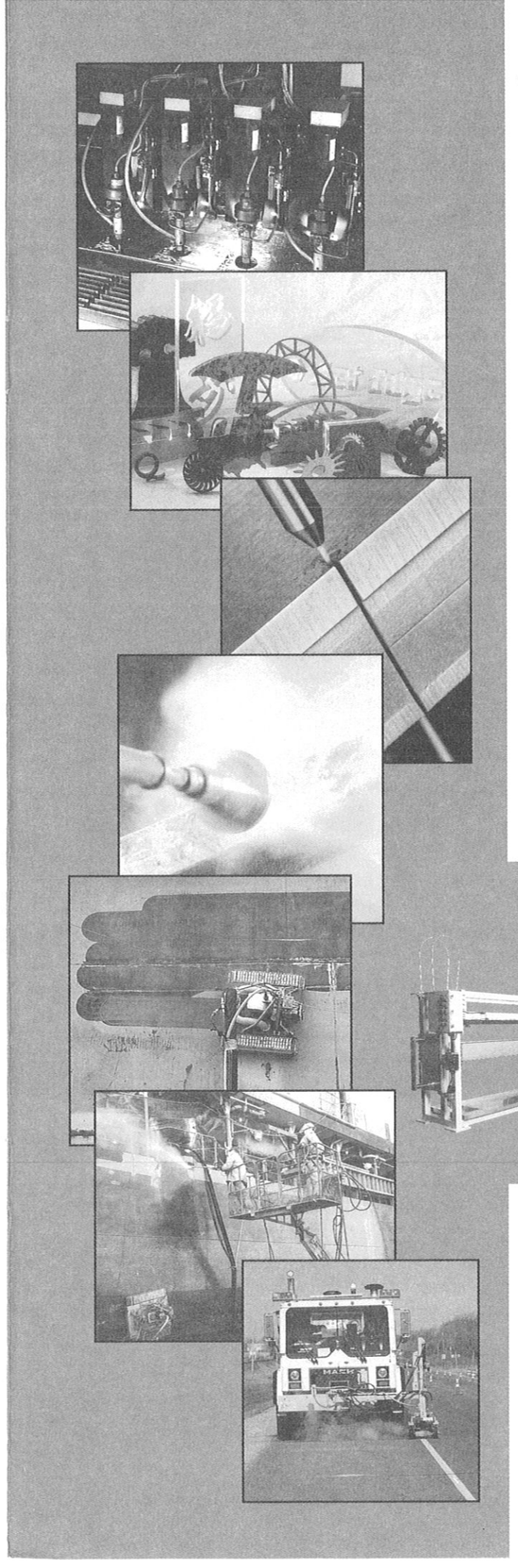
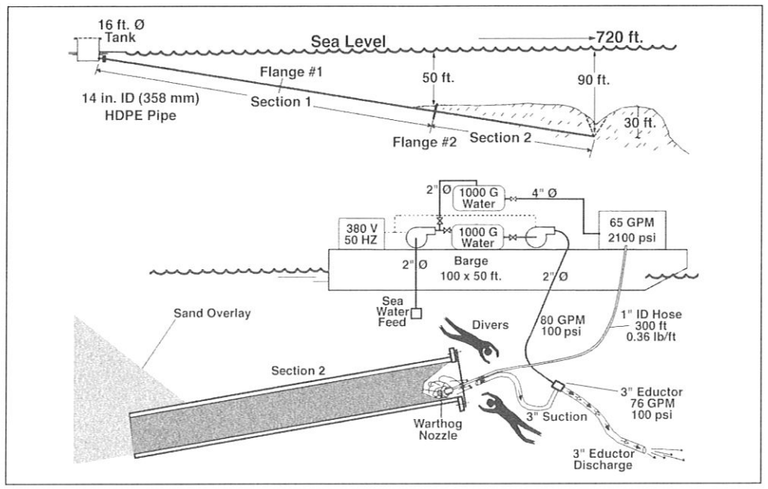


Waterjets Unplug Underwater Tailings Pipeline In Chile

Having plugged a 16 inch diameter, 720 foot long tailings line, a Chilean mining company turned to StoneAge distributor Nexxo Ltda. for equipment and know-how that would restore operation. The plugged section was 220 feet long, 50 to 90 feet below sea level, about 700 feet from shore. A 100 HP positive displacement pump was available for the jetting operation, with specifications similar to large sewer jetting trucks commonly used for cleaning municipal sewers. StoneAge's Warthog model WG-1 self-rotating nozzle was a perfect match for this pump, but the job presented a few challenges not typical for municipal sewer jetting. The equipment needed to be located on a barge, moored over the plugged line. The operation required divers to get the jetting tool in place. Also, it was important that the job be successful the first time attempted, due to the cost of the off-shore operation, and the severe restriction the plugged line placed on shore operations.

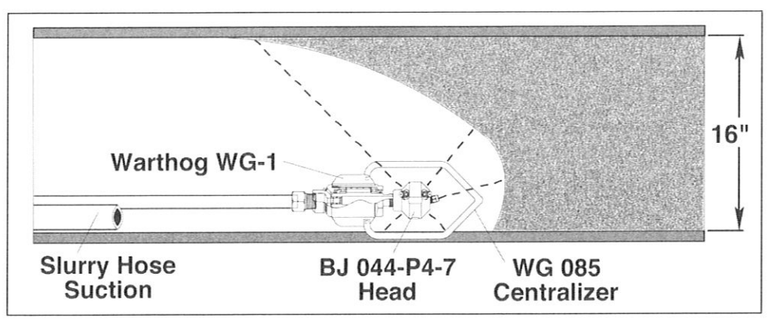


The ability of the Warthog nozzle to slurry the granular tailings was not a concern. Instead of the usual sewer jetting head, a versatile BJ 044-P4-7 head was fitted on the Warthog, allowing several different jet configurations. Two forward jets at 45° and two pulling jets at 135° proved to be an effective configuration on the Warthog. To keep the nozzle from burying itself in the plug, a WG 085 Super Centralizer was used. It was positioned further forward than usual, by reversing the standard skid used on the WG-1. However, like cleaning sand from a sewer, we needed a way to prevent the solids from settling out a few feet back from the nozzle. A three-inch eductor was used like a vacuum cleaner, with suction just behind the Warthog nozzle. It was powered by a centrifugal pump also located on the barge, and could remove slurry at 50 gpm, discharging against 40 psi - the pressure at 90 ft. water depth.

Divers separated the flange to isolate the plugged section of pipe, and introduced the jetting tool to start the unplugging operation. The job was successfully completed in only 8 hours of jetting, even though inclement weather stretched the entire operation to two days.

Our thanks to Nexxo's Horst Jander, located in Valparaiso, Chile for submitting this case history. Nexxo is both a supplier of waterblast equipment and an engineering consultant. Horst's knowledge of the equipment, and procurement of the Warthog, eductor, tanks, and hose for this job was the key to a quick and successful solution of a major problem for the mining company.

Article, illustrations reprinted courtesy of StoneAge Waterjet Tools, Durango, Colorado.



New WJTA Safety Video

The WaterJet Technology Association (WJTA) will soon release **Recommended Practices**, the companion video to the WJTA publication *Recommended Practices for the Use of Manually Operated High Pressure Waterjetting Equipment*. The **Recommended Practices** video is scheduled to be on display at the WJTA Conference, August 18-21, 2001, in Minneapolis, Minnesota.

The new video is a visual depiction of many of the major topics in the WJTA's *Recommended Practices for the Use of Manually Operated High Pressure Waterjetting Equipment*, Third Edition. The WJTA's Recommended Practices includes suggestions for the operation of all types of manually operated high pressure waterjet equipment used by the construction, maintenance, repair, cleaning and demolition industries.

This video is an excellent training tool and supplement to operator training programs for businesses that use high pressure waterjet technology.

Pre-release orders are being taken for the **Recommended Practices** video. Prices are $49.95 each for WJTA members, $99.95 each for nonmembers. Discounts are available for bulk purchases. Shipping charges are in addition to the video charge and may vary depending on destination, i.e., international orders will be quoted on individually.

An order form is enclosed for your convenience.

Member News, from page 11

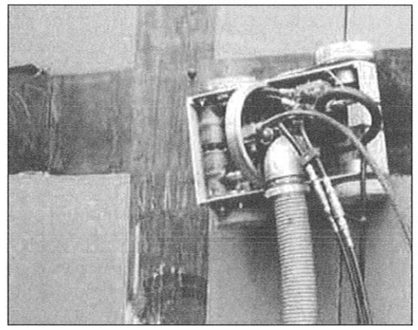
tally friendly and non-sparking abrasives. The MaxxStrip and SoftStrip are fast, cost effective methods for cleaning and surface preparation.

Universal Minerals is distributing a new rust inhibitor, **Rust Arrest 30**, blended at Universal Minerals' Louisville, Kentucky, plant. Rust Arrest 30 is an Amine based solution comparable to Hold Tight and Sharp Chem at a fraction of the cost.

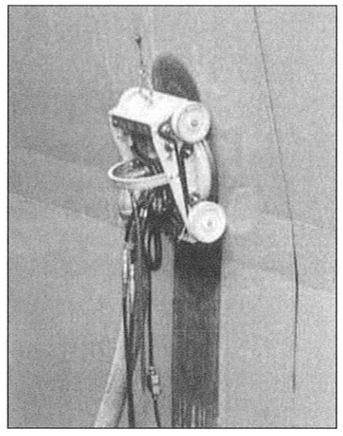
For more information, contact Melanie Delfakis, Universal Minerals, tel: 800-528-7086, ext. 37, or visit the web sites: www.universalminerals.com or waterjetsupply.com

WOMA Introduces Emission-Free Vacu-Crawler

WOMA Apparatebau GmbH, Duisburg, Germany, a world leader in high-pressure waterjetting Technology, has introduced a newly developed remote-controlled, automatic jetting system for large scale surface preparation projects. The Vacu-Crawler is well suited to cleaning, paint stripping, and rust removal applications on ship hulls, large storage tanks, concrete walls as well as steel and concrete floors. The system operates emission-free due to a sealing system and vacuum unit that sucks away water and removed material.



Hydro-Crawler moving in any direction; note the attached vacuum hose.



Hydro-Crawler in operation on a large-scale storage tank.

The vacuum generated also provides the basis for the crawler to adhere itself to the surface. A Vacu-Crawler cleaning system consists of the following basic components: Vacu-Crawler, high-pressure unit with high-pressure hose, vacuum unit, remote-control with cable, control panel for wireless remote-control. Via the control panel, the operator controls all basic operational functions of the crawler. The crawler can move in any direction and handles surface corners and curvatures.

The production rates of the Vacu-Crawler are very high; typical rates being between 80 and 120 m^2/h, (861 - 1291 sq.ft./hr) for paint stripping applications.

Technical data: Maximum operating pressure - 2,500 bar (36,000 psi); Width vacuum cover shield - 500mm (19.7 in); Working width - 420mm (6.5 in); Total Width - 550mm (21.6 in); Weight - approximately 90 kg (198 lbs); Travel speed - up to 280m/h (918 ft/hr.).

For more information, contact: WOMA Corporation, P.O. Box 6793, Edison, NJ. 08818, Tel: 800-258-5530, Fax: 732-417-0015, e-mail: womacorp@bellatlantic.net, www.womacorp.com

Papers To Be Presented At The 2001 WJTA American Waterjet Conference, August 18-21, 2001

- 800 MPa Pure Waterjet and Abrasive Waterjet Cutting - What's Next, F. Trieb and K. Zamazal
- AWJ To Machine Free Form Profiles in Natural Stone, L. Carrino, M. Monno, W. Polini and S. Turchetta
- Abrasive Cutting Comparisons, R.D. Fossey, D.A. Summers, M. Johnson, D. Burch, J.W. Newkirk and G. Galecki
- Abrasive Waterjet & Metal Material Interaction Dynamics, J.F. Urbánek
- Abrasive Waterjet Cutting a Comparative Study Between Open Catcher Tank and Water Catcher Tank, I. Kain and J. Munoz
- Abrasive Waterjet Machining of Aluminum with Local Abrasives, O.V. K. Chetty and M.K. Babu
- Advanced High-Pressure Waterjet Cleaning Systems for Investment Casting Foundries, J. Tebbe
- Advanced Waterblast Tools Pay for Themselves, J. Wolgamott, D. Wright and M. House
- Comparison of Surface Preparation Using Different Methods, L.E.O. Trotter
- Cutting of Hollow Structures with Polymer Supported Abrasive Water Suspension Jets, H. Louis and Ch. von Rad
- Cutting of Reinforced Concrete Using Abrasive Suspension Jet, A. Bortolussi, R. Ciccu and B. Grosso
- Development and Design of Self-Rotating Forced Pulsed Waterjet: Basic Study and Applications, M.M. Vijay, W. Yan, A. Tieu and C. Bai
- Development of a Generic Procedure for Modeling of the Waterjet Cleaning, K. Babets and E.S. Geskin
- Development of a Technology for Fabrication of Ice Abrasives, E.S. Geskin, B. Goldenberg and D.V. Shishkin
- Development of the PREMAJET Derusting Machine, Z. Dongsu, L. Benli, J. Beihua and L. Lihong
- Difference and Similarity of Glue Removal for Airport Concrete Runway and Bitumen Runway, S. Xue, Y. Fan, H. Peng, W. Huang, Z. Chen, T. Jiang and L. Wang
- Disintegration of Rocks Exposed to Laser Beam by Waterjet, L.M. Hlaváč, P. Martinec and A. Jančárek
- Electrostatic Charge Generation in Waterjet Systems, P.L. Miller
- Empirio-Analytical Method a Good Means of Water Jetting Technology Investigations, B.V. Radjko
- Environmental Evaluation and Management of AWJ Process, J. Urbánek
- Experimental Studies of Jet Cavitation Noise Spectrums in Oil Well Casing, G. Li, Z. Huang, D. Zhang and J. Niu
- Experimental Studies of Swirling Jet for Hole Drilling, Y. Yang, Z. Shen, R. Wang and W. Zhou
- Field Experiments of a City Street Fence Water Jet Cleaner, J. Wang, L. Yang, S. Jing and W. Liu
- High Pressure Water Jet for Mining Red Sea Egyptian Phosphate, A. A. El-Saie

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Debut In Eastern Europe for Aquajet's Hydrodemolition Robot

Czech contractor DSH has recently taken delivery of Eastern Europe's first HVD-6000 hydrodemolition robot from Aquajet Systems. Delivered in April 2001, Eastern Europe's first Aquacutter HVD-6000 robot is also one of the first hydrodemolition units ever to appear in this part of Europe. According to Petr Hrancik, project manager for DSH, hydrodemolition technology is still in its infancy in Eastern Europe and contractors are still loath to spend money on a relatively unknown method.

"Having one of the first hydrodemolition machines in Eastern Europe puts us in a strong position to sell this method of concrete removal as a quick and cost effective alternative to traditional methods," says Hrancik.

DSH's Aquacutter robot is currently working on a bridge rehabilitation project 20km southeast of the Czech capital Prague.

Linking Prague with the country's second largest city of Brno, the 200km-long D1 motorway is the busiest highway in the Czech Republic. Opened in the early 1970s a number of bridges along its route are in need of renovation, according to official sources.

The first bridge is in fact two parallel structures each carrying two lanes of traffic over a narrow river gully. The bridges, separated by a 1m gap, are 197m in length, with each two-lane structure measuring 14m in width. The highest point of the structure over the gully is 14m.

The project began in early June 2001, and one-half of the bridge is expected to be completed by October, with the remaining half due to begin next year.

According to Hrancik, Czech governmental regulations stipulate construction work of this kind cannot be carried out in winter, due to the severe conditions.

The two parallel structures were constructed from round prefabricated hollow concrete beams, each measuring 27m in length and with a circumference of 1.5m. On top of this a 0.5m thick concrete monolithic load-bearing slab was laid which is covered by a 17cm deep layer of asphalt.

Currently the HVD-6000 unit is working two narrow 120cm wide paths that are raised approximately 30cm above the surface of the road and extend along the length of the bridge, either side of the traffic lanes.

Diagnostic tests were carried out this year with the results showing the bridge's concrete surface was in need of repair. "Poor quality concrete used when the bridge was originally built combined with the effects of salt, spread on the highway during winter, had contributed to the worsening condition," commented Hrancik.

Marks were first laid along the concrete path to indicate the areas were damaged concrete had been detected. The Aquacutter HVD-6000 robot is removing concrete to various depths along these paths, depending on the extent of damaged concrete. The maximum depth of concrete removal

(continued on page 9)

The Berger Fountain, Minneapolis, Minnesota, from page 1

The Berger Fountain is located in Loring Park in Minneapolis, Minnesota, one block from the Hyatt Regency Hotel on the Nicollet Mall, the headquarters for the 2001 American Waterjet Conference to be held August 18-21, 2001.

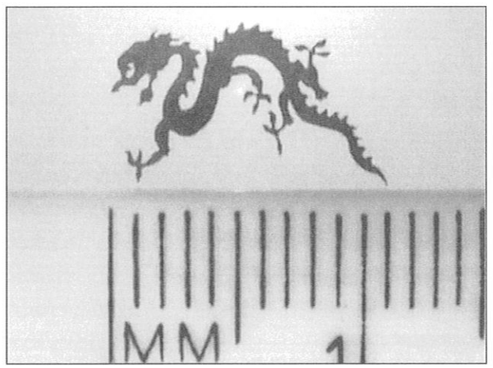
The fountain is named after its donor, Ben Berger, who was the owner and cofounder of the original Minneapolis, now Los Angeles Lakers, professional basketball team.

The fountain, designed by architect Robert Woodward of Sydney, Australia, is a replica of a fountain in Sydney. The pool at the base of the fountain is different from the Australian version.

The pumping, recycling and filtration systems are underneath the fountain. The fountain has about 250 jets, each with a flow of about four gpm.

Papers To Be Presented At The Conference, August 18-21, 2001, from page 5

- Hydro-Balanced Packing System for High Pressure Pumps, M.T. Gracey
- Hydrodynamic Generator for Ultrasonic Modulation of the Jet: Basic Study, L. Sitek, Z. Řiha, J. Foldyna and L. Lhotáková
- Impact Initiation Mechanisms of High Explosive Materials During Waterjet Demilitarization, P.L. Miller
- Influences on Structure Formation at the Cutting Edge with Abrasive Waterjets, A. Henning, R. Friedrich, T. Ditzinger, T. Kübler, E. Westkämper and G. Radons
- Investigation of a New Cutting Head Concept Based on an Annular Driving Jet, U. Suchy
- Investigation of Metal Piercing Using High-Speed Water Slugs, O. Petrenko, E.S. Geskin, B. Goldenberg and G.A. Atanov
- Laboratory Research for Water Jet Material Surfaces Cleaning, S. Radu, N. Ilias, A. Magyari and A.A. Magyari
- Limitations to the Use of Waterjets in Concrete Substrate Preparation, G. Galecki, N. Maerz, A. Nanni and J. Myers
- Macro Characteristics of AWJ Turned Surfaces, M. Hashish
- Micro Abrasive Waterjet Cutting, D.S. Miller
- Modeling and Simulation of Abrasive Water Jet Cut Surface Topography, N.R. Babu and G. Vikram
- Modulated vs. Continuous Jets: Performance Comparison, J. Foldyna and L. Sitek
- Numerical Investigation of Chaotic Motion for Cavitation Bubble in Oscillating Pressure Field, F. Zhang, Z. Liao, C. Tang and L. Yang
- Numerical Simulation of Abrasive Water Jet, D. H. Ahmed, E. Siores, J. Naser and F. L. Chen
- Numerical Study of the Turbulent Flow Inside a Pure Waterjet, K. Babets and E.S. Geskin
- Optical Method for Surface Analyses and Their Utilization for Abrasive Liquid Jet Automation, J. Valíček, M. Držík, M. Ohlídal, V. Mádr and L.M. Hlaváč
- Optimizing Water Blast Power, D. Wright, G. Zink, and J. Wolgamott
- Performance of Water Jet Cutting System in Dimension Stone, C.T. Lauand, G.R. Martin C., W.T. Hennies and M. Agus
- Reducing Abrasive Consumption by Using SUPERWATER® for Venturi Abrasivejet Cutting, W.G. Howells and V. L. Imlay
- Removal of Non-Skid Coatings From Aircraft Carrier Decks, T. Kupscznk and J. Van Dam
- Research of Waterjet Interaction with Submerged Rock Materials, L.M. Hlaváč, I.M. Hlaváčová, M. Kušnerová and V. Mádr
- Results of Comparative Nozzle Testing Using Abrasive Waterjet Cutting, D.A. Summers, R.D. Fossey, J.W. Newkirk, G. Galecki, M. Johnson, D. Burch and G. Olson
- Study on the Flow Characteristics of Free Water Jet Based on Hyperbola Flow Line Structure, S. Jiang and M. Fang
- Testing of Mineral Types of Abrasives for Abrasive Water Jet Cutting, J. Foldyna, P. Martinec and L. Sitek
- The Development of Improved High Pressure Valves, G. G. Yie
- The Electro-Aerosol Jet Cleaning the Grease and Impurity on the Metal Surface, Z. Liao, C. Tang, F. Zhang, X. Deng and S. Zhang
- The Hydro-Cannon Nozzle Optimization, G. Atanov
- The Removal of Hardened Grease Deposits from Steam Dryers in a Paper Mill First Successful Contract Application of Forced Pulsed Waterjet, M.M. Vijay, W. Yan, A. Tieu, C. Bai and J. Szemeczko
- The Study on the Breaker of Self-Excited Oscillation Pulsed Jet to Scour the Hard Clay and Rocky Beds Under Water, C. Tang, F. Zhang, L. Yang, Z. Liao
- The Use of the Theory of Sonics for Producing High Pressure Pulsatory Water Jets, A. Magyari, N. Ilias, Gh. Roman and S. Radu
- Turning a Liability Into an Asset! The Story of an Old Power Plant, R. Dupuy, R. Ashworth and L. Frenzel
- Ultra High Pressure Waterjet Peening - Part I: Surface Texture S. Kunaporn, M. Ramulu, M. Hashish and J. Hopkins
- Ultra High Pressure Waterjet Peening - Part II: High Cycle Fatigue Performance, S. Kunaporn, M. Ramulu, M. Hashish and J. Hopkins
- Using Porous Lubricated Nozzles to Prevent Nozzle Wear in Abrasive Water Suspension Jets (AWSJ), U. Anand and J. Katz
- Waterjet Cleaning of Truck-Mounted Concrete Mixing Tanks, A.L. Miller, G.W. King and G.A. Savanick
- Waterjet Technology Challenge to Meet New Expectation, J. Russell
- Waterjet Use in Sculpting Large and Small Objects, D.A. Summers, J.G. Blaine and L.J. Tyler



Dragon shape cut from 150 micron thick stainless steel using a 50 micron diameter abrasive waterjet. Photograph provided courtesy of D.S. Miller, Miller Innovations, Harrold, Bedford, UK.

Photo taken from D.S. Miller's paper, "Micro Abrasive Waterjet Cutting," to be presented at the 2001 WJTA American Waterjet Conference in Minneapolis, Minnesota, August 18-21, 2001.

BIG Savings On Shipping Costs!

WJTA corporate members can take advantage of considerable discounts on shipping costs by using a new online freight service made available through WJTA and freightquote.com. **One WJTA corporate member recently saved $2,000 off a $12,000 shipping charge thanks to FREIGHTQUOTE's competitive rates.**

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Contact WJTA today to obtain your access code/PIN and then log on www.freightquote. com to enroll and start saving today! If you do not have internet access, or if you would like to speak directly to a freightquote representative, call 1-888-595-5664. NOTE: Individual members are welcome to use this service, but the special discounted rates are available only for WJTA corporate members. For information about upgrading your membership, contact the WJTA office.

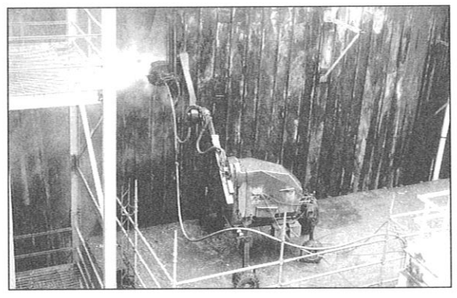
Waterjets Assist In Repair Of Nuclear Submarine Dry Docks

The versatility of a Conjet Robot 363 concrete hydrodemolition machine, owned by the US specialist concrete repair contractor A&B Coring Company, has been successfully demonstrated during the company's approximate US$750,000 contract to assist in the repair and renovation of two huge nuclear submarine dry-docks on the Thames River at Groton, Connecticut. The entire protective gunite coating on the docks' steel sheet piled walls had to be removed and rust cleaned from the piles, which were corroding from salty seawater seeping through the porous gunite.

The flat section steel sheet piles, driven in a series of semi-circular cell sections forming the 41-foot (12.5 m) high walls of the two dry-docks, have suffered from extensive chloride attack. Salt in the seawater has penetrated the gunite covering through surface cracks, porosity, and capillary attraction. The ingress of salt has accelerated corrosion of the underlying steel, which has expanded as it corroded causing cracking and bursting of the surrounding gunite.

A&B Concrete Coring Company, based in Zachary, Louisiana, was able to quickly and easily adapt its high pressure waterjetting Conjet Robot 363 to suit gunite and rust removal from the steel sheet piles. The company started the project using a standard single oscillating nozzle on a feed beam mounted on an extension arm to the Robot's four-wheeled hydrostatically driven carrier, which A&B had to modify to cater for obstructions on the docks' floors. But the company replaced the standard nozzle with a Conjet hydraulically driven spinning rotor head, equipped with four nozzles, which was considerably faster and produced a cleaner surface.

"The sheet piled walls were covered with a three-inch layer of gunite, which had deteriorated and allowed seawater to attack the steel piles," says A&B Concrete Coring Company President Richard Jones. "We removed the bulk of the gunite with a remotely operated Brokk breaker and then started on the residual gunite using the Conjet's single oscillating nozzle system. But this left streaks on the piles and, although it produced an acceptable surface, decided to change over to the Conjet rotor system. The Conjet rotor worked exceptionally well and took off the gunite and the rust, leaving a very clean surface for the painting to follow on."



"There were a lot of obstacles on the docks' floors, such as jacking supports, which could not be moved. So we made some extension legs for the Conjet Robot and raised it two feet (600 mm) to negotiate these obstructions," adds Jones. "The Conjet was then able to clean all the way round the walls to a height of about 21 feet (6.4m). We then built a moveable scaffold platform 40 feet (12.2 m) long, 12 feet (3.66 m) wide, and 20 feet (6.1 m) high and put the Conjet on that and removed the gunite from the top half of the walls. We had to remove and clean a total area of about 145,000 feet^2 (13,470 m^2) from the two docks and were able to do this at up to 300 feet^2/h (28m^2/h) with the rotor system, which was about two to three times faster than with the single waterjetting nozzle."

The high pressure water for the Robot 363 was provided by a complementary diesel driven power pack housed in a silenced 20-foot (6.1 m) long ISO container. Water at a pressure of 21,750 psi (1480 bar) and flow of 30 US gallons /minute (113 litres/min) was fed through a flexible hose to the Conjet Robot's nozzle and rotor from a Hammelmann HDP 353 high pressure pump driven by a 442 hp (330 kW) Caterpillar 3406B diesel engine.

The two dry docks, one 550 feet (168 m) long by 75 feet (23 m) wide and the other 690 feet (210 M) long by 99 feet (30 m) wide, are part of a private shipyard owned by Electric Boat Corporation, which builds, repairs and re-fits nuclear submarines for the US Navy. "We have three graving docks and two of them were built in 1961 and 1964. The steel sheet piled walls in these two docks were later covered with a gunite protective coating. But the gunite started deteriorating, causing the piles to start rusting so we decided to take off the gunite and apply a special protective paint coating instead," says Electric Boat civil engineering supervisor Bill Brazicki.

"I originally planned to use grit blasting to remove the gunite and clean the piles. But A&B suggested the Conjet hydroblasting alternative and as it turned out it worked fine. I was very impressed with the Conjet equipment. This was my first experience with hydroblasting and thought it was great and very efficient. A&B did a very good job and was very pleased with their performance. We have a couple of other similar jobs coming up and would have no hesitation in using A&B's Conjet hydro blasting system again."

For more information, contact: Lars-Goran Nilsson, Conjet AB, PO Box 507, S-136 25 Haninge, Sweden, tel: +46-8-741-3940, fax: +46-8-741-3960, e-mail: conjet@conjet.se, web: www.conjet.com, or Stephen Toms, National Hydro Inc., 5643 Warner Road, Fowlerville, MI 48836, tel: 1-517-223-0915, fax: 1-517-223-9525, e-mail: toms@ismi.net

Debut In Eastern Europe for Aquajet's Hydrodemolition Robot,

from page 6

has been in the region of 7cm, with some areas not requiring repair work at all.

The unit has the option of up to four different speeds, all of which can be utilised on the same overpass. The unit's nozzle angle can also be altered from –44 to +44 degrees. Differing speeds and angles are programmed into the machine's on-board computer to correspond with the project's damaged concrete. The operator controls the unit via a remote control system.

The power of the water jet corresponds with the speed and angle of the nozzle, and this in turn corresponds with the depth and strength of the concrete to be removed.

The unit's computer allows for the most efficient and effective removal of concrete and also provides tracking of production rates and operating hours, all stored in a memory bank.

As Hrancik commented, "The Aquacutter robot carries out a selective process leaving behind the desired concrete surface, while also leaving behind a superior bonding surface with no cracks."

During the process rebars are cleaned of all rust and concrete by the water jet and they are left damage free. The hydrodemolition method has been proven to be faster than traditional jackhammer methods, and causes no dust pollution.

Once all of the damaged concrete has been removed, the pathways will have a new concrete surface that will be 5cm higher than the original surface. DSH estimates that a total of 70m^3 of concrete will be used on the first half of the bridge.

The diesel powered HVD-6000 robot is working in conjunction with a Woma power pack pump driven by a 480kW MAN engine. This is supplying 1000bar pressure and 250 litres of water per minute.

DSH are currently awaiting the test results from the bridge support columns and underneath sections. Once these are ready a decision will be made on whether to utilise the Aquacutter unit on these areas or not.

B ased in the town of Uherské Hradište, DSH employs over 250 people. With a number of construction divisions, the company specialises in renovation and concrete repair and generally works in the Czech Republic and Slovakia.

"Since acquiring the Aquajet robot, we expect to do more work in other Eastern European countries, particularly when the benefits of hydrodemolition become apparent," says Hrancik.

For more information, visit Aquajet's web site: www.aquajet.se or contact: John Hooper, Joem Promotions, 14-16 Broad Street, Deal, Kent CT14 6ES, England, tel: +44-1304-368688, fax: +44-1304-375181, e-mail: val@joempr.demon.co.uk

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Bohler Opens Subsidiary, from page 13

Future Activities

As in recent years, BOHLER will be represented at the WJTA Conference by Franz Trieb, Vice President of Bohler Hochdrucktechnik and President of BFT Fluid Tech. This year, the Austrians will also be presenting their products in a booth at the conference exhibition. "To a certain extent, we regard ourselves as missionaries of this highly innovative technology. Together with our customers and different research institutes, we are involved in many investigation and research activities – a lot of potential fields of application for the waterjet technology are yet to be discovered," mentioned Franz Trieb.

In November, BFT Fluid Tech Corp. will participate in FABTECH in Chicago, demonstrating to the visitors a complete cutting system and showing a high pressure pump in operation.

F. Trieb (President BFT), Mrs. H. Aichhorn (Controller BFT), Dr. H. Aichhorn (President Bohler Hochdrucktechnik.), J. Moser (President STM), K. Zamazal (VP BFT), T. Tuckerman (C.S.R. BFT)

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The *Jet News* is published by the WaterJet Technology Association (WJTA) and is a benefit of membership in the Association.

Member News

Klaus Zamazal has been named vice-president and chief operating officer for **BFT Fluid Technology Corporation,** 1640 Commerce Road, Holland, Ohio 43528. BFT is a subsidiary company of **Bohler Hochdrucktechnik,** Kapfenberg, Austria. Bohler's waterjet division manufactures high pressure pumps and high pressure components for different applications. Contact BFT by tel: (419)861-9800, fax: (419)861-9700 or by e-mail: zamazal@bftcorp.com

ESAB Cutting Systems has received a patent on its capability to combine thermal and non-thermal cutting processes on a single carriage for its gantry cutting systems. ESAB offers this technology on its Hydrocut waterjet cutting systems, recently introducing a low-rail Hydrocut model that combines a waterjet cutting head, a PT-15 plasma cutting head, a plasma marker and a laser pointer. The combination of waterjet and plasma allows the machine to make intricate cuts in a part's internal geometry with waterjet and high-speed perimeter cuts with plasma. This increases productivity and throughput and greatly reduces cutting costs.

Luis-Gerardo Tores-Rivero, managing director of **TRIBO USA Inc.,** has announced the company's new address: TriBO USA Inc., 1408 Woodhollow Drive, #9211, Houston, Texas 77057, tel: (713)785-3232, fax: (713)785-0266.

The company name for **EasiJet, Inc.,** has been changed to **WARDJet, Inc.,** effective immediately. WARDJet, Inc. will continue to offer information and demonstrations of the Waterjet Abrasive Recycling Dispenser (WARD). Contact WARDJet for more information. Tel: (330)633-7698, web: www.wardjet.com, e-mail: sales@wardjet.com.

New Products, Services, Equipment

Waterjet product removal is featured in a new NLB brochure, available free from NLB Corp.. The brochure shows how high-pressure waterjetting solves difficult product removal problems in diverse industries, demonstrates waterjetting in action and shows the results in "before and after" photographs.

The six-page, four-color brochure also highlights NLB's turnkey solution capabilities. These include a broad range of high pressure and ultra high pressure pumps and accessories (up to 40,000 psi, or 2,800 bar), application engineering, manufacturing, training, testing, and research and development.

Featured applications (among hundreds of popular uses for waterjetting) include reactor and tank cleaning, deburring, dechipping, ceramic investment removal, and pipe and tube lancing. The brochure also explains how productively waterjetting can clean parts, conveyors, fixtures, skids, carriers and clogged screens.

Both manual and automated waterjet systems are shown, as well as waterjet cutting and the comprehensive support available to NLB customers.

For more information, contact Jim Van Dam, tel: (248)624-5555, fax: (248)624-0908, or visit NLB's web site: www.nlbcorp.com.

Universal Minerals, Inc., has introduced new water soluble abrasives called **MaxxStrip and SoftStrip Blast Media.** Both the MaxxStrip and Softstrip are used extensively for general cleaning and paint removal in a wide variety of commercial and industrial applications. Both water soluble abrasives can be used in pneumatic systems and in low (500 psi) and ultra high (40,000 psi) water blast systems. Both are environmen-

(continued on page 20)

Bohler Hochdrucktechnik Opens Subsidiary In Ohio

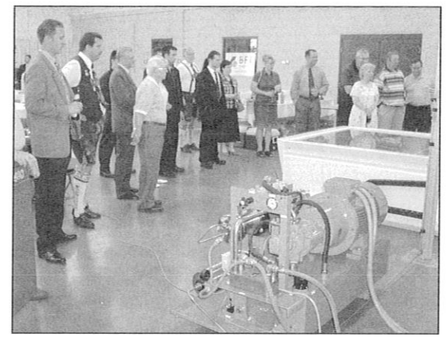
Since 1979, Bohler Hochdrucktechnik has been manufacturing pumps and components for waterjet cutting technology. Europe's biggest pump manufacturer has finally set foot on American soil as subsidiary BFT Fluid Tech Corp. settled in Toledo, Ohio.

BFT's presence in the States goes back to November 1999, but for strategic and capacity reasons, the headquarters relocated from Buffalo, NY to Holland, OH one year later. On the 8th of June 2001, the "Open House Celebration" took place and the spacious new building was inaugurated.

BFT Fluid Tech is a sales and service company. From its base in the vicinity of Detroit, the automotive capital, it offers its customers optimal support in response to their technical requests, and it delivers spare parts directly to the site. The high pressure pumps, renowned to combine high quality with a reasonable price, are still completely manufactured and assembled by the parent company in Kapfenberg, Austria, but installation, technical training, trouble shooting and the complete after sales business is provided locally by a highly qualified and dedicated team from the US division. "Our main concern is to keep our customers happy. That's number one priority!", says Tad B. Tuckerman, the Customer Service Representative. "Of course there are 6,000 miles between Austria and Ohio, but we can deal with approximately 95% of all demands immediately", comments Klaus Zamazal, Vice President and C.O.O. "The remaining 5% may involve a delay of 6 hours or express delivery via air freight."

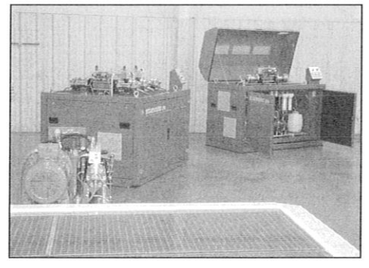
Products

In addition to the tried-and-tested Dynatronic® series, since the end of last year complemented by a big sister, the Dynatronic®408 with a flow rate of 2 gpm and a max. operating pressure of 58.000 psi the company was also successful in introducing the Ecotron® series in the US market. The modular system allows the customer to adapt the high pressure pump to his individual needs, and a wide range of options can be supplied at a highly attractive price. Furthermore, a large number of high pressure components for waterjet cutting like on/off valves, abrasive cutting heads, CNC-controlled metering systems, swivels, fittings, etc. are also available.



The cutting demonstration, X-Y Table from STM and Ecotron 404, during the open house celebration.

In its bid to gain a foothold in the US, Bohler had been joined by STM, also a company from Austria. STM supplies computer controlled XY-tables. Having co-operated for more than ten years, BFT and STM decided to join for the North American market. Customers can now visit the facility near the Toledo airport and see for themselves how a complete and well coordinated cutting system works. Apart from the most common standard sizes for the cutting table, i.e. 5 ft. x 10 ft. and 6 ft. x 12 ft., a wide range of alternative sizes is also available. The tables come as a complete set. Once the Y-axis is mounted and set up, the system can be operated in less than ten hours. A cutting accuracy of +/- 0.006" within 3 ft., encapsulated linear guides, adjustable Z-axis and easy-to-use cutting software are all standard features, while a double head, an abrasive disposal system, etc. are available as an option.



Bohler products featured at the open house included a cutting table, Ecotron 404, the new Dynatronic 408 and the

Facts and Figures

The sales of Bohler Hochdrucktechnik have been increasing steadily in recent years. Together, more than 100 employees in Austria and the US company guarantee high quality and continuous improvement for high pressure systems from 30,000 psi to 145,000 psi. The high pressure pumps division delivers pumps and special systems to customers all over the world. Special projects such as the latest pressure test station in China are positive proof of the wide product range and the impressive overall high pressure know-how. In the year 2000, BFT Fluid Tech Corp., the new subsidiary, contributed nearly one quarter of Bohler's annual pump business. The target for the next years is to stabilize this ratio and grow continually.

(continued on page 15)