



Photograph courtesy of Peggy Savanick.

**Yosemite Falls In
Yosemite National
Park, California.
The average peak
flow is 149,000
gallons per minute.
This flow falls
vertically 2,425
feet.**

See page 9 for a
photograph of Bridal
Veil Falls.

On The Inside

- Air Canada Buys Ultra-High
Pressure (55 Kpsi) Water Jet
System For Jet Engine
Coating Removal* pg. 2
- Customized Instrument
Panel* pg. 3
- Member News* pg. 5
- Abrasive Cutting Of
Glass Plaques* pg. 6
- New Products, Services* pg. 8
- Chemically Reactive
Water Jets* pg. 11
- WJTA Seeks Safety
Videos* pg. 11

WJTA Seeks Video Tapes Of Water Jet Cleaning Applications

The Water Jet Technology Association hopes to expand its video library of water jet applications, particularly in the area of cleaning applications.

If you have video footage that you think may be useful, please forward a written description of material you can donate to the WJTA library.

For information, contact Rhonda Stevens at the WJTA office.

WJTA Administration

Chairman of the Board

Thomas J. Labus
(414)275-5572

President/Newsletter Editor

Dr. George Savanick
(612)432-7594

Vice-President

John Wolgamott
(970)259-2869

Secretary

Dr. Andrew F. Conn
(410)484-3628

Treasurer

Bruce Wood
(614)927-8790

1995-1997 Directors

Paul T. Bowser
(814)833-9000

Dr. Thomas J. Kim
(401)792-2186

Pat DeBusk
(713)499-8611

Forrest Shook
(810)624-5555

Lydia M. Frenzel, Ph.D.
(209)267-0992

Dr. David Summers
(314)341-4311

Dr. Mohamed Hashish
(206)872-8500

Honorary Members

Mohan Vijay, Ph.D.
(613)993-2731

Fun-Den Wang, Ph.D.
(303)273-3653

Association Managers

Mark S. Birenbaum, Ph.D.
Kenneth C. Carroll
(314)241-1445

Air Canada Buys Ultra-High Pressure (55 Kpsi) Water Jet System For Jet Engine Coating Removal

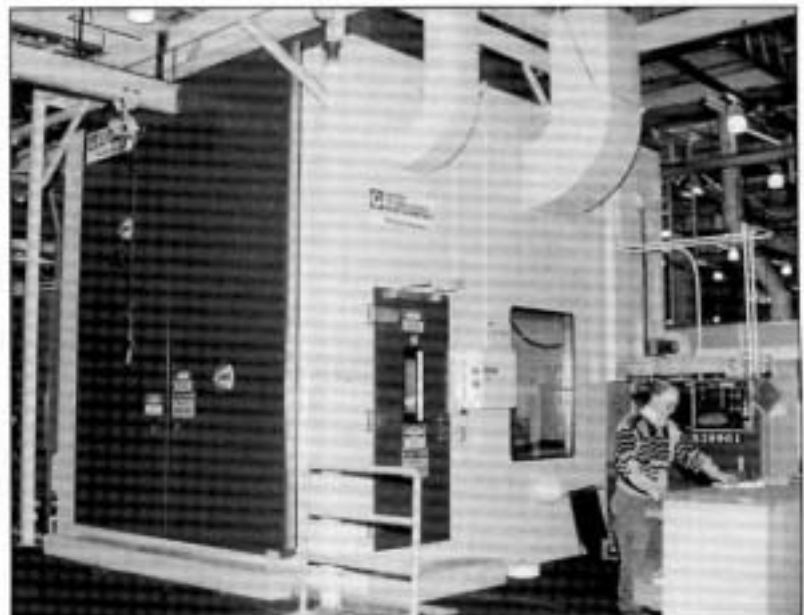
This year, Air Canada will begin using ultra-high pressure (55 ksi) water to remove tenacious coatings from jet engine components at their overhaul and repair center in Montreal.

Air Canada has recently purchased the first system of its kind in Canada, an Engine ARMS®, Automatic Robotic Maintenance System, from Waterjet Systems, Inc. of Huntsville, Alabama, USA. Air Canada's Engine ARMS® will be Waterjet System's 16th system installed throughout the world.

Mr. Alex Lipnicki, Air Canada's Manager of Power Plants Special Processes states, "Our primary goal was to remove plasma coatings without damage to the part. Economic and environmental factors also played a part in the decision to use water jet technology."

This system is an environmentally safe alternative to toxic chemicals, grit blasting and other mechanical processes that have been used for many years throughout the engine overhaul-and-repair industry. With the use of specially designed water jet nozzles, ultra-high pressure water jet technology is able to remove protective engine coatings without damage to the part. The process is robotically controlled so it is safe for the operators as well.

Systems have recently been installed in Singapore at Singapore Airlines Engineering Company and the Naval Aviation Depot in Jacksonville, Florida. Engine ARMS® are also in use at Delta Air Lines, Northwest Airlines, United Airlines, Concurrent Technologies Corporation, USAir, Japan Airlines, Combustor Airmotive Services, Avair Caledonian Engine Services, Lufthansa Technik AG, Corpus Christi Army Depot and three systems in Pratt & Whitney facilities.



This photograph shows Waterjet System's Engine ARMS® enclosure. This enclosure houses the robot and contains the water that is jetted onto the jet engine components.

Polyflex

**Your Rock Solid
Connection to
High Pressure**

**Recognized as the
world leader in high
pressure hose and fittings
for over 27 years.**



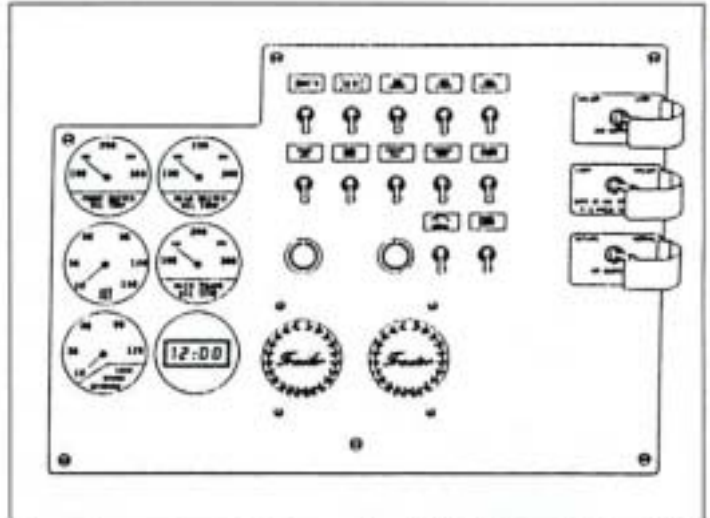
4263 Dacoma, Houston, Tx 77092 • Tele:(800) 446-5236 / (713) 686-5236 Fax: (713) 686-1292

Customized Instrument Panel

Vulcan Waterjet Cutting Services recently began customizing dash and instrument control panels for several major over-the-road truck cabs. Individual owner-operators of the big rigs are now able to choose the instrument configurations they prefer.

Utilizing CAD/CAM software, Vulcan Waterjet designs and programs the cutting of an individual array of holes for gauges, controls, switches and lights in the flat aluminum panels. The apertures may range from one-fourth inch in diameter up to three inches in diameter, and may be square, round, or notched, depending on application. The layout of the cutouts is selected by the driver to maximize comfort and efficiency, and reduce eye strain.

Since the waterjet is completely computerized, no tooling is necessary, and changeover time from one custom panel to another is minimal. Vulcan Waterjet is currently offering sizes ranging from 6 inches x 4 inches up to 12 inches x 17 inches. Once the panel is fabricated, the truck supplier may offer special finishing options to the customer before installing the unique dash panel and its instruments.



Over the road cab dash panel cut by Vulcan Waterjet, Milwaukee, WI.

Introducing the First Abrasive Engineered for Water Jet Cleaning



The makers of METgrain® steel abrasive now bring you revolutionary JETgrain™ and JETgrit™ abrasives for water jetting applications.

Water jet cleaning can be an ideal way to minimize waste and dust in surface preparation operations. And now, with new JETgrain and JETgrit abrasives, your water jetting system can have the cleaning and cutting power of garnet but at a fraction of the cost.

- JETgrit is a high density, angular iron oxide designed to dramatically speed paint rust and scale removal from steel surfaces while imparting an excellent anchor pattern
- JETgrain is a high density, granular iron oxide designed to lower the cost of water jet cutting
- JETgrain and JETgrit contain no free silica and are non-hazardous

Both have excellent flow characteristics and may be used in either induction or slurry applications. Discount pricing is available for truckload quantities

For your water jet abrasive needs, use JETgrit for Cleaning, JETgrain for Cutting. To order, call or FAX us at the number below.



410/388-5055
Fax 410/388-5194
5055 North Point Boulevard
Baltimore, Maryland 21219
Owned and Operated in the U.S.A.

Member News

Advantage Publishing/*Cleaner Times Magazine* is the recipient of the first annual "Power Washers of North America (PWNA) Industry Contributor of the Year Award." Publisher Charlene Yarbrough accepted the award during the recent PWNA Convention in Charlotte, North Carolina. The award recognizes PWNA members who have provided dedicated service and outstanding support to the PWNA.



Congratulations to Charlene and her team at Advantage Publishing/*Cleaner Times Magazine*.

JETECH, Inc., Bedford, Michigan, has announced new staff positions and advancements. **Randy Kahrig** has been appointed to oversee a new JETECH direct sales office in Kentucky, and **Michael Gracey** has been appointed the new manager of JETECH's Houston sales, service and manufacturing facility. At JETECH's Michigan headquarters, **Jacob Harmon** has been promoted to supervisor of the company's R&D Department, and **Edward Regnier** will be responsible for parts department activities.

Shamrock Pipe Tools, Baton Rouge, Louisiana, recently expanded its facility and moved into a new 10,000 square foot building for trailer/truck sewer cleaning and manufacturing. With the new addition, Shamrock's total facility under roof is approximately 30,000 square feet. Congratulations to **Don Schweitzer** and Shamrock Pipe Tools on the new expansion.

Aqua-Dyne Wins Award

Aqua-Dyne, Inc., Houston, Texas, is the recipient of the American Society of Mechanical Engineers (ASME) - Petroleum Division *Thayer Mechanical Engineering Achievement Award*. Aqua-Dyne's selection was based largely on its newly developed and patented Recycle Tank Cleaning System. The tank cleaning system avoids placing workers inside storage tanks during cleaning, and the automatic system removes and processes oil storage tank sludge, resulting in a product of reusable oil and dried solids.



Jet News congratulates **George Rankin** and his team at Aqua-Dyne, Inc., for winning this prestigious award.

VALVES · FITTINGS · REACTORS

High Pressure Equipment

FREE 74-page catalog detailing our wide range of valves, fittings, tubing, reactors, pumping systems and related items for use in high pressure applications. Most items are available from stock for immediate shipment. Write or call for your free catalog today.



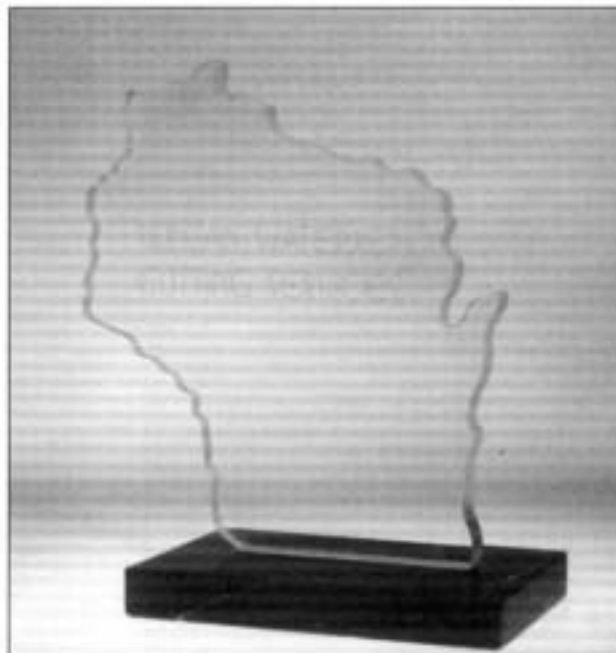
HiP High Pressure Equipment Company
1222 Linden Avenue - Erie, PA 16505 - USA
(800) 289-7447 · FAX (814) 838-6075

Abrasive Jet Cutting Of Glass Plaques

Vulcan Waterjet Cutting Services recently cut several Wisconsin-shaped plaques for Glass Concepts, Ltd., of Milwaukee. The 6-inch and 8-inch plaques were fabricated from a single sheet of Starfire glass with one edge already beveled.

The striking transparent awards began to take shape when a hand sketch was presented to Vulcan Waterjet by Glass Concepts, a designer and manufacturer of custom glass and crystal awards and executive gifts. The sketch contour was scanned, scaled and nested by computer, and the necessary parameters converted to machine code for cutting. Close nesting and minimal kerf from the high speed erosion process all help maximize material usage, an important factor when materials are expensive and difficult to acquire.

The water jet's unusual edge finish which appears to have been sandblasted, adds a frosted element to the overall aesthetic of the crystalline awards. The irregular borders and waterline of Wisconsin were easily and accurately cut on the plaque with Vulcan's impressive omni-directional robotic cutting head.



Vulcan Waterjet Cutting Services provides customers with the advanced technology of high-speed, abrasive cutting on virtually any material up to 10 inches thick. The Vulcan water jet is ideal for cutting industrial parts with intricate patterns, creating signage, flooring, sculpture and unique custom designs. Advantages of the Vulcan waterjet include prototype to production with no tooling, full CNC capability, single pass cutting, no thermal deformation, multidirectional cutting, environmentally sound kerf and water recovery and reduced dust emission. Vulcan Waterjet provides FREE sample cuts upon request. For more information about Vulcan Waterjet Cutting Services, call (414)645-2040 or (800)932-5323.



Why deal with distributors, voice mail and untrained salespeople, when you can deal direct? Your choice for high pressure thermal plastic hoses to **60,000 psi** is now **SPIR STAR**. Talk with a knowledgeable technician for your high pressure hose needs.

*See us at the Offshore Technology Conference, Booth #2235
May 6-9, 1996, Houston, Texas*

24 Hour Sales & Service (800) 890-7827

BARTON

GARNET ABRASIVES

THE INDUSTRY STANDARD
FOR ALL WATERJET CUTTING

- PERFORMANCE
- QUALITY
- CONSISTENCY
- SERVICE
- AVAILABILITY
- COST EFFECTIVE

Barton Mines Corp., Lake George, NY
(518)798-5462 Fax: (518)798-5728

WJTA New Members

MARCH — APRIL

Corporate

Canyon Creek Industrial

*Mac Shearer
Phil Proctor*
Woodinville, WA

Chesapeak Speciality Products, Inc.

*Don Sanchez
Carl Mantegna*
Baltimore, MD

Individuals

Stephen Buck

Advanced Technology Mfg. (ATM)
Sanford, FL

Matt Cotterell

Cork RTC
Bischoptown, Cork, Ireland

David M. Eslinger

Dowell-Schlumberger
Broken Arrow, OK

Mark Julian

Protech
Dickerson, TX

George Mathieus

Mathieus Machine Co., Inc.
Goldendale, WA

Thomas Micunek

A&M Blanchard
Redford, MI

Brian F. Miraki

GA Precision, Inc.
Atlanta, GA

Stephen Rose

Ontario Hydro
Toronto, Ontario, Canada

Dean Seligman

James Hardie Building Products
Fontana, CA

Todd Turner

ATP Results, Inc.
Monroe, LA

George Veres

Bengold Holdings Pty. Ltd.
City Beach, Perth, Australia

Richard Ward

Richel, Inc.
Tallmadge, OH

New Products, Services

Carolina Equipment & Supply, Inc., has available the new **Aqua Miser B.O.S.S.**, designed to handle high pressure water blasting, industrial sandblasting, and sodium bicarbonate stripping. The Aqua Miser is available in two models: a small electric model that will fit through a 36-inch doorway and requires air and water supply, and a diesel unit that is totally self-contained and requires only a water supply. Compact guns are designed to handle a variety of cleaning formulations. For more information, call Carolina Equipment at 1-803-760-3000.

SPIR STAR, Inc., Houston, Texas, has available several **new hoses**, including 20/6, a large bore supply hose: 20,000 psi working pressure/50,000 psi burst pressure, three-fourth inch inside diameter; 10/6 for large flow, ultra high pressure water jet applications: 30,000 psi working pressure/75,000 psi burst pressure, .40 inch inside diameter; 6/2W for greater flexibility in high pressure hydraulic jobs: 17,400 psi working pressure/43,500 psi burst pressure, one-fourth inch inside diameter; and 4/8, an extreme pressure hose designed for 45,000 psi and above jet cutting and high pressure robotic applications: 46,400 psi without shield, 58,000 psi working pressure with shield/116,000 psi burst pressure, three-sixteenth inch inside diameter. For more information, contact SPIR STAR, Inc. toll free at 1-800-890-STAR.

A **FREE video** on **SUPER-WATER®** concentrated industrial water blasting additive is available from Utah Metering Systems. The video demonstrates required mixing equipment, and explains the applications and benefits of SUPER-WATER®. To obtain a copy, contact Utah Metering Systems, 485 East 1200 North, Logan, Utah 84314, phone: (801)753-1255, fax: (801)753-1259.

"SAPPHIRE WATER JET ORIFICES"

*Micro-Rolled Edge Produces
Superb Stream Quality*

Mechanically drilled to insure optimum material integrity, eliminating possible fatigue due to laser drilling.

Orifices manufactured in the USA to fit your design requirements.

I.D. Sizes: .002" through .100"

O.D. Sizes: Your choice

Thickness: Your choice

Rework capabilities eliminate scraping of poor stream quality orifices. Give your used orifices a second life for a fraction of the cost of replacement.

Liberal order policy allows you to place a blanket order without committing to orifice size until released.

Assemblies available to fit most any system, tested and ready for installation.

William Langer Jewel

213 1st Street N.W.

Rolla, ND 58367

Telephone: (701)477-3193 Fax: (701)477-6579



Bridal Veil Falls in Yosemite National Park, California. Here the water descends 317 feet vertically.
Photograph courtesy of Peggy Savanick.

SHARPJET™

*"A Premium Waterjet Abrasive
Engineered and Tailored For Your Job"*

#1 Cost Effective Abrasive

- Warehousing Throughout the United States
- Abrasives for Stationary and Portable Equipment
- All Waterjet Sizes Available

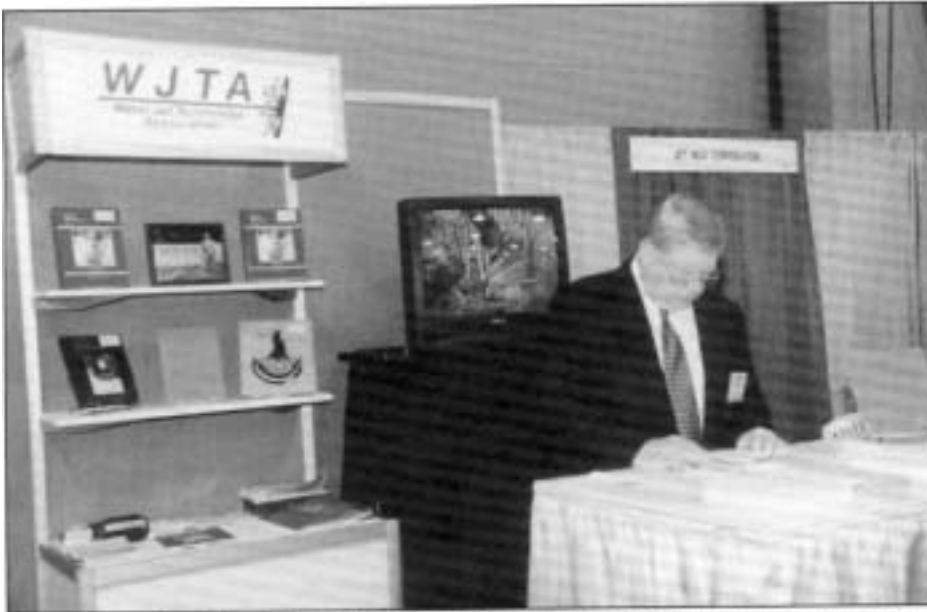


For Information On Sharpjet Products Call:

1-800-875-0776

International Liquid Waste Haulers Equipment & Trade Show

March 21-23, 1996
Opryland Hotel In Nashville, Tennessee



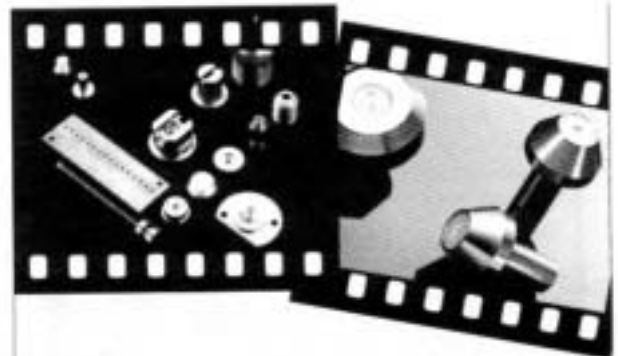
Ken Carroll at the WJTA Booth at the exhibit hall at the International Liquid Waste Haulers Equipment & Trade Show.



WJTA board member, Bruce Wood, presenting "Stepping Up From A Pressure Cleaner" at a seminar. Mr. Wood showed how pressure cleaners can also perform water blasting and capitalize on equipment that they have available.



A performance of the Grand Ole Opry was a highlight of the International Liquid Waste Haulers Equipment & Trade Show, March 21-23, 1996, at the Opryland Hotel in Nashville, Tennessee.



**Injecting, diffusing, pulverizing...
with sapphire nozzles you are out
in front!**

Nozzles for injecting, cutting, cleaning. Pulverizing nozzles for crop treatment and for burners. Sapphire technology finds more and more applications wherever nozzles need to resist severe friction, corrosion, heat. We can help you in any development study, and advise you on product manufacture.

comadur sa  A company of **AMEC**

Division Thun
Bernstrasse 11 CH-3605 Thun
Tel. 033 21 88 33 Fax 033 228 433

Chemically Reactive Water Jets

Alliant Techsystem's Global Environmental Solutions operation is a world leader in the use of high pressure water jets with numerous years of research testing the safety of water jet systems on high explosive materials. One of the recent issues that they have advised the Water Jet Association about is the use of "untested" materials in contact with explosive materials. A surprising number of common materials are hazardous to use in contact with explosives as they initiate a chemical reaction that can lead to serious consequences.

Alliant Techsystems (ATK) routinely runs an inexpensive military compatibility test called the *vacuum stability test* on **all** materials that may come in contact with explosives. This includes o-rings, water additives and plumbing materials. Regrettably, this type of testing should be performed every time a new lot of material is purchased. A recent change in an antifreeze formulation by a manufacturer turned a historically safe material into a hazardous one. Other materials, such as corrosion inhibitors, may be hidden in the water jet water or system components that could result in initiating a serious exothermic reaction. For these reasons, Alliant Techsystems strongly advises having a thorough system hazard analysis to identify where there may be suspect materials in the operation and the use of routine compatibility testing of all materials that come in contact with explosives.

For more information on water jet effects on explosives and the vacuum stability tests, please contact Paul Miller at Alliant Techsystems Global Environmental Solutions operations at (612)931-4378. For information on process safety management and system hazard analyses, please contact Bob Ford at ATK/GES (801)251-6604.

WJTA Seeks Safety Videos

The WJTA is studying the possibility of creating a videotape that demonstrates good safety practices for employers and employees who are working near or with high pressure water jetting equipment.

In order to have as much information as possible to work with, WJTA members are asked to submit suggestions for the video tape as well as footage from safety videos already in use.

If you have specific suggestions and/or a video that you think might be helpful, please forward your written suggestions and a written description of your video to the WJTA office by mail or fax.

If you have any questions, contact Rhonda Stevens at the WJTA office.

I N T R O D U C I N G T H E

HURRICANE



- 3D Rotating Cleaning Tool
- Adjustable Speed Control
- Handles 15-80 gpm
- Weighs Only 29 lbs.
- Fits Through 8" Opening
- Handles Dirty Fluids
- 3,000 to 10,000 psi
- Made and Serviced in the USA



 **STONEAGE**
WATERJET ENGINEERING

54 GIRARD STREET • DURANGO, CO 81301 • (970) 259-2889 FAX: (970) 259-2888

1996 Calendar Of Events

May 6-9: Offshore Technology Conference (OTC), Houston Astrodome, Houston, Texas. For more information, contact Deborah Wheeler at (214)952-9494.

May 15-16: Fundamentals Of Waterjet Machining, Cleveland State University, Cleveland, Ohio. For more information, contact the Society Of Manufacturing Engineers at 1-800-733-4763.

June 4: Lydia Frenzel Conference Series, Norfolk, Virginia. Contact Lydia Frenzel Conference Series, P.O. Box 850, Sutter Creek, California 95865, phone: (209)267-0992, fax: (209)267-0992.

June 25-28: China Glass '96, the 6th International Technical Exhibition, Beijing Exposition Center, Beijing, China. For more information, contact Dame Associates, Inc., 51 Church Street, Boston, MA 02116, phone: (617)482-3596, fax: (617)423-0245.

September 3-6: International Conference Geomechanics '96. Czech Republic. For more information, call 42-69-691-86-51 or fax 42-691-94-55.

September 9-12: International Conference Geomechanics '96, including Water Jet Technology, to be held at the historic "Old Wooden Village" in Roznov p.R., Beskydy Mountains, Czech Republic. For more information, contact Dr. Z. Rakowski, Institute of Geonics, Studentská 1768, 708 00 Ostrava Poruba, Czech R., phone: (+42)69 6914164, fax: (+42)69 6919452, email: GM96@UGN.CAS.C2

October 16-19: CETA PowerClean '96, Chicago, Illinois. Call 1-800-441-0111.

October 29-31: 13th International Conference on Jetting Technology. Sardinia, Italy. Contact BHR Group Limited, Cranfield, Bedford MK43 OAJ, UK, Fax: 44(0)1234750074.

WATER JET ORIFICES

For High Pressure Cutting And Cleaning

Precision Sapphire Orifice Assemblies Ready
For Installation Into
Your Water Jet System

A.M.  GATTI INC
524 Tindall Avenue
Trenton, NJ 08610

Phone: (609)396-1577

Fax: (609)695-4339

GARNET

The
abrasive
with
GRIT

Almandite Jet Cut Garnet

Our **jet cut** brand is the answer. Expect high productivity with our **jet cut** almandite garnet grains for high pressure water jet cutting applications. Our **jet cut** brand is the hardest, sharpest, heaviest, fastest cutting and cleanest of the garnet family. High density and high kinetic energy. Sizes as required. 100 lb. bags. For more information contact:

MYERS

Myers Metals & Minerals, Inc.
Norton Building
801 Second Ave., Suite 1505
Seattle, Washington 98104
TEL: (206)622-2278/1-800-394-2278
FAX: (206)682-8829