H V I S

HYPERVELOCITY IMPACT SOCIETY

Volume 5, Issue No. 1
May 1998

NEWSLETTER

1998 HYPERVELOCITY IMPACT SYMPOSIUM

As mentioned in the last newsletter, the University of Alabama in Huntsville will host the *1998 Hypervelocity Impact Symposium.* The technical conference will include three full days of unclassified oral and poster presentations—November 17-19, 1998—at the Von Braun Center, Huntsville, Alabama, USA. Registration will take place on the evening of November 16th. Classified sessions will be held on November 20, 1998, at the Sparkman Center on Redstone Arsenal, Huntsville, Alabama. Attendance at the classified sessions will be limited to individuals who meet the appropriate U.S. clearance requirements.

Interest in the symposium has risen considerably this year; we received nearly 170 abstracts of unclassified papers for presentation consideration. Of these, approximately 130 were accepted for further consideration. In addition to a large number of accepted abstracts from the U.S. and Russia, we were pleased to accept abstracts from Canada, China, England, France, Germany, Israel, Italy, Japan, and Spain. The technical areas addressed in these abstracts include hypervelocity impact and penetration phenomenology, planetary impact, spacecraft shielding, hypervelocity launchers & diagnostics, material response, fracture & fragmentation, shaped-charge jets & EFPs, and numerical modeling techniques.

We are planning to have a special session on the application of pulsed power technologies to the study of hypervelocity impact phenomena, as well as a special lecture by the recipient of the HVIS Distinguished Scientist Award, and three plenary talks by world-renown impact scientists and engineers. The following plenary talks are planned for *HVIS98*:

Vladimir M. Titov, Lavrentyev Institute of Hydrodynamics: *A Review of Hypervelocity Impact Technology and Applications*

J.A.M. McDonnell, University of Kent at Canterbury: *Building a Bridge between Microscale and Macroscale Hypervelocity Impact Phenomena with Applications to Spacecraft Design*

Robert C. Cauble, Lawrence Livermore Laboratory: *Laboratory Measurements of Materials in Extreme Conditions: The Use of High Energy Lasers for High Pressure Studies*

The Technical Program Committee is looking forward to receiving a significant number of high quality papers for its June paper review meeting. We are planning approximately ten sessions with oral presentations as well as an exciting poster session. This year, the poster session will be accompanied by a reception featuring a wide variety of hot and cold hors d'oeuvres. The symposium banquet will be held at the U.S. Space and Rocket Center, one of Huntsville's premier tourist attractions. An eventful family program is also being planned for attendees' spouses, companions, and families.

Web Site. Further information about *HVIS98* can be found on our Internet web site: ***www.futureonline.com/hvis***. Registration and hotel information will be mailed in late July. If

you are not already on the *HVIS98* mailing list and wish to be included in all future mailings, please notify Dr. Schonberg at the following email address: *wschon@ebs330.eb.uah.edu.*

Commercial Exhibits. Those interested in exhibiting commercial products at the symposium should contact Lanny Bell of Sverdrup Technology for further information. His phone and fax numbers are (931) 454-7411 and (931) 454-5803, respectively. Further information about commercial exhibit opportunities can also be found on our Internet web site

PROCEEDINGS

The *Proceedings of the 1996 Hypervelocity Impact Symposium* were published as Volume 20 of the *International Journal of Impact Engineering.* Due to its size, this 876-page journal volume was published as two softbound volumes. The volume contains 75 technical articles, including James Asay's Distinguished Scientist paper presented at the *1994 HVIS* in Santa Fe. The volume also contains an author index, a subject index, and a list of attendees at the Freiburg symposium. The volumes were mailed directly from Elsevier to Symposium attendees. Extra copies of the proceedings are available; see the section on Subscriptions to obtain a copy.

NOMINATIONS COMMITTEE

Lew Glenn and Roger Chéret, co-chairs for the Nominations Committee, have received many good suggestions for possible candidates to be on the Board of Directors of the Society. They now are in the process of selecting a subset of these nominations to go onto the ballot. The election will take place this summer; all members in good standing (paid up Society dues) will receive a ballot. Results will be announced at the Symposium in Huntsville, November 1998. If you have any questions, please contact Lew (phone: 510-422-7239; fax: 510-423-6907; e-mail: glenn5@llnl.gov) or Roger (phone: +33-1-69-26-76-74; fax: 33-1-69-26-70-05; e-mail: roger.cheret@cea.fr).

AWARDS COMMITTEE

Jeanne Crews is the Awards Committee chairman. Jeanne and the committee have been evaluating candidates for the next Distinguished Scientist Award. Jeanne's phone number is 281-483-5308; fax number is 281-483-5276; her e-mail address is *jcrews@ems.jsc.nasa.gov.* This committee will also be responsible for final selection of the Best Paper Award to be presented at the *1998 HVIS.*

BEST PAPER AWARDS

Starting in 1989, manuscripts have been reviewed and nominated for the Best Paper Award. The nominated papers then go through another review and down select process. Four criteria, in order of importance, are used to evaluate the papers: originality, difficulty of the research, importance of the research, and excellence of the written paper. In several cases, the votes by members on the Awards Committee resulted in a tie, so two papers were awarded *Best Paper.* There have typically been over 70 papers at each of the symposium, so it is an honor to have a paper nominated for the best paper award. And, of course, it is even more of an honor to have a paper finally selected as the *Best Paper.*

As Editor, I thought it would be interesting to summarize the results for the past four symposia.

1989 HVIS Best Paper Candidates

R. W. Klopp, D. A. Shockey, J. E. Osher, and H. H. Chau: *Characteristics of Hypervelocity Impact Debris Clouds*

S. A. Mullin, C. E. Anderson, Jr., J. S. Wilbeck, and D. Apo: *Dissimilar Material Velocity Scaling for Hypervelocity Impact*

*****Best Papers—1989*****

D. L. Orphal and R. R. Franzen: *Penetration Mechanics and Performance of Continuous and Segmented Rods Against Confined Glass and Ceramic Targets*

A. J. Piekutowski: *A Simple Model for the Formation of Debris Clouds*

1992 HVIS Best Paper Candidates

J. A. Ang, B. D. Hansche, C. H. Konrad, W. C. Sweatt, S. M. Gosling, R. J. Hickman: *Pulsed Holography for Hypervelocity Impact Diagnostics*

E. P. Fahrenthold: *A Lagrangian Model for Debris Cloud Dynamics Simulation*

S. A. Finnegan, J. K. Pringle, J. C. Schultz, O. E. R. Heimdahl, and A. J. Lindfors: *Impact-Induced Delayed Detonation in an Energetic Material Debris Bubble Formed at an Air Gap*

D. L. Orphal, R. R. Franzen, and C. E. Anderson, Jr.: *The Influence of Experimental Design on DOP Test Results and Derived Mass Efficiencies*

A. J. Piekutowski: *Characteristics of Debris Clouds Produced by Hypervelocity Impact of Aluminum Spheres with Thin Aluminum Plates*

*****Best Papers—1992*****

C. E. Anderson, Jr., D. L. Littlefield, and J. D. Walker: *Long-Rod Penetration, Target Resistance, and Hypervelocity Impact*

D. A. Crawford and P. H. Schultz: *The Production and Evolution of Impact Generated Magnetic Fields*

1994 HVIS Best Paper Candidates

C. E. Anderson, Jr., J. D. Walker, S. J. Bless, and T. R. Sharron: *On the Velocity Dependence of the L/D Effect for Long-Rod Penetrators*

S. B. Bazarov and V. A. Skvortsov: *Cumulative Effect by High Velocity Interaction*

R. M. Brannon and L. C. Chhabildas: *Experimental and Numerical Investigation of Shock-Induced Full Vaporization of Zinc*

E. L. Christiansen, J. E. Williamsen, J. L. Crews, J. H. Robinson, and A. M. Nolen: *Enhanced Meteoroid and Orbital Debris Shielding*

S. A. Finnegan, J. K. Pringle, A. I. Atwood, O. E. R. Heimdahl, and J. Covino: *Characterization of Impact-Induced Violent Reaction Behavior in Solid Rocket Motors Using a Planar Motor Test*

G. I. Kanel, M. F. Ivanov, and A. N. Parshikov: *Computer Simulation of the Heterogeneous Materials Response to the Impact Loading*

W. J. Sommers, G. R. Kruse, J. W. Johnston, L. C. Atha, and J. C. Henderson: *Spin Velocitometers for Impact Debris Fragments*

*****Best Paper—1994*****

D. A. Crawford, M. B. Boslough, T. G. Trucano, and A. C. Robinson: *The Impact of Periodic Comet Shoemaker-Levy 9 on Jupiter*

1996 HVIS Best Paper Candidates

C. E. Anderson, Jr., R. Subramanian, J. D. Walker, M. J. Normandia, and T. R. Sharron: *Penetration Mechanics of Seg-Tel Penetrators*

D. W. Baum, R. M. Kuklo, J. E. Reaugh, and S. C. Simonson: *Time Resolved Diagnostics for Concrete Target Response*

E. L. Christiansen, J. H. Kerr, and J. P. Whitney: *Debris Cloud Ablation in Gas-Filled Pressure Vessels*

B. A. Ivanov, D. Deniem, and G. Neukum: *Implementation of Dynamic Strength Models into 2D Hydrocodes: Applications for Atmospheric Breakup and Impact Cratering*

C. Loupias, J. M. Sibeaud, and P. L. Hereil: *Hypervelocity Impacts of Orbital Debris on an Advanced Heat Shielding Material: Comparison of Ouranos Computations to Experimental Results*

D. L. Orphal: *Phase Three Penetration*

A. J. Stilp and K. Weber: *Debris Clouds Behind Double-Layer Targets*

*****Best Paper—1996*****

D. E. Grady and M. E. Kipp: *Fragmentation Properties of Metals*

"Nature never deceives us; it is always us who deceive ourselves." Jean-Jacques Rousseau

"You can observe a lot just by watching."
Yogi Berra

DR. EUGENE SHOEMAKER

Gene Shoemaker died on 18 July 1997 as a result of a two-car collision outside Alice Springs, Australia. Gene was 69 years old. His wife Carolyn was seriously injured in the accident and was airlifted to the hospital. She is now recovering well at their home in Flagstaff. In addition to Carolyn, Gene is survived by his two daughters and his son.

Many of you will recall that Gene gave the Keynote Address at the 1994 Symposium in Santa Fe on the impact of the Shoemaker-Levy 9 comet on Jupiter. We were truly privileged to have Gene and Carolyn as participants at our 1994 Symposium.

Gene is considered the founder of modern planetary geology as a discipline distinct from astronomy. Gene was the first to apply fundamental principles of geology to the other planets. Shortly before his death, the American Geophysical Union awarded Gene the Bowie medal, the AGU's highest honor, for his outstanding contributions to fundamental geophysics and his unselfish cooperation in research. A selection of his many other honors includes the * National Medal of Science * Whipple Award of the American Geophysical Union * Leonard Medal of the Meteoritical Society * Kuiper Prize of the American Astronomical Society * Barringer Award of the Meteoritical Society * Gilbert Award of the Geological Society of America * Arthur L. Day Medal of the Geological Society of America, and the NASA Medal for Scientific Achievement. Gene was a Fellow of the Geological Society of America, Mineralogical Society of America, American Geophysical Union, American Academy of Arts and Sciences, as well as a member of the National Academy of Sciences. He received honorary doctorates from several universities. These and many other honors are a testament to his many and seminal contributions to planetary science and the role of impact processes in the solar system.

Gene was born in Los Angeles in 1928 and received a B.S and M.S from Princeton before going to Cal Tech and receiving an M. A. and then his Ph.D. in 1960. One of Gene's early research topics was Meteor Crater and he was one of the first to attempt to model quantitatively the impact responsible for the crater. He was the co-discoverer of coesite at Meteor Crater in 1960. This was about the beginning of the space program and Gene rocketed in that direction and never looked back. He founded the U. S. G. S. Astrogeology Branch in Flagstaff in 1961 and was its Director for years. He was a leader of Projects Ranger and Surveyor to the Moon, established a time scale for lunar geology, help train the Apollo astronauts, and was the Principal Investigator for the Apollo geological field investigations associated with the lunar landings. There was little associated with the lunar and planetary exploration part of the space program in which Gene was not a leader and key contributor. More recently, he was a key participant in the Voyager mission and the Science Team Leader for Clementine. Gene officially "retired" from the U. S. G. S. in 1993, but maintained an office as Scientist Emeritus and, in addition, joined the staff at Lowell Observatory.

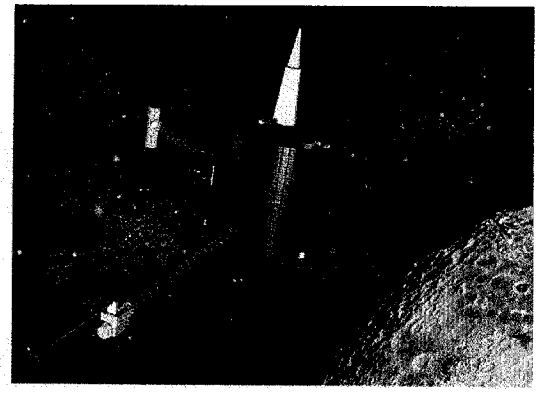
In addition to his planetary geology research, Gene was an astronomer. Carolyn is also highly respected as an astronomer. Gene and Carolyn, as a team, had long regularly used a Palomar telescope to search for earth crossing asteroids. Combined, the Shoemakers are credited with the discovery of 32 comets and more than 1000 asteroids. Just before our 1994 Symposium, "Shoemaker" became a household name because of the unprecedented and incredibly exciting impacts of the fragments of the Shoemaker-Levy 9 comet into the planet Jupiter.

Speaking personally, I was privileged to know Gene for the last 20 years or so. He guided me to the bottom of Meteor crater—and out again. He was a friend. He was probably the most generous scientist I have ever met. He was generous with his ideas and his help for younger scientists. We'll never know how many research results started with a suggestion and then a helping hand from Gene. He was not interested in credit. He was interested in understanding how the earth and the planets originated, evolved, and "worked". He is missed by all his colleagues and friends.

Gene always wanted to go to the Moon. A minor medical problem prevented him from being selected as the first scientist astronaut. The Prospector satellite is scheduled for launch to the Moon on 6 January 1998. After about a one-year polar

orbiting mission conducting basic research on the Moons origin, evolution and composition, Prospector will be crashed into the Moon to end the mission. Prospector carries an ounce of Gene's ashes. Gene will, after all, make it to the Moon.

Dennis L. Orphal
International Research Associates, Inc.
Pleasanton, CA, USA



Lunar Prospector in Orbit: *This artist's conception of Lunar Prospector shows the Spacecraft in lunar orbit with its instrument masts fully deployed. Prospector's primary mission will keep the spacecraft in a 100 km polar mapping orbit for a full year or more. This orbit will provide higher quality science data than has previously been obtained. Prospector has an Extended Mission option of a 10 km, very high resolution orbit for a brief period of time.*

ANDREW E. WILLIAMS

"A pillar of the hypervelocity impact community" recently passed away. Andrew E. Williams, 57, director of the US Naval Research Laboratory's (NRL) Hypervelocity Impact Facility died unexpectedly at his home during the evening of September 12, 1997. "Andy" dedicated his entire professional life to impact physics research and to development of equipment necessary for modern research investigations. He rose to become one of the "pillars" of his profession.

He arrived at NRL during the fall of 1960 as a Co-op student from Virginia Polytechnical Institute where he worked alternate four-month periods for three years with me on a variety of impact-related projects including high speed camera development, sabot design, optimization of high velocity powder guns, and design and shakedown of a large capacitor discharge bank. Upon receiving his BS (Physics) degree in June 1960, Andy served his U. S. Army ROTC commitment at Rocky Mountain Arsenal where he rose to the rank of Captain in the ordnance planning office. He served in the Army Reserve for an additional six years after returning to NRL in 1965. At NRL, Andy served initially as staff physicist in the Hypervelocity Impact Facility under the late Walter Atkins while he earned a graduate degree, MS (Physics), from Catholic University. Andy quickly developed a reputation as a technical innovator as he tackled a variety of difficult research assignments. The hypervelocity community was especially impressed with his accomplishments in sabot technology where he: mastered the art of launching long, dense rods to hypervelocities using light-gas guns (during the late 1960's); reached launch velocities as high as achieved anywhere in the world (also during the 1960's); developed sabot technology for launching multiple projectiles that could strike targets at preselected relative positions; and conducted some of the earliest reverse ballistic studies reported in the hypervelocity literature. The lasting importance of his early work is attested to by the unusual frequency of his reference citations by modern authors. As it happens, the paper I presented at the *48th Aeroballistic Range Association* meeting (2-6 November 1997, Austin, TX, USA) described an effort that was, essentially, an extension of a project reported by Andy in 1978. He developed a unique technique for applying mechanical loads to sabots statically that matched almost exactly those applied dynamically during energetic gun launches.

Andy's technical prowess, his organizational capabilities, and his often-demonstrated abilities to work smoothly with others lead him to regular promotions at NRL until he took over as director of the Hypervelocity Research Facility in 1978, which he ran until his passing. Many of the intervening years were "lean" for the entire hypervelocity community, but Andy's professional reputation and his many business contacts always produced enough resources to keep the facility in good financial health. Much of the group's technical work after Andy's accession was classified, but enough could be reported to maintain NRL's

standing as a very important asset to the hypervelocity research community. He worked using his large mass-throwing capabilities to support NASA, DARPA, MICOM, and Navy efforts to develop spacecraft armor for protecting them from energetic impacts. He also worked closely with our current HVIS president, Dr. Lalit Chhabildas, on an important project to demonstrate engineering applications of "third stage" projectile launches from modified light-gas guns.

Andy Williams was active in technical organizations serving his professional interest. He served as Secretary of the Aeroballistic Range Association and supported its activities for nearly thirty years with his attendance at meetings and his presentation of many important technical papers. A commemorative technical session to Andrew E. Williams on Modern Instrumentation Development was held at their 49th Meeting where Dr. Chhabildas and I delivered a short memorial address.

Andy is survived by: his wife, Patricia (Patty), a son Adrian; a daughter Stephany, and two grandchildren. At the moment, his son is a U.S. Army Captain in Korea. His work is classified, but is said to be in a field adjacent to our own. I can't help wondering if we may be hearing from another Williams in the hypervelocity impact field sometime in the future.

As a rather sad footnote, we understand that NRL has decided to liquidate its hypervelocity laboratory. It's substantial capabilities for launching heavy masses and for accommodating toxic materials safely, along with Andy Williams' innovative approaches for conducting hypervelocity research will be sorely missed !

Hallock F. Swift
Physics Applications, Inc.
Dayton OH, USA

SUBSCRIPTIONS TO *IMPACT ENGINEERING*

A special subscription rate to *International Journal of Impact Engineering* is available to Society members in good standing (paid up dues). A subscription to Volume 21, the volume currently in publication, can be made prior to the end of the year. All issues already published will be received.

Impact Engineering remains at ten issues for 1998. The subscription rate is $114.75; although this represents approximately a 10% increase over the subscription rate for 1997, the editors anticipate that there will be approximately 13% more pages in the 1998 volume. These subscription rates represent a savings of approximately $1000 over the cost of obtaining the journal directly from Elsevier. As in the past, the Journal will be mailed directly to subscribers from Elsevier.

Additionally, copies of the Proceedings of the *1996 Hypervelocity Impact Symposium*, Volume 20 (1997) are available at $100/copy.

Checks should be made out to the **Hypervelocity Impact Society**, and sent to

Dr. Charles E. Anderson, Jr.
HVIS Publications Chairman
Southwest Research Institute
P. O. Drawer 28510
San Antonio, TX 78228-0510 USA

Please include the address to which you wish the journal to be mailed. If you did not attend the symposium in Freiburg, or have not paid the $100 membership dues, please include the $100.00 in your total. Any questions concerning subscriptions should be addressed to Charlie Anderson (phone: 210-522-2313; fax: 210-522-3043; e-mail: canderson@swri.edu).

MEMBERSHIP

Membership dues are $100 (US) between symposia. Attendees of the Freiburg Symposium automatically received membership into the Society. If you did not attend the *1996 HVIS*, and did not send your dues payment previously, please send a check, made out to Hypervelocity Impact Society, for $100 (US) and send it to:

Mr. Andrew J. Piekutowski
HVIS Secretary-Treasurer
University of Dayton Research Inst.
300 College Park
Dayton, OH 45469

Please make sure we have your current address. Thank you.

HVIS & IBC DATABASES

Åke Persson of Dynamec Research AB, Sweden, has developed a PC database (it operates under DOS or under WINDOWS) that includes the titles, authors, and the full abstract for over 2100 papers published in the International Symposia on Ballistics and the Hypervelocity Impact Symposia. The search program allows the user to search for words or parts of words, or combinations thereof, in the whole text. You can search for any word, part of word or combinations thereof within the whole database using the search program included in the package! **DTX/BALLISTICS & HVIS** is delivered on 3.5 inch, MS-DOS formatted diskettes. You only need a 286 or higher DOS Personal Computer with 2 MB RAM and 5 MB hard disk space to access 2166 high quality contributions. With a 386 or higher computer you can run the program either under DOS or under WINDOWS 3.x/95.

Such a database might be of considerable interest to our membership. The prices are as follows:

DTX/BALLISTICS + HVIS (16 + 11 symposia)

Full price	$645.00
IBC or HVIS attendees	$260.00

HVIS upgrade for DTX/BALLISTICS holders (each update)

Full price	$50.00
IBC or HVIS attendees	$50.00

The price for future upgrades with abstracts from new symposia is $50.00

If you are interested, you should contact:

Åke Persson
Dynamec Research AB
P.O. Box 201
S-151 23 SÖDERTÄLJE
FAX No.: 46 8 550 60466
Tel. No.: 46 8 550 65323
E-mail: ake@dynemec.se

BOARD OF DIRECTORS AND COMMITTEES MEMBERSHIPS

Board of Directors

Lalit Chhabildas, President
Sandia National Laboratories
Division 1433 M/S 0821
P.O. Box 5800
Albuquerque, NM 87185
Tel: 505-844-4147
Fax: 505-844-0918
E-mail: lcchhab@sandia.gov

Dennis Orphal, Past President
International Research Associates, Inc.
4450 Black Avenue
Pleasanton, CA 94566
Tel: 510-485-0130
Fax: 510-485-0133
E-mail: dorphal@aol.com

Andy Piekutowski, Secretary-Treasurer
University of Dayton Research Institute
300 College Park Ave.
Dayton, OH 45469-0182
Tel: 512-229-3549
Fax: 513-229-3869
E-mail: piekuta@udri.udayton.edu

Charles E. Anderson, Jr.
Southwest Research Institute
P.O. Drawer 28510
San Antonio, TX 78228-0510
Tel: 210-522-2313
Fax: 210-522-3042
E-mail: canderson@swri.edu

Jeanne Crews
NASA-Johnson Space Center
Mail Code SN3
Houston, TX 77058
Tel: 281-483-5308
Fax: 281-483-5276
E-mail: jcrews@ems.jsc.nasa.gov

Dennis Grady
Applied Research Associates, Inc.
Suite A220
4300 San Mateo Blvd, NE
Albuquerque, NM 87110
Tel: 505-883-3636
Fax: 505-883-3673
E-mail: deg@swd.ara.com

Alois Stilp
Bussardweg 7
79110 Freiburg
Germany
Tel: 49-761-135925

Membership Committee

Hal Swift
Physics Applications, Inc.
7635 Wilmington Pike
Dayton, OH 45458
Tel: 937-439-1723
Fax: 937-439-5904

Marc Giraud
Institut Franco-Allemand de Saint-Louis
5 rue du Général Cassagnou
Boite Postale 34
F68301 Saint-Louis Cedex
France
Tel: 33-8969-5002
Fax: 33-8969-5142

Justin Kerr
NASA Johnson Space Center
Mail Code SN3
Houston, TX 77058
Tel: 713-244-5071
Fax: 713-483-3908
E-mail: kerr@snmail.jsc.nasa.gov

Awards Committee

Jeanne Crews (Chairman)
NASA-Johnson Space Center
Mail Code SN3
Houston, TX 77058
Tel: 281-483-5308
Fax: 281-483-5276
E-mail: jcrews@ems.jsc.nasa.gov

James Wilbeck (Past Committee Chairman)
ITT Sciences and Systems
600 Blvd. South, Suite 208
Huntsville, AL 35802
Tel: 205-650-2744
Fax: 205-883-5633
E-mail: james.wilbeck@ssc.de.ittind.com

Burt Cour-Palais
656 Lake Forest
Canyon Lake, TX 78133
Tel: 830-899-4781
Fax: 830-899-6999
Email: burtcp@gvtc.com

Ian Cullis
DERA
Fort Halstead
Sevenoaks, Kent
United Kingdom
Tel:
Fax: 44 1959 516050
Email: 100634.1637@compuserve.com

William Gooch
Army Research Laboratory
SLCBR-TB
Aberdeen Proving Ground, MD 21005
Tel: 410-278-6080
Fax: 410-278-8739
Email: gooch@arl.mil

Tim Holmquist
Alliant Techsystems, Inc.
600 Second Street NE
Hopkins, MN 55343
Tel: 612-931-6614
Fax: 612-931-5735
Email: tim_holmquist@atk.com

Eduard Igenbergs
Technische Universitat Munchen
Arcisstrasse 21
8000 Munchen 2
Germany
Tel: 49 89 289 15996
Fax: 49 89 289 16004
Email:

Nominations Committee

Lewis Glenn (Co-Chair)
Lawrence Livermore National Laboratory
MS-L-200
7000 East Avenue
Livermore, CA 94550
Tel: 510-422-7239
Fax. 510-423-6907
E-mail: glenn5@llnl.gov

Roger Cheret (Co-Chair)
CEA CEDEX 15
131-33 rue de la Federation
Paris 75752

France
Tel: 33-1-69-26-76-74
Fax: 33-1-69-26-70-05
E-mail: roger.cheret@cea.fr

Don Shockey (Past Committee Chairman)
SRI International
333 Ravenswood Avenue
Menlo Park, CA 94025-3493
Tel: 415-859-2587
Fax: 415-859-2260
E-mail: dshockey@unix.sri.com

Publications Committee

Charles Anderson (Chairman)
Southwest Research Institute
P.O. Drawer 28510
San Antonio, TX 78228
Tel: 210-522-2313
Fax: 210-522-3042
E-mail: canderson@swri.edu

James Walker
Southwest Research Institute
P.O. Drawer 28510
San Antonio, TX 78228
Tel: 210-522-2051
Fax: 210-522-3042
E--mail: jwalker@swri.edu

Educational Outreach Committee

Gordon Johnson (Chairman)
Alliant Techsystems, Inc.
600 Second Street NE
Mail Station MN11-1614
Hopkins, MN 55343
Tel: 612-931-5905
Fax: 612-931-6523
E-mail: gordon_johnson@atk.com

Jerry Davis
Institute for Advanced Technology
The University of Texas at Austin
4030-2 West Braker Lane, Suite 200
Austin, TX 78759
Tel: 512-471-9060
Fax: 512-471-9096
Email:

Fred Hörz
NASA-JSC
Mail Code SN4
Houston, TX 77058
Tel: 713-483-5042
Fax: 713-483-5347
E-mail: horz@snmail.jsc.nasa.gov

William Isbell
ATA Associates
P.O. Box 6570
Santa Barbara, CA 93111
Tel: 805-965-4220
Fax: 805-967-6031
E-mail: bill_isbell@cmail.sb.grci.com

Eberhard Schneider
Ernst-Mach-Institut
Fraunhofer-Institut für Kurzzeitdynamik
Eckerstraße 4
7800 Freiburg i.Br.
Germany
Tel: 49-07628-80563
Fax: 49-761-2714-316

William Schonberg
University of Alabama at Huntsville
Mechanical Engineering Department
Huntsville, AL 35899
Tel: 205-895-6117
Fax: 205-895-6758
Email:

Peter Schultz
Brown University
Department of Geological Sciences
Providence, RI 02912
Tel: 401-863-2417
Fax: 401-863-2978

Dieter Stoffler
Institut für Mineralogie und Petrographie
am Mueseum für Naturkunde
Zentralinstitut der Humboldt-Universitat
Invalidenstr. 43
D-10115 Berlin
Germany
Tel: 49-30-2897/2544
Fax: 49-30-2897/2561

S. Robert Skaggs
79 County Road 117 South
Santa Fe, NM 87501
Tel: 505-455-2392
Fax: 505-455-3181
E-mail: bobskaggs@aol.com

CALENDAR OF RELATED CONFERENCES AND SYMPOSIA

Meeting	Location	Dates
8th Conf. on Computational Research on Materials	Morgantown, WV, USA	May 20-22, 1998
Structural Safety and Protection Symposium	Trondheim, Norway	May 25-27, 1998
Gordon Conference on Research at High Pressure	Meriden, NH, USA	June 21-26, 1998
Vth European Indirect Fire Symposium	Cranfield University Shrivenham, UK	June 23-25, 1998
SUSI 98 (Structures Under Shock and Impact)	Thessaloniki, Greece	June 24-26, 1998
5th International. Conf. on Composites Engineering,	Las Vegas, NV, USA	July 5-11, 1998
New Models and Numerical Codes for Shock-Wave Processes in Condensed Matter	St. Petersburg, Russia	July 12-17, 1998
1998 ASME Pressure Vessels and Piping Conference	San Diego, CA, USA	July 26-30, 1998
9th Annual Ground Target Modeling & Validation Conf.	Houghton, MI, USA	August 18-20, 1998
11th Detonation Symposium	Aspen, CO, USA	August 30 - Sept. 4, 1998
Personnel Armour Systems Symposium '98	Colchester, UK	September 8-11, 1998
SES '98 Conference (Society of Engineering Science)	Pullman, WA, USA	September 27-30, 1998
Aeroballistic Range Association Meeting	The Hague, The Netherlands	October 5-9, 1998
ICES '98 (Int. Conf. on Computational Engng. Science)	Atlanta, GA, USA	October 6-9, 1998
Hypervelocity Impact Symposium	Huntsville, AL, USA	November 16-20, 1998
ASME Winter Annual Meeting	Anaheim, CA, USA	November 16-19, 1998
3rd International Symposium on Impact Engineering	Singapore, Singapore	December 7-9, 1988
6th Pan American Congress on Appl. Mech. (PCAM VI)	Rio de Janeiro, Brazil	January 4-8, 1999
Plasticity '99: Int. Symp. on Plasticity and Its Current Applications	Cancun, Mexico	January 5-13, 1999
2md Australasian Congress on Appl. Mech. (ACAM99)	Canberra, Australia	February 10-12, 1999
APS Shock Physics Conference	Snowbird, UT, USA	June 27-July 2, 1999
AIRAPT High Pressure Conference	Honolulu, Hawaii, USA	July 25-30, 1999
Ballistics '99 (International Symposium on Ballistics)	San Antonio, TX, USA	November 15-19, 1999