



Waterjets make snow at Buck Hill Ski Area in Burnsville, Minnesota. Buck Hill uses the latest in snowmaking equipment. These snowmakers use 30-70 gpm of water at 300 psi and 50 cfm of compressed air to produce snow for the slopes. See additional photographs throughout this issue.

Photograph provided courtesy of Buck Hill Ski Area.

Abrasivejet Reduces Traditional Machining Time For Santa Ana Job Shop

When Ray and John Connelly's father, Leroy, founded Connelly Machine Works fifty years ago, he probably never envisioned using water to machine parts. Today, the Connellys have discovered how to reduce the time and cost of traditional machining using an abrasive waterjet.

Connelly Machine Works is a family-owned and operated shop based in Santa Ana, California. They employ 20 people at their 10,000 square foot facility and offer an array of machining, welding and grinding services to the aerospace and other commercial industries. Equipment used at Connelly includes CNC and conventional mills, lathes, saws, welding and grinding machines.

Connelly's senior management concluded earlier this year that the shop needed to streamline its traditional

(continued on page 3)

BHR Group's 13th International Conference On Jetting Technology

The BHR Group's 13th International Conference on Jetting Technology was held October 29-31, 1996, in Sardinia, Italy. Many WJTA members presented papers, including David Summers, Ph.D., Thomas Kim, Ph.D., Mohan Vijay, Ph.D., Mohamed Hashish, Ph.D., Bruce Wood, Larry Moers, Robert Fossey, Ernest Geskin, Ph.D., A.W. Momber, Ph.D., Helmut Louis and Raimundo Ciccu.

A list of the topics covered at the International Conference appears in this issue of *Jet News*, beginning on page 10.

WJTA Administration

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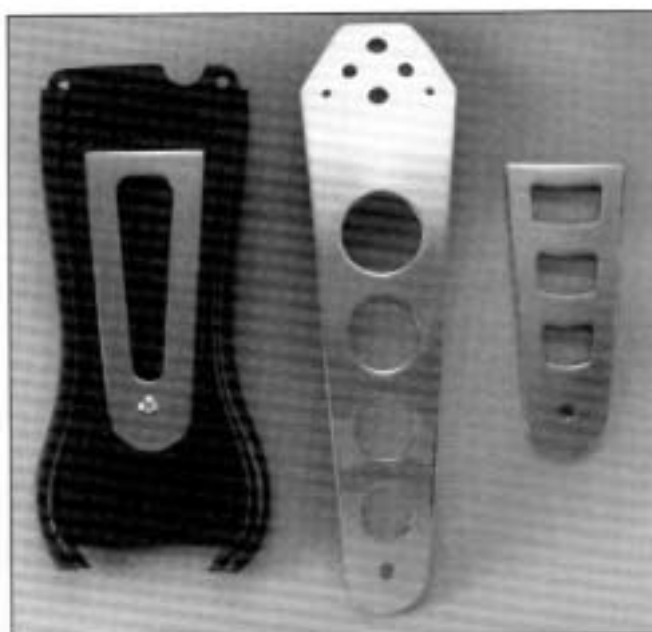
Association Managers

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

Vulcan Waterjet And Milsco Manufacturing Help Customize Harley-Davidson Bikes

Vulcan Waterjet Cutting

Services recently cut the smooth, clean edges of intricate cutouts for Milsco Manufacturing Company of Milwaukee. After plating and assembly, the pieces are now gracing the new Diamond Back™ Collection of Harley-Davidson® motorcycle accessories. The innovative line of products features several stylish tail sections and tank panels of highly polished nickel chrome plated steel fabricated by Milsco.



Smooth edges and intricate cutouts add flair to these motorcycle accessories. Photograph courtesy of Vulcan Waterjet Cutting Services.

Vulcan Waterjet Cutting Services was chosen by Milsco for the task because edge condition is a significant factor for parts of a decorative nature. The waterjet cut edges are completely clean and even, and do not have the residual ash that is often found on laser cut edges. The entrained abrasive in the waterjet's cutting stream actually creates an edge that is similar to one that has been sandblasted.

Harley-Davidson and Milsco chose not to have the parts stamped because of "break out," a problem inherent in the process. Break out occurs because dies will not cut entirely through the material. The remaining portion actually breaks, leaving a raw edge that usually requires further finishing. These secondary finishing costs may be substantial when the part in question is a decorative one.

"The smooth waterjet-cut edge does not require any buffing, grinding or clean up, and meets the stringent cosmetic requirements of Harley-Davidson," stated Mark Dahlman, senior buyer for Milsco Manufacturing Company as he described why Vulcan Waterjet had been chosen to create the unique pieces. He added that the CNC controlled waterjet efficiently cuts the intricate shapes without requiring any expensive hard tooling. "The variety of cutout shapes is unlimited, allowing The Diamond Back Collection to feature a wide range of distinctive styles," he continued. "We're really proud of it."

(continued on page 6)

Abrasivejet Reduces Traditional Machining Time For Santa Ana Job Shop, from page 1

machining process. Previously, parts were cut to near net with a saw and machined to finished tolerance on a CNC mill. This often required multiple passes, or wire EDM. "Time was a big disadvantage to this approach," said Ray Connelly. "It tied up our milling machines and EDM was too expensive and slow."

Intent on purchasing a wire EDM, the Connellys attended a trade show in Los Angeles. However, instead of the intended wire EDM, the Connellys purchased the Bengal abrasivejet machining center manufactured by Flow International Corp., in Kent, Washington.

They were pleased to discover that the Bengal would net and near net parts to ± 0.006 -inch accuracy from virtually any flat material up to four inches thick. Compact in size, the fully-integrated machining center is equipped with the Windows-based FlowMaster PC controller, the Paser 3 abrasive waterjet, an X-Y motion system, a 40,000 pound per square inch (psi) pump and a 39-inch by 19.6-inch worktable.

Connelly machines stainless and carbon steel, Inconel, titanium and brass with its abrasivejet machine. "When we saw what the Bengal could do, how fast it could cut and how easy it was to operate, we were convinced it was machined for us," said John Connelly.

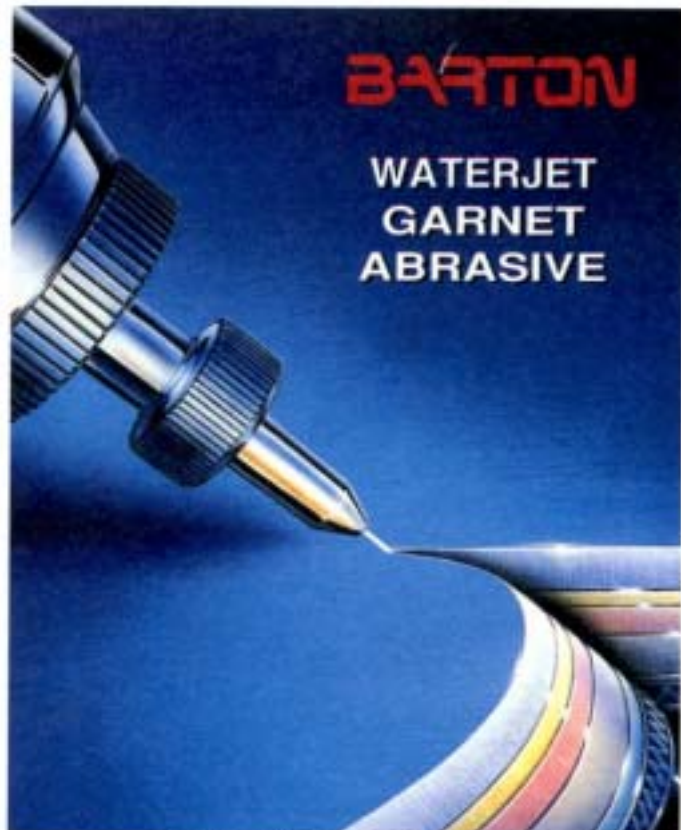
"We now hog parts out in one pass with the Bengal and machine them to finish tolerance in a single pass with our CNC mills," said Ray Connelly. "And, we can use the same program on both the Bengal and the CNC mill. All we do is change the offsets."

The shop also utilizes the Bengal for other applications. "The machine is very good for prototyping and short run production. The simplicity of the software makes it an excellent machine for prototyping."

This ease of operation was a major factor in Connelly's decision to purchase the Bengal. The FlowMaster controller is pre-programmed with cutting parameters for a variety of materials, dramatically simplifying abrasive waterjet machining. To produce parts from a DXF or CAD file, users select material type and thickness and click on icons to execute waterjet commands. The controller determines optimum cutting parameters for the application. No special knowledge of abrasivejet machining or CNC programming is necessary.

"My daughter just started working at the shop," said Ray Connelly. "She has no programming experience, though she is familiar with PCs. She was able to program the Bengal, including complex parts within one week."

(continued on page 7)



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The nesting capabilities of the Bengal Abrasivejet maximize material utilization and reduce scrap. Here it is shown cutting a tight nesting pattern. Photograph provided courtesy of Flow International Corp., Kent, Washington.

Nominations Open For WJTA Board Of Directors

"Nominations for the Waterjet Technology Association (WJTA) Board of Directors are now open," announced Dr. Andrew Conn, secretary of the Waterjet Technology Association.

"With rapid advances in fluid jet technology, the Waterjet Technology Association is growing rapidly. The Association needs dedicated directors to lead the members as the WJTA grows," says Thomas J. Labus, chairman of the 1997 Committee on Nomination. "The duties of the directors are truly challenging and rewarding."

The four-year terms of office of Andrew F. Conn, Ph.D., Mohamed Hashish, Ph.D., Thomas J. Labus, George A. Savanick, Ph.D., David A. Summers, Ph.D., and Bruce Wood, will expire on August 24, 1997. Therefore,

continued on page 12

Nominations/Elections Procedures

In accordance with the bylaws of the Waterjet Technology Association, revised in 1993, nominations and elections to the Board of Directors include the following procedures:

- At least two calls for nominations to the board of directors will be published in the *Jet News*. The first call for nominations appears in this issue. **Nominations will be accepted through May 23, 1997.**
- A list of the eligible nominees and a brief biographical sketch for each individual will be published in the June 1997 issue of *Jet News*.
- An official ballot listing the eligible nominees will then be forwarded by mail to all eligible voting members of the Association on July 11. **Signed and executed ballots must be mailed to the Association's office for tallying by August 20, 1997.**
- The names of newly elected board members will be announced on Sunday, August 24, 1997, at the WJTA general membership meeting held in conjunction with the 9th American Waterjet Conference in Dearborn, Michigan.

Only eligible members of the Waterjet Technology Association may submit a nomination and nominees must be eligible members of the Waterjet Technology Association.

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Waterjet Technology, Inc. (formerly QUEST Integrated, Inc.) is seeking a senior level technical expert to market, plan and direct complex waterjet and abrasivejet R&D projects. Requires Ph.D. and 10-15 years R&D experience, preferably with some industrial or commercial experience.

Position is based in Seattle.
Top pay and benefits.

Fax or mail cover letter and resume to:

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Waterjet Technology, Inc.
21414 68th Avenue South
Kent, WA 98032
Fax: (206)872-7358

Vulcan Waterjet And Milsco Manufacturing Help Customize Harley- Davidson Bikes, from page 2

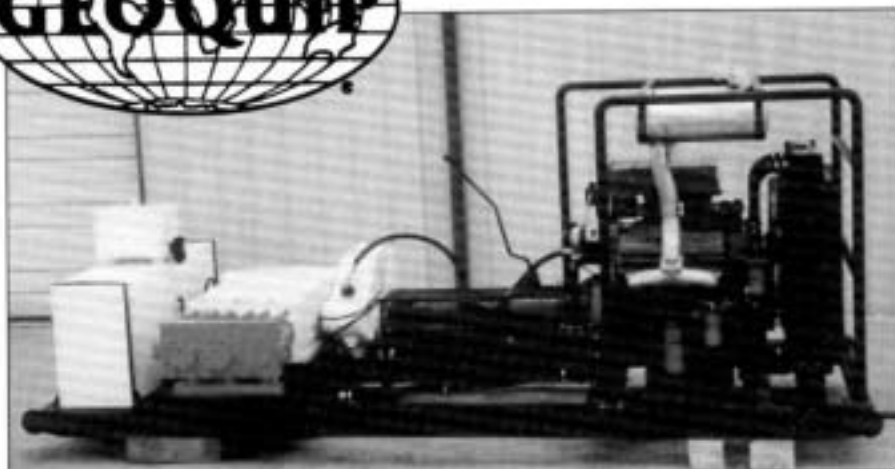
Milsco is an international company that specializes in the design and fabrication of seating products for recreational, industrial, agricultural and construction vehicles. The company's fully integrated capabilities include research, development, forming, sewing, fabrication and assembly of their products.

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Plunger Diameter	Gal Rev.	MAX PSI/GPM	MAX GPM/PSI
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1-1/4"	.10	40,000/10.2	38/13,190
1-1/2"	.14	35,000/14	54/9284
1-3/4"	.19	25,000/19.5	73/6867
2	.25	20,000/25	96/5222
2-1/4"	.31	15,000/32	119/4213
2-1/2"	.38	12,800/39	146/3433
3	.55	8500/56	211/2376



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Abrasivejet Reduces Traditional Machining Time, from page 3

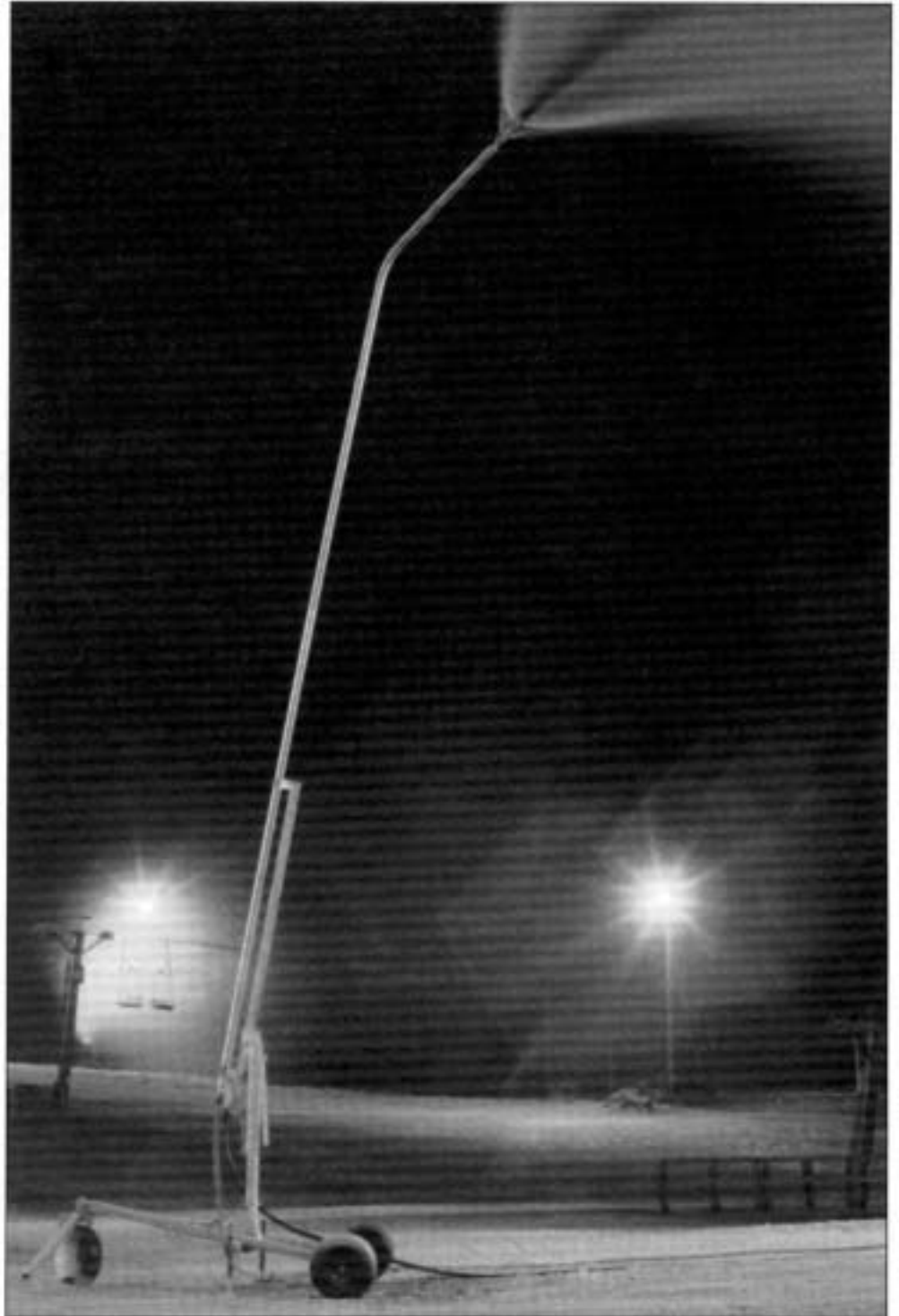
FlowMaster includes a CAD/CAM package and drawing functions. An optional scanner makes it possible to scan a drawing into FlowMaster where users can convert it to a DXF file in minutes. All components of the Bengal are controlled through FlowMaster.

Abrasivejet machining offers several key benefits to machine and job shops. A cold-cutting process, abrasivejet machining leaves a finished edge free of a heat-affected zone (HAZ). Consequently, abrasivejet machining reduces or eliminates secondary operations. Cutting without heat also protects against metallurgical changes, leaving the material structure of the part intact. "We previously consumed a lot of tooling trying to penetrate edges hardened by HAZ," said Ray Connelly. "An edge machined with an abrasive waterjet is very easy on inserts and bits."

Abrasivejet is also said to improve material utilization, cutting from the edge or middle of a plate along specified lines in any direction. Minimal kerf (0.030 to 0.060 inch) width of the abrasivejet adds to the material savings. "The Bengal consumes much less material than saw cutting," said Ray Connelly. "We nest the parts pretty tight and definitely get more parts from a piece of material."

Set up for the abrasivejet takes less than five minutes. Tooling consists of an orifice and mixing tube, both lasting in excess of 120 hours. No tooling alignment is necessary and fixturing is minimal. "Set up time is very low," said John Connelly. "Our fixturing is very simple, one or two clamps or sometimes none at all."

Easy maintenance and uptime are other advantages. "Our machine has been running ten hours a day, six days a week. We run every minute of the day we're open. Maintenance is not a problem," said Ray Connelly. Operating cost amounts to approximately \$19 per hour, excluding labor.



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HKD Tower System making snow at Buck Hill Ski Area, Minnesota. The HKD Tower System, the latest in snowmaking technology, are more energy efficient than earlier snowmakers. These towers do not require hill electricity and have no moving parts.

Photograph courtesy of Buck Hill Ski Area

Candidates Sought For 1997 WJTA Awards

You are invited to submit candidates for these special awards that are presented biennially by the Waterjet Technology Association to honor a company, organization or individual who has made a significant contribution to the industry through accomplishments that directly enhance waterjet technology and the industry as a whole.

Candidates must be received no later than July 1, 1997. The award recipient, to be selected by the Awards Committee of the Waterjet Technology Association, will be honored at a presentation ceremony on Sunday, August 24, 1997, in conjunction with the 9th American Waterjet Conference in Dearborn, Michigan.

Following is an official form for candidate nominations. Complete one form for each nomination submitted. Please make additional copies of the form as needed. Nominations providing complete written information specified on the form may be faxed to (314)241-1449 or mailed to the Waterjet Technology Association, 917 Locust Street, Suite 1100, St. Louis, MO 63101-1413, USA.

1997 WJTA Awards Nomination Form

Instructions: Complete sections below and submit a narrative (300-word maximum) to support your nomination on a separate sheet of paper. Please print or type all information.

I nominate the following company, organization, or person as a candidate to receive a 1997 WJTA Award (CHECK ONE AWARD):

☐ **Distinguished Pioneer Award**

The nominee must:

- Have made contributions to the waterjet industry;
- Have made contributions to the achievement of the goals of WJTA;
- Have high moral character;
- Have strong personal and business ethics;
- Be dedicated to the future of the waterjet industry and to the growth of WJTA.

☐ **Service Award**

How has the nominated company, organization or individual contributed in time and talent toward improvement in the Waterjet Technology Association?

☐ **Safety Award**

What has the nominated company, organization or individual done to introduce new and innovative ideas in safety? This could include, but is not limited to new products, new concepts, new safety techniques . . . any unique activity which increases the overall safety of waterjet equipment.

☐ **Technology Award**

What has the nominated company, organization or individual done to introduce new and innovative ideas in engineering or manufacturing? This could include, but is not limited to, new products, new manufacturing techniques, patents . . . any unique activity that advanced the technology of the waterjet industry.

Candidate: _____ Company: _____

Address: _____

City/State/Zip: _____ Country: _____

Phone In US/Canada () _____ Fax () _____
area code area code

Phone Outside US/Canada [] () _____ Fax [] () _____
country code city code country code city code

Candidate Submitted By: _____ Company: _____

Address: _____

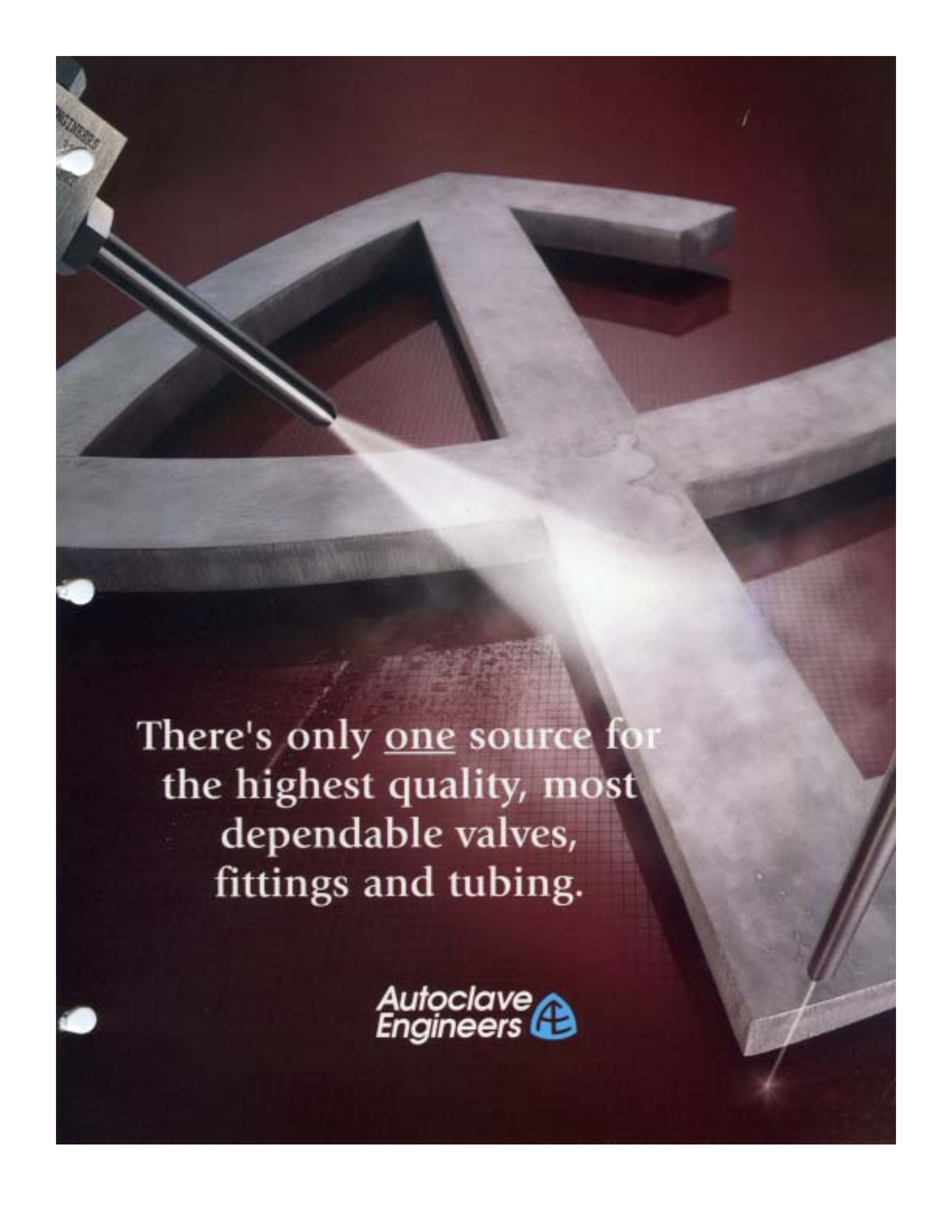
City/State/Zip: _____ Country: _____

Phone In US/Canada () _____ Fax () _____
area code area code

Phone Outside US/Canada [] () Fax [] ()
country code city code country code city code

Signed: _____ Date: _____

Nominations must be received no later than July 1, 1997. For a prompt response, fax completed form to (314)241-1449, or mail to the WJTA, 917 Locust Street, Suite 1100, St. Louis, MO 63101-1413, USA.

A large, complex industrial valve is shown in a dark, industrial setting. A bright welding torch is positioned at the top left, directing a powerful beam of light and heat onto the valve's structure. The valve itself is made of heavy metal and has a complex, multi-ported design. The background is dark and textured, suggesting a factory or workshop environment.

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New Products, Developments

NLB Introduces Internet Website.

The latest information about water jetting is now available via NLB's new site on the World Wide Web: <http://www.nlbcorp.com>.

The site highlights NLB's waterjet equipment and accessories and introduces the company's facilities. It includes photos, descriptions and basic specifications, as well as an extensive list of waterjet applications. Future plans include a "What's New" page to introduce new products, NLB trade show activities and more.

NLB, celebrating its 25th year of providing problem-solving, high-pressure waterjet products, manufactures a full line of quality waterjet systems and accessories. Uses include surface preparation, tank cleaning, descaling, heat exchanger cleaning, paint and sludge removal, concrete demolition, concrete and pipe cutting, and more.

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Richel, Inc. Schedules Waterjet Cutting Techniques Course. Richel, Inc., a waterjet consulting firm, is offering a three day hands-on waterjet cutting course. The mornings are devoted to theory and the afternoons to hands-on work. An optional fourth day is devoted to learning about waterjet as a business. This course is an ideal opportunity to learn and experience what is involved in waterjet cutting, allowing existing users of waterjets to improve their skills and techniques, and giving a full understanding of the business to those wishing to enter waterjet cutting.

For more information, please contact: Richard Ward (President of Richel, Inc.), telephone: (330)633-7698, fax: (330)633-7670 or e-mail: richel@ix.netcom.com.

Ingersoll-Rand Waterjet Systems will exhibit its new-generation Acculine AMG 84 mid-rail gantry-type waterjet cutting system at WESTEC-97, Los Angeles Convention Center, March 24-27. The Acculin system is equipped with a three-axis moving gantry which manipulates the waterjet cutting head to produce the desired cut profile. The system gantry is driven by a PC-based RE2000 CNC controller specifically configured for waterjet cutting systems. All guideways on the AMG 84 are precision-machined to ensure a flat and straight mounting surface, and all gantry axes are triple-protected by neoprene/hypalon way covers, metal labyrinth guards and way wipers. The system can be used for a host of general industrial material-cutting applications over a thickness range from wafer-thin to 6 inches or more.

For more information, contact Ingersoll-Rand Waterjet Systems, Inc., 23629 Industrial Park Drive, Farmington Hills, MI 48335, toll-free: (800)286-2971, outside U.S.: (810)471-0888, fax: (810)471-9113, e-mail: sales@iraautomation.com/wjs/.

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BHR Group's 13th International Conference On Jetting Technology -- Papers Presented

Study Of A Novel Nozzle Device For Generating Cavitating And Pulsed Water Jets.

Effects Of Nozzle Shape On Structure And Drilling Capability Of Premixed Abrasive Water Jets.

Wear Patterns In Abrasive Waterjet Nozzles. Cutting With (690-MPA) Waterjets.

A Contribution To The Implementation Of An Adaptive Controller For Hydro-Abrasive Jet Machining Based On The Generalized Minimum Variance Method.

Contribution To The Understanding Of Jet Cutting Mechanism.

Dynamic Properties Of The Stagnation Pressure In The Continuous Region.

Measure Of Air Flow Rate According To The Mixing Chamber Designs.

Electro-Discharge Technique For Producing Powerful Pulsed Water Jets; Potential & Problems.

Mixing Tube Geometry Influence On Abrasive Waterjet Flow.

Characteristics Of The Interaction Between Abrasive Waterjet And A Workpiece.

A Residual Stress Analysis Of Metals Machined With The Abrasive Waterjet.

Impulsive Pressure Distributions On A Flat Surface Resulted By A Waterjet.

Damage Mechanisms Of Injuries Caused By High Pressure Waterjets.

Developing A "Hands-On" Approach To High Pressure Water Blast Training.

Development Of Ultra-High Pressure Waterjet Systems And Their Application For Maintenance And Repair. Waterjet In-Situ Reactor Cleaning.

Abrasive Waterjet Cutting Of Marble And Calcareous Stones — A Phenomenological Study.

Computer Modelling Of Rock Cratering By Waterjets.

Quarrying Granite Underground Is Now Feasible With Waterjet.

Data For The Cutting Of Romanian Marble With Continuous And Abrasive Water Jets.

An Air-Water Jet For Concrete Removal — A Laboratory Investigation.

A Water-Cooled, Hydraulically Positioned 20,000 PSI Lance For Waterblasting Inside A Hot Kiln.

High Pressure Water Jetting As A Method Of Removing Blockages In Sewerage Systems.

Development In High Pressure Jetting Of Sewers.

Hard Rock Cutting With Waterjet Assisted Diamond Tools.

(continued on page 12)

WJTA New Members

Corporate

E.I. Dupont de Nemours

*Helen T. Watson
Timothy R. Wiseman
Newark, DE*

Earl Industries/United Coatings

*George Wyatt Jr.
La Shell Jahn-Keith
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Marietta, GA*

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Clement Zanzuri
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Jeff Kitchel

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Fred Lancaster

Concurrent Technologies Corporation

Frank Mantegna

*EISCO
Claymont, DE*

Richard Mellor

*Abrasive & Cutter Technology Inc.
Marion, IA*

Ping Meng, Ph.D.

Kamy, NJ

Mel Mickevici

*Castlewood Industries Corporation
Chicago, IL*

Geoff Moon

*University Technologies International Inc.
Calgary, Canada*

Joel Schafer

Teconash, MI

Gideon Schoen

*SADIT Engineering
Tel Aviv, Israel*

Congratulations to **Greg and Barb Mort** of Farmington Hills, Michigan on the birth of their first child, **Jackson McDonald Mort**. Jackson, born on December 14, 1996, weighed 8 pound, 13 ounces.

Greg is a business applications manager at Ingersoll-Rand Waterjet Systems Division in Farmington Hills, Michigan.

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Fax: (905)689-0485

Nominations Open for WJTA Board of Directors, from page 4

nominations are sought for six (6) board members, each to serve a four-year term of office beginning August 24, 1997.

According to the WJTA bylaws, each of the above-named individuals are eligible for re-nomination and re-election to the WJTA Board of Directors.

With regard to all first-time nominees, the WJTA bylaws provide that no more than one of the elected board members may be from the same company or organization. Therefore, board members may not be nominated from facilities that are already represented on the board by individuals whose terms expire in 1999. These facilities include: StoneAge, Inc. (John Wolgamott), Maxpro Technologies (Paul Bowser), HydroChem Industrial Services, Inc. (Pat De Busk), Lydia Frenzel Conference Series (Lydia Frenzel, Ph.D.), University of Rhode Island (Thomas J. Kim, Ph.D.), and NLB Corp. (Forrest Shook).

According to the WJTA bylaws, any WJTA member in good standing (1997 membership dues paid) may submit a nomination(s). Nominees must also be WJTA members in good standing. The deadline for making nominations is at least eight (8) weeks prior to the biennial business meeting scheduled for Sunday, August 24. Your nomination(s) should reach the WJTA office no later than May 23, 1997. To submit a nomination(s), complete the form below and return to:

BHR Group's 13th International Conference On Jetting Technology -- Papers Presented, from page 10

The Development Of A Light-Weight System
For Excavating High Level Radioactive
Waste From Underground Storage Tanks.

Interaction Of Grains With Waterjet — The
Base Of The Physical Derivation Of
Complex Equation For Jet Cutting Of Rock
Materials.

Hydraulic Impulse Blasting Offers Diverse
Applications.

Milling With Abrasive Jet In Petroleum
Wells.

A Comprehensive Analysis Of Abrasive For
Use In Waterjet Cutting.

Process Control Of Abrasive Water
Suspension Jets.

Towards Agile Abrasive-Waterjet Machining.

Process Control For High Pressure Waterjet
Cutting Systems.

The Second Decade Of Waterjet De-
Militarization. New Concerns, New
Solutions.

Abrasive-Rock Interaction In AWJ Cutting.

The Use Of Waterjets In The Pre-Profiling Of
Underground Excavations.

The Results Of The Laboratory Researches In
Hydromechanical Coal Cutting.

Design Of A Waterjet-Assisted Machine For
Mineral Comminution.

Developmental Trends Of Three-Dimensional
Abrasive Waterjet Cutting Systems For
Production Applications.

Waterjet Technology As A Tool For Efficient
Dismantling Of Technical Products — A
New Application.

Removal Of Compensator Coating AT Paks
Nuclear Power Plant, Hungary.

Thomas J. Labus, Chairman, Committee On Nomination
Waterjet Technology Association
917 Locust Street, Suite 1100
St. Louis, MO 63101-1413
Phone (314)241-1445 Fax (314)241-1449

Remember, nominations must be received no later than May 23, 1997.



Nomination Form

Name Of Nominee _____

Title _____

Address _____

City _____ State _____

Country _____ Postal Code _____

Telephone _____

In US/Canada (_____) _____
(area code)

Outside US/Canada [_____] (_____) _____
(country code) (city code)

Fax _____

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(area code)

Outside US/Canada [_____] (_____) _____
(country code) (city code)

*Attach biographical information with a brief statement of your nominee's
mission and vision for WJTA.*

Name Of Nominator _____

Title _____

Address _____

City _____ State _____

Country _____ Postal Code _____

Telephone _____

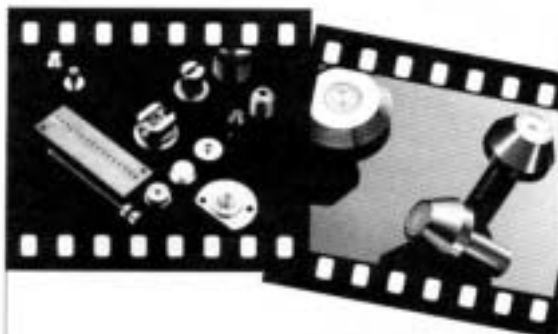
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- Greenfield Village, where over 240 of America's most treasured buildings are preserved in pristine condition, including Thomas Edison's laboratory, Noah Webster's home, Firestone's farm and the Wright Brothers Bicycle Shop.
- The Henry Ford Museum, where hundreds of antique automobiles and thousands of 19th and 20th century machines are on display.

WJTA 9TH AMERICAN WATERJET CONFERENCE HOTEL RESERVATION FORM

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August 23- 26, 1997

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Single (one person)		\$103	\$118
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Double (two persons, king, bed)		\$103	\$118
Triple (three persons)		\$128	\$143
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Signature _____

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Check-in: 3:00 p.m. Check-out: 12 Noon

Please note: A \$25.00 departure charge fee will be incurred if there are any changes to the departure date after check-in.

To guarantee convention rates, reservations must be received by the Hyatt Regency Dearborn by **August 2, 1997**.

**The Waterjet Technology Association's
9th American Waterjet Conference
August 23-26, 1997
Hyatt Regency, Dearborn, Michigan**

Preliminary Schedule of Events

Saturday, August 23

- | | |
|---------------------|--|
| 8:30 a.m.-Noon | Short Course on the Fundamentals and Applications of Waterjet Technology |
| Noon-1:30 p.m. | Luncheon for "Short Course" Participants |
| 1:30 p.m.-4:30 p.m. | Short Course (continued) |
| 6:30 p.m.-9:30 p.m. | Welcoming Reception In The Exhibit Hall -- Exhibit Opens |

Sunday, August 24

- | | |
|----------------------|------------------------------------|
| 8:00 a.m.-11:00 a.m. | Applications Workshops |
| 8:30 a.m.-11:30 a.m. | Research & Development Sessions |
| 9:30 a.m.-5:00 p.m. | Exhibits |
| Noon-2:00 p.m. | Awards Luncheon |
| 2:30 p.m.-4:30 p.m. | Applications Workshops (continued) |
| 5:00 p.m.-6:00 p.m. | WJTA Biennial Business Meeting |

Monday, August 25

- | | |
|------------------------|---|
| 9:30 a.m.-2:30 p.m. | Exhibits |
| 8:00 a.m.-11:00 a.m. | Applications Workshops |
| 8:30 a.m.-11:30 a.m. | Research & Development Sessions |
| Noon-2:00 p.m. | Luncheon in Exhibit Hall |
| 2:00-4:30 p.m. | Applications Workshops (continued) |
| 2:00-5:00 p.m. | Research and Development Sessions (continued) |
| 6:30 p.m. - 11:00 p.m. | Social Function |

Tuesday, August 26

- | | |
|---------------------|---|
| 9:30 a.m.-3:00 p.m. | Technical Tour and Field Demonstrations |
|---------------------|---|



**9th
American
Water Jet
Conference**

August 23-26, 1997

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1997 Calendar Of Events

February 19-21, 1997: GlassLat '97, Monterrey, Mexico. Contact USGlass magazine at (540)720-5584 or fax (540)720-5687.

May 10-16, 1997: American Society for Surface Mining and Reclamation 14th Annual Meeting, Austin, Texas. For more information, contact the North American Coal Corporation, 14785 Preston Road, Suite 1100, Dallas, TX 75240, fax: (214)387-1051.

October 28-30, 1997: Cerasia '97, Asia Pacific Exhibition For Ceramics, Stone And Bathroom Fittings. Contact: Cerasia UK: Paragon Exhibitions Ltd., Brook House, Yoxall Road, Newborough, Burton-on-Trent, Staffordshire, DE13 8SU, England, Tel: +44 (0) 1283 575564, Fax: +44 (0) 1283 575622.

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