

FOIA MARKER

**This is not a textual record. This is used as an
administrative marker by the William J. Clinton
Presidential Library Staff.**

Collection/Record Group: Clinton Presidential Records
Subgroup/Office of Origin: Office of Science and Technology Policy
Series/Staff Member: Skip Johns
Subseries:

OA/ID Number: 10672
FolderID:

Folder Title:
Laser and Electro-Optics Manufacturers Association (LEOMA)

Stack:	Row:	Section:	Shelf:	Position:
S	66	4	5	1

File

The Laser and Electro-Optics Manufacturers' Association

LEOMA

123 Kent Road
Pacifica CA 94044
415 738-1492
415 738-1592 FAX

1994 Officers

President

Patrick Edsell
Spectra-Physics Lasers

President-Elect

Desmond Bradley
Lumonics Inc

Past President

David Farrell
Burleigh Instruments

Treasurer

Randall Heyler
Newport Corp.

Secretary

Donald Scifres
Spectra Diode Laboratories

Director:

Remy Aubert
Continuum

Martin Cohen
Quantronix

Bernard Couillaud
Coherent

Dennis Fortino
Spectra-Physics

Robert Gelber
Coherent

Ben Graham
Lexel

Robert Greening
OmniChrome

Robert Hill
Union Carbide

Paul Kenrick
Melles Griot

Carlos Roudy
Spiricon

Glenn Sherman
Laser Power Optics

John Wheeler
Melles Griot

Executive Director

C. Breck Hitz

January 5, 1994

Barbara Bernstein
White House OSTP
via FAX: 202 395-4155

Dear Ms. Bernstein:

We are looking forward to hearing Mr. Johns' comments during our annual Executive Seminar at 8:30 AM on February 7 at the Washington Marriott Hotel, 1221 22nd Street NW.

Can you please re-confirm that the 8:30 time is convenient with Mr. Johns? My fax number is 415 738-1592.

For your information, I am accompanying this letter with a schedule for the entire Seminar. Perhaps Mr. Johns will be interested in knowing the other people we will be hearing from that day.

Sincerely,

si C. Breck Hitz

C. Breck Hitz
Executive Director

Schedule of Events

LEOMA Executive Seminar Washington DC February 6-8, 1994

Sunday, February 6

6:00 Cocktail reception for all attendees

7:00 Seminar Banquet

8:00 Duncan Moore

Professor Moore, formerly the Director of the Institute of Optics at the University of Rochester, is currently an APS Congressional Fellow. In his after-dinner talk, he will relate some of his experiences as a technologist in the halls of Congress.

Monday, February 7

7:00 - 8:00 Breakfast

8:30 Lionel Johns, Director of Technology Policy,
The White House Office of Science and Technology Policy.

Mr. Johns' subject will be "The Role of the National Laboratories in the Clinton Administration's Technology Policy."

9:45 Marc Stanley, Assistant Director for Business Assessment,
National Institute of Standards and Technology

Mr. Stanley will describe NIST's Advanced Technology Program (ATP), which has been called a "civilian DARPA," and which will fund at least \$200 million of technology development in 1994.

11:00 L.N. Durvasula, Program Manager (for laser programs), Defense
Sciences Office, Advanced Research Projects Agency

Mr. Durvasula will discuss ARPA's goals in developing and improving materials-processing lasers.

12:00 Luncheon Senator Pete Domenici

Senator Domenici will give his perspective on the future of the national laboratories, and discuss the political climate for entrepreneurial, R&D-based companies.

2:30 James Jensen, Director, Congressional Affairs, U.S. Congress
Office of Technology Assessment

Mr. Jensen will address Congressional attitudes toward high-technology industries, and explain how technology policy is developed and implemented in Washington.

4:00 Jonathan Silver, Assistant Deputy Secretary,
United States Department of Commerce

Mr. Silver will describe the Clinton administration's health-care plan, and explain why it will benefit employers and employees alike.

Monday evening.

There is no formal program Monday evening, but new LEOMA members and non-members may, if they wish, join small pre-arranged groups of LEOMA members for dinner at various restaurants about town.

Tuesday, February 8**7:00 Breakfast**

John F. Mancini, Senior Vice President
American Electronics Association

Mr. Mancini will explain how to maximize the effectiveness of visits with Members of Congress, Congressional staffers, and administration officials.

9:00 - 12:00 Visits with Federal Officials

Seminar participants will visit officials on Capitol Hill and in the Administration. LECOMA will make all appointments in advance, based on consultation with the Washington Office of AEA. Topics to be discussed may include federal support of U.S. technical participation in international standards, accounting rules affecting issuance of stock options, various federal tax policies such as capital gains, foreign tax issues, and R&D credits, and other federal policies.

1:00 LECOMA Annual Meeting

Non-members are welcome to attend the Annual Meeting, which will include status reports on all LECOMA projects and other LECOMA business. An agenda for the Annual Meeting will be distributed to attendees in January.

3:00 Seminar ends

General Information

Spouses

Spouses are welcome to participate in any or all parts of the Seminar, and there is no additional charge for spouses. If your spouse will accompany you, please be sure to include his or her name on the registration form.

Saturday evening reservations at the Washington Marriott

If you would like a reservation at the Washington Marriott for Saturday evening, February 5, please check the appropriate box on the registration form. Please pay for this extra night, and for any other incidental expenses you've incurred during your stay, when you check out on Tuesday.

Registration form information

Please be sure to fill out the registration form completely. The information about your date of birth and social security number will be required for some of the visits on Tuesday morning.

Visits with Congressional and administration officials

In the coming weeks, we will be preparing a list of people to see, and topics to discuss, during our visits on Tuesday morning. If you would like to add people or topics to this list, please call LECOMA headquarters.

LEOMA

123 Kent Road
Pacifica CA 94044
415 738-1492
415 738-1592 FAX

1993 Officers

President

David Farrell
Burleigh Instruments

President-Elect

Patrick Edsell
Spectra-Physics Lasers

Past President

Robert Gelber
Coherent Inc.

Secretary

Mark Fukuhara
Laser Photonics Inc.

Treasurer

Desmond Bradley
Lumonics Inc.

September 1, 1993

Barbara Bernstein

Office of the Director of Technology Policy
White House Office of Science and Technology Policy
Old Executive Office Building
Washington DC 20500

Dear Ms. Bernstein:

Thank you for your recent phone message accepting our invitation for Mr. Johns to speak at our seminar in Washington on February 7.

Directors

Remy Aubert
Continuum

Martin Cohen
Quantronix

Bernard Couillaud
Coherent

Mark Dowley
Liconix

John Fleischer
Photon

Dennis Fortino
Spectra-Physics

Robert Hill
Union Carbide

Randall Heyler
Newport

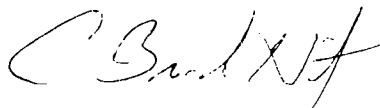
Paul Kenrick
Melles Griot

Gary Klauminzer
VISX

Donald Scifres
Spectra Diode Labs

Glenn Sherman
Laser Power Optics

Sincerely,



C. Breck Hitz
Executive Director

Executive Director

C. Breck Hitz

LEOMA

123 Kent Road
Pacifica CA 94044
415 738-1492
415 738-1592 FAX

1993 Officers

President

David Farrell
Burleigh Instruments

President-Elect

Patrick Edsell
Spectra-Physics Lasers

Past President

Robert Gelber
Coherent Inc.

Secretary

Mark Fukuhara
Laser Photonics Inc.

Treasurer

Desmond Bradley
Lumonics Inc.

Directors

Remy Aubert
Continuum

Martin Cohen
Quantronix

Bernard Couillaud
Coherent

Mark Dowley
Liconix

John Fleischer
Photon

Dennis Fortino
Spectra-Physics

Robert Hill
Union Carbide

Randall Heyler
Newport

Paul Kenrick
Melles Griot

Gary Klauminzer
VISX

Donald Scifres
Spectra Diode Labs

Glenn Sherman
Laser Power Optics

Executive Director

C. Breck Hitz

August 16, 1993

Mr. Lionel Johns
White House OSTP
Old Executive Office Bldg Rm 423
Washington, DC 20500

yes

Dear Mr. Johns:

I enjoyed seeing you again when I visited your office with several members of the LEOMA Board on July 28. As we mentioned during that visit, we are holding our annual Executive Seminar in Washington this winter, and we would like to extend to you an invitation to address this group of executives.

The date for the Seminar has now been set for February 7. The time of your presentation can be arranged to suit your convenience, but if you have no preference I would propose that it be mid-morning. Your prepared comments might take about half an hour, and we will allow a question-and-answer period at the close of your presentation. I would hope at least part of your presentation would address the future of the large national laboratories like Livermore and Los Alamos, because these institutions are not only leading innovators in our field, they are also among many of our members' largest customers.

LEOMA is the trade association for U.S. manufacturers of lasers, electro-optics, and associated equipment. We are heavily involved in the formulation of international standards in lasers and optics; in analyzing and understanding global markets for our members' products; and in coordinating the interface between our industry and the federal government. Our Executive Seminar brings together 20 to 40 of the top executives in our industry to address issues that are of importance to the industry.

I certainly hope you will be able to accept this invitation to address the U.S. laser industry. Please do not hesitate to contact me with any questions you may have about LEOMA or about our Executive Seminar.

Sincerely,

C. Breck Hitz
C. Breck Hitz
Executive Director

8/24 left a "yes" on voice mail

The Role of the National Laboratories
in the Clinton Administration's Technology Policy

1. The Federal investment in research and development is about \$72 billion [?] this year. With the government budget as tight as it is, our first concern is to protect that investment, and second, to spend it wisely. Every dollar we spend for R&D should count. Explain NSTC.

2. Out of the Federal R&D budget, more than one-third goes to the government's own labs; in 1993, we spent upwards of \$25 billion in labs that the government owns or operates.

3. President Clinton and Vice-President Gore outlined their technology goals and strategy a year ago, in a policy document called "Technology for America's Economic Strength." That title states in a nutshell the goal of the Administration's policy.

4. As for the labs' contribution, the policy document stated:

All laboratories managed by the Department of Energy, NASA, and the Department of Defense that can make a productive contribution to the civilian economy will be reviewed with the aim of devoting at least 10-20 percent of their budgets to R&D partnerships with industry.

5. This group of labs was chosen for two reasons. First, these labs were built around defense and space missions that originated in the Cold War, and with the Cold War over, their missions must now change. Second, these labs are where the money is. They accounted for \$18 billion out of the \$25 billion Federal lab budget in 1993. The only other agency with a lab system close in size to those of the Big Three is Health and Human Services (\$2 billion in 1993). HHS labs -- chiefly NIH -- already have longstanding research relationships with the pharmaceutical and biotechnology industries.

6. We have made a good start on increasing lab-industry R&D partnerships. For example, the Department of Energy signed 339 Cooperative Research and Development Agreements (CRADAs) in 1993 alone -- more than the total of 328 over the previous 3 years. CRADAs do not yet represent 10 percent, much less 20 percent, of the nearly \$6 billion combined budgets of the DOE labs. However, the labs are making progress, and they have far more proposals for industrial partnerships than they have so far been able to fund.

7. The agencies -- DOE in particular -- are also improving the process of CRADA approval, cutting red tape and the time it takes to shepherd an agreement through to a final signature. Bureaucratic obstacles (e.g., too many layers of review) are being lowered, but there are still issues that stand in the way

of speedy resolution; in particular, disposal of rights to intellectual property generated in R&D partnerships, and requirements that products resulting from the partnerships be manufactured in the United States. It is important to resolve these issues consistently among agencies, and stick with the resolutions so as to avoid time-wasting wrangles.

8. Of course, numbers of CRADAs are not the only measure of the performance of the Federal laboratories in contributing to economic growth and industrial competitiveness. There also needs to be a strategic approach to guide R&D partnerships, so they make a maximum contribution to high priority national needs and avoid wasteful duplication with the activities of other agencies.

9. That brings us back to the points I began with: in a time when R&D budgets are likely to be flat at best, we have to do a better job of setting priorities. In other words, put more money into the most important investments and cut back on those that are less important or outdated. And to do that, we need an effective means of coordinating R&D across agencies: The NSTC committees are the forum for this kind of interagency coordination and management.

10. We also need to sort out the particular advantages of different kinds of players and institutions in a technology policy that is targeted to stronger industrial performance and economic growth. For example, the comparative advantage of the big, multi-program national laboratories is in their ability to do long-term, large-scale projects, requiring expensive equipment and teams of people with great depth in many scientific and engineering disciplines. In laying out our R&D strategy, we will need to give closer attention than ever to the particular or even unique strengths of all the players -- universities, independent research organizations, and industrial laboratories, as well as the government's labs.

To BB

Shirley suggests referring
them to Anita Jones.

I will do if you want
me to _____ would you

✓ab/AB Bob pls. do
So as I told
them I had passed it to you

LEOMA

1994 Officers

President
Patrick Edsell
Spectra-Physics Lasers

President-Elect
Desmond Bradley
Lumonics Inc.

Past President
David Farrell
Burleigh Instruments

Treasurer
Randall Heyler
Newport Corp.

Secretary
Donald Scifres
SDL, Inc.

Directors

Remy Aubert
Continuum

Martin Cohen
Quantronix

Bernard Couillaud
Coherent

Dennis Fortino
Spectra-Physics

Robert Gelber
Coherent

Ben Graham
Lexel

Robert Greening
Omnichrome

Robert Hill
Union Carbide

Paul Kenrick
Melles Griot

Carlos Roundy
Spiricon

Glenn Sherman
Laser Power Optics

John Wheeler
Melles Griot

Executive Director

C. Breck Hitz

123 Kent Road
Pacifica CA 94044
415 738-1492
415 738-1592 FAX

Date Rec'd 7-18-94

ACTION to See

INFO to

SIG of

Stationery

DATE DUE

7/18 - Skip
July 14, 1994

Dr. John Gibbons
White House OSTP
Old Executive Office Bldg
Washington, DC 20500

Dear Dr. Gibbons:

LEOMA is the trade association for American manufacturers of lasers, electro-optics, and related components. Each year we hold an Executive Seminar for our industry's executives to address issues that are crucial to the industry. Typically, 30 to 40 of the top executives from U.S. laser manufacturers attend this function. Our 1995 Executive Seminar will be at the Washington Sheraton in March, and we would like to invite you to deliver the keynote address. The exact date of the Seminar has not been set and, if it were helpful, could be adjusted to accommodate your schedule.

The U.S. laser and electro-optics industry is small, but central to the development of many vital technologies during the next decade. As I know you are aware, the future of communications, information processing, medicine, manufacturing, and many other crucial industries will be dependent on lasers and electro-optics.

LEOMA is the only trade association for U.S. laser makers, and the organization is described in more detail in the enclosed booklet. It has been estimated that 90% of the lasers made in the United States are manufactured by LEOMA members.

The executive committee of LEOMA's Board will meet in Washington in September, and we would be delighted to visit you then, to introduce you to this Association and personally invite you to the Executive Seminar. The exact date of this visit can also be adjusted to accommodate your schedule.

Sincerely,

C. Breck Hitz
C. Breck Hitz
Executive Director

An Invitation to Join LEOMA

If your company is not already a member of the Laser and Electro-Optics Manufacturers' Association, you are invited to join your colleagues who are already members. Membership is open to any North American manufacturer of lasers, laser systems, laser accessories, or laser optics. Associate membership is open to any company or individual, and Exhibitor Associate membership is open to any company that wishes to participate only in LEOMA's conference and exhibition activities. Membership dues are shown below.

Revenue from Laser/E-O Sales	Dues
up to \$600,000	\$200
up to \$1M	\$400
up to \$2M	\$700
up to \$3.5M	\$1,250
up to \$6M	\$1,850
up to \$10M	\$2,900
up to \$20M	\$5,700
up to \$35M	\$10,000
up to \$60M	\$14,000
up to \$100M	\$18,000
up to \$200M	\$22,000
Associate	\$660
Exhibitor Associate	\$200

For more information, please contact the LEOMA headquarters office at 123 Kent Road, Pacifica CA 94044, phone 415 738-1492, fax 415 738-1592.

LEOMA Officers and Directors

President Patrick Edsell Spectra-Physics 415 961-2550	President-Elect Desmond Bradley Lumonics 613 592-1460	Past President David Farrell Burleigh 714 924-9355	Secretary Donald Scifres SDL 408 943-9411	Treasurer Randall Heyler Newport 714 963-9811	
Remy Aubert Continuum 408 727-3240	Martin Cohen Quantronix 516 273-6900	Bernard Couillaud Coherent 415 493-2111	Dennis Fortino Spectra-Physics 415 961-2550	Robert Gelber Coherent 916 823-9550	Ben Graham Lexel 510 770-0800
Robert Greening Uniphase 909 627-7446	Robert Hill Union Carbide 206 835-9802	Paul Kenrick Melles Griot 714 252-1444	Carlos Roundy Spiricon 801 753-3729	Glenn Sherman Laser Power Optics 619 755-0700	John Wheeler Melles-Griot 714 252-1444

MEMBERS' NEWSLETTER

June 1994

LEOMA Urges Restrictions on National Laboratories

LEOMA has urged the U.S. Congress to enact legislation that would restrict the national laboratories, and especially the nuclear-energy labs at Los Alamos, Livermore, and Albuquerque, from competing with private companies. As a result of LEOMA's campaign, a bill before the House of Representatives has been amended to include language discouraging such competition.

The competition has developed as weapons-related work at the laboratories has decreased, and they have moved into civilian technologies to take up the slack. In principle, the labs' contributions to civilian technology should augment efforts in the private sector, enhancing the nation's technical competitiveness in the global market. But, in

practice, it doesn't always work that way. Sometimes, the labs make available the same or similar products and services as those provided by the private sector. The result is diminished markets for the private sector, and U.S. companies that are less able to compete internationally. There are numerous examples of this, some involving LEOMA members.

Part of the program for the 1994 LEOMA Executive Seminar, held in Washington in February, involved visits by Seminar participants with their own legislators and with other legislators active in science and technology policy. Many participants raised the issue of competition between the national labs and the private sector during these visits.

(Continued on page 2)

INSIDE:

1994 LEOMA Economic Survey	p.3
LEOMA Influences House Bill	p.3

Laser Standards

Approval of Laser Standards Expected

Half a dozen proposed laser standards will be up for approval when the ISO Laser Committee (ISO TC172/SC9) meets later this month in Beijing, China. Among them is the important – and difficult – standard for measuring beam width, divergence, and propagation factor. When it is implemented, this standard will make possible meaningful comparison of "beam quality" for different lasers any place in the world.

The capability to make meaningful comparisons is one of the strongest motivations for standardization. Although there are existing standards for the measurement of a gasoline's octane, for example, or a stereo amplifier's wattage, there are no widely accepted standards for measuring laser parameters. The lack of standards makes it difficult to compare laser measurements and, in the long run, inhibits the utilization of lasers.

Beam quality is just one of the laser parameters whose measurement may vary from labora-

(Continued on page 2)

COCOM is Dead — Unilateral Controls in Place

COCOM, the International COordinating COMmittee for Export Controls, ceased to exist on March 31. Created in the aftermath of World War II, COCOM served for decades as the mechanism that controlled the exports of "dual-use" commodities from the free world to communist nations. ("Dual-use" commodities are those that can be used in both civilian and military applications.) In the mid-1980s, the U.S. laser and electro-optics industry was spending hundreds of man-hours annually dealing with the administration of export controls. Many medium- and high-power

(Continued on page 3)

National Labs

(Continued from page 1)

It was the first time many legislators had heard of this problem, and some of them wanted to know more. So LEOMA was invited to testify on the subject before the House Committee on Energy and Power. LEOMA executive director Breck Hitz presented the testimony on March 24.

Hitz began by emphasizing LEOMA's support for the national laboratories and their expansion into civilian technologies. "We believe that a strong and constructive linkage between industry and the DoE labs can enhance the competitiveness of U.S. high-technology companies, and, in the long-term, augment the standard of living of the American people," he told the committee. But he also warned of a less desirable result if the labs "deploy their taxpayer-financed resources to compete with those companies in the marketplace."

Examples

LEOMA's testimony brought forth several examples of competition between the national labs and the private sector. One involving LEOMA members is the manufacture of high-power diode lasers. Hitz explained that while several companies manufacture these devices, none of them is the *largest* producer of high-power diodes. That title belongs to Lawrence Livermore National Laboratory, he said. The market available to commercial companies is significantly reduced as a result.

"It is important to note," Hitz continued, "that manufacturing costs of diode lasers decrease dramatically as volume increases. Thus, American manufacturers

have not been able to drive their prices down as rapidly as they otherwise could have."

Another example of competition between the national labs and the private sector cited in the LEOMA testimony involves military and intelligence satellites. Often a military agency will contract with a national lab to develop a satellite, despite the availability of appropriate satellite technology in the private sector. Among the examples given in the testimony were the AMDAS and BASILISK satellite programs.

The problem is not limited to the laser and electro-optics industry. To drive this point home, Hitz mentioned a consortium of companies that have contracted with Sandia for environmental work that could have been conducted by private firms. "But, instead of doing the work [themselves, these firms] are subsidizing Sandia's competition with their tax money," Hitz observed.

Recommendations

LEOMA's testimony concluded by recommending that the labs continue to redirect their emphasis from military to civilian projects. "However, we urge that any legislation intended to facilitate this redirection be crafted so that the redirection is limited to areas where the national labs truly can enhance, and not diminish, the health of American high-tech companies," Hitz testified. "The most efficient way to get technology into the private sector is to develop it there in the first place." Thus, technologies being developed by the private sector should not be addressed by the national labs. Instead, the labs should address technologies that are too big, and whose pay-off is too far

(Continued on page 3)

Laser Standards

(Continued from page 1)

tory to laboratory. Another is pointing stability. A standard for measuring that quantity is also up for approval during the Beijing meeting. A third measurement standard, this one for measuring the light scattered by optical components, is also tentatively scheduled for approval at the meeting.

The Committee's group on medical-laser standards – whose meeting will be held in Stuttgart rather than Beijing – will consider approval of a standard to measure the laser resistance of endotracheal tubes.

The two other standards that will be up for approval during the Beijing meeting are one that would establish preferred sizes and focal lengths for infrared optical components, and one that would define many technical terms used in integrated optics.

Tech-Transfer Tour of LLNL

Despite our current disagreements with Livermore and the other national laboratories, LEOMA remains a strong supporter of the labs in general. On May 13, more than 20 LEOMA representatives, from 11 companies, visited LLNL. The purpose of the visit was to evaluate LLNL laser and electro-optics technologies for transfer to commercial companies.

Was the tour successful? Most participants thought so, and several people said they had spotted technology that might be useful in their products.

LEOMA will probably repeat the tour later this year. Please contact LEOMA headquarters for information.

1994 LEOMA Economic Survey to be Published

The first half of the 1994 LEOMA Economic Survey, covering the period from January, 1990, through December, 1993, is ready for distribution to participating LEOMA members. Altogether, the Survey covers sales of more than \$700 million in lasers and electro-optics. These sales are analyzed in terms of *what* is sold, *to whom* it's sold, and *where* it's sold.

The second half of the 1994 Survey, available in the fall, will include data from the first half of 1994.

National Labs

(Continued from page 2)

in the future, for the private sector. "For example, technologies that would seem appropriate for the DoE laboratories to pursue include inertial-confinement fusion,

hydrogen-powered automobiles, and large-scale, advanced environmental technologies," Hitz said. LEOMA's final recommendation was the creation of a government-industry panel to oversee the selection of future projects for the national labs.

Legislation Amended in House of Representatives

LEOMA followed up its testimony by working with Representatives and Congressional staff to amend a bill currently before the House. House Resolution 1432, *Department of Energy Laboratory Technology Act of 1994*, was prepared by Representative George Brown, chairman of the powerful Committee on Science, Space, and Technology. During April, its language was amended in two places to reflect Congressional concern over the issue of competition between the national labs and the private sector.

In the bill's opening pages, where the mission of the DoE labs is described, the stipulation has been added that the labs' undertakings "complement and do not duplicate or conflict with existing capabilities in the private sector." In addition, another section of the bill deals with the responsibilities of the Secretary of Energy. Here, the following paragraph has been added. "The Secretary shall ensure, to the

maximum extent practicable, that activities of the departmental laboratories complement and do not duplicate or conflict with existing capabilities in the private sector."

These two amendments, both in key sections of the bill, are supported by the Secretary of Energy. They will carry a strong message to the laboratories' leadership. Already, LEOMA has initiated discussions with Livermore in an attempt to resolve the problem of diode-laser manufacturing. HR 1432 is expected to reach the floor of the House this summer. Many LEOMA members have already contacted their Representatives and urged support for this bill, and other members will do so before the bill reaches the floor. The current expectation among Congress-watchers is that the bill will be approved by the House, and then move into conference committee to resolve differences between this House bill and a corresponding bill from the Senate.

COCOM

(Continued from page 1)

lasers and components could not be exported, even to friendly nations in western Europe and Asia, without extensive licensing.

Licensing requirements have been easing continually since 1990, matching pace with the shrinking cold war. LEOMA executive director Breck Hitz joined the Commerce Department committee that establishes laser export controls in 1989, and on several occasions traveled to COCOM's headquarters in Paris as a member of the U.S. negotiating team. Although he now chairs the committee (the Laser Technical Advisory Committee, or LaserTAC), Hitz says LEOMA members rarely encounter problems with export controls now. "Any LaserTAC meetings during the past couple of years have been held over the telephone," he says.

But the demise of COCOM does not mean an end to all export controls. COCOM allowed many nations to coordinate their export controls, and in COCOM's absence individual nations still retain their own regulations. U.S. regulation on lasers and electro-optics have again been reduced, however. A new general license, called "GLX," allows many items that previously required an individually validated license to be exported under general license. By using a general license instead of an individual license, an exported can slash the paperwork requirement dramatically. Examples of lasers eligible for export under GLX license include high-power, pulsed, dye, carbon-dioxide, and neodymium lasers. Detailed information about the GLX license is available from LEOMA headquarters.



THE LASER AND ELECTRO-OPTICS MANUFACTURER'S ASSOCIATION

*...Creating a healthy business environment for North American
manufacturers of lasers, electro-optics, and associated equipment.*

Table of Contents

LEOMA Mission Statement	<i>1</i>
LEOMA's Contributions to the Industry	<i>4</i>
The LEOMA Economic Survey	<i>11</i>
The LEOMA Executive Seminar	<i>12</i>
ISO Laser Committee Standards Summary	<i>14</i>
LEOMA Officers and Directors, 1994	<i>19</i>
LEOMA Membership List	<i>20</i>
An Invitation to Join LEOMA	<i>21</i>

LEOMA Mission Statement

LEOMA's mission is *"to create a healthy business environment for North American manufacturers of lasers, electro-optics, and associated equipment."* The Association strives to create an environment in which the industry as a whole can thrive and prosper. LEOMA recognizes four specific functions where industry members can work together to achieve significantly greater progress than would be possible working separately. These four functions are:

1. Electro-optics markets

- Analyze and promote understanding of existing markets for lasers and electro-optics.
- Encourage the development of, and manufacturers' access to, new markets.

2. Federal government interface

- Provide a single industry voice to all branches, departments, and agencies of the United States government.

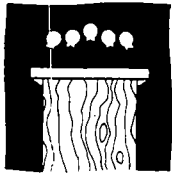
3. National and international standards

- Influence the evolution and implementation of standards bearing specifically on laser and electro-optics.
- Provide information and assistance with all other standards affecting laser and electro-optics manufacturers.

4. Industry infrastructure

- Promote legal and appropriate intra-industry communication through seminars and other functions.
- Encourage improvements in electro-optics education and manufacturing technology.

The following editorials, reprinted with permission from Laser Focus World and Photonics Spectra, summarize the focus of our efforts and emphasize the importance of our activities in addressing industry-wide concerns.



Why your company should join LEOMA

David J. Farrell

The laser and electro-optics industry is going through an unbelievable culture shock. For years, many who have any longevity in this marketplace had come to believe growth was inevitable and recessions nonexistent. However, the real world has taught us that, indeed, growth can be nonexistent and recessions inevitable. Jobs have disappeared in takeovers, mergers and downsizings. The global marketplace has imposed a new set of competitive rules with national and international standards. Financial and market data take on new levels of significance as we try to understand existing markets for lasers and electro-optics and try to develop new markets.

Formulating industrywide positions and communicating them to the government is no longer an option—it's a necessity. Encouraging improvements in the industry infrastructure may be the only way to survive the future. Traditional approaches simply are not acceptable any more. We are being forced to do something we hate to do—change.

It's time for our industry executives to speak up and make their voices heard. And LEOMA—the Laser and Electro-Optics Manufacturers Association—may be the best way to make that happen. LEOMA is an organization of North American manufacturers of lasers and related electro-optical equipment created to harness the collective energies of its members and focus them on creating an environment in which the laser and electro-optics industry can thrive. While individual member companies may sometimes benefit directly and immediately from LEOMA activities, the long-term health of the entire industry is LEOMA's overriding concern.

Heading off disasters

Tracking development of national and international standards and heading

off disasters is at the top of LEOMA's agenda. We are concerned, of course, about new standards for laser safety and laser-measurement techniques; but there are broader standards on subjects such as electromagnetic compatibility, quality systems, electrical safety, and other topics important to laser and electro-optics manufacturers.

During the past two years, LEOMA has forged an alliance with European and Asian standards institutes. It has been involved in the generation of international laser standards through the International Standards Organization (ISO) Laser Committee, chaired by LEOMA's executive director, Breck Hitz. As a global leader in laser standards, LEOMA can assure manufac-

Formulating industrywide positions and communicating them to the government is no longer an option—it's a necessity.

turers that the standards being produced will facilitate, rather than hinder, international trade in laser and electro-optical equipment.

Second on LEOMA's agenda is analyzing and promoting understanding of the laser and electro-optics market, and encouraging development of new markets. Last year, LEOMA initiated a project to gather data from its members concerning financial operations and markets. These data were analyzed by an independent group and distributed to participating LEOMA members. LEOMA plans to repeat this survey annually and extend its base domestically and internationally.

A third function for LEOMA is to provide a coherent interface with the federal government. The organization

has had a significant influence on scaling back US national-security export controls on lasers and electro-optical hardware. LEOMA will continue this activity as the USA defines new national-security controls for the post-Cold War era. In a similar vein, the US Department of Commerce has invited LEOMA to assist in its Congress-mandated survey of the health of the US optoelectronics industry. And, in a separate matter, the US National Institute of Standards and Technology has asked LEOMA to participate in discussions on its new Strategic Partnership Initiative, designed to bring together suppliers and users of high technology for the benefit of both.

A fourth LEOMA project area is to promote the industry infrastructure through seminars and other functions. Longer-term goals include encouraging improvements in electro-optical education and manufacturing technology, which is currently being addressed by LEOMA's advocacy of industrywide certification under ISO 9000.

Working together

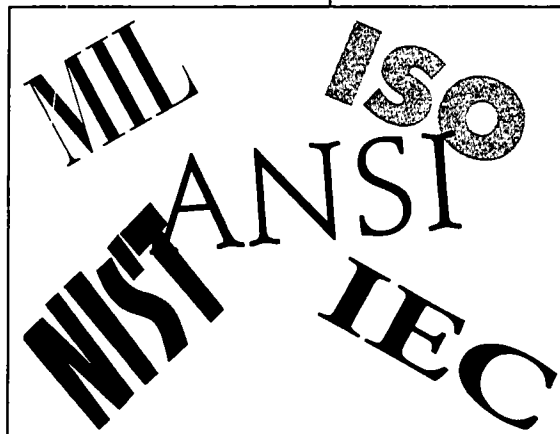
Before LEOMA's inception there was little cooperation among companies in our industry. Although there is still healthy competition among LEOMA members, the organization provides a mechanism for cooperation and mutual assistance in those areas where is it both legal and beneficial. In a sense, the existence of LEOMA demonstrates the industry's maturity and its capability to set aside short-term parochial concerns to address major issues facing the entire community. □

If your company is not already a member of the Laser and Electro-Optics Manufacturers Association, you are invited to join. New members will receive a 50% discount. For further information, contact LEOMA Headquarters, 123 Kent Road, Pacifica, CA 94044; tel. (415) 738-1492, or FAX (415) 738-1592.

DAVID J. FARRELL is president of Burleigh Instruments (Fishers, NY) and president of LEOMA for 1993.

The Push for Standards in Photonics

LEOMA's Efforts Deserve Solid Support



From the first gleam in an inventor's eye to the competitive rough-and-tumble of the mature marketplace, every industry passes through a series of defining stages. Somewhere in the latter stages, the issue of standardization becomes vital to the determination of whether or not a given indus-

try can solidify its position and avoid the dangers of fragmentation or stagnation.

For photonics, that time is now reaching a critical phase. In the past, issues such as laser safety and communication protocols have been dealt with in a more-or-less orderly fashion, and those segments of the technology directly affected have responded to both the marketplace and the various standards committees and industry associations.

Today, however, global forces have added to both the urgency and the complexity of the task by reshaping the way that companies design products and do business. Worldwide imperatives, as much as technologies, now drive the quest for standards.

Fortunately, many in the photonics industry have already involved themselves in that endeavor. To cite the most impressive example, through the efforts of LEOMA in the US and companies all over the world, the first standards of the ISO Laser Committee — covering definitions, documentation, mechanical interfaces, damage testing and laser optics — will soon be published. And this committee's work will continue with upcoming standards in laser power measurement, laser safety, polarization measurement, infrared components and others.

The entire laser and electro-optics industry will benefit from this effort, but more needs to be done. Already, Japanese companies are pressing for standards in

the rapidly developing field of integrated optics, for example. Doing more will require more resources: Standard-setting involves a number of costs, including meetings, international travel, telecommunications and, most importantly, the time of knowledgeable people.

Although most countries support standards activities, this is not the case in the US. Instead, American companies and industry groups have had to pay their own way. LEOMA member companies, for example, collectively spend about \$100,000 each year on the development of laser standards. Despite the economic importance of such efforts, convincing the federal government to become a useful participant will be a long, hard process at best. The participation of US firms in developing international standards cannot be put on hold waiting for Washington to act.

What happened in the development of international optics standards illustrates the problem. Without the participation of American companies, the standard that emerged was essentially a modified German Standards Institute version. Unfortunately it is quite different from US military specifications to which most American optics firms adhere. The result is not good for anyone. US firms will have to incur greater costs selling in international markets, and overseas companies will have to put up with unfamiliar documentation and procedures when they deal with US firms.

That is why the efforts of LEOMA, APOMA and other industry organizations to educate companies to the importance of standards are so crucial. The process may be costly and tedious, but in a global marketplace where manufacturing efficiencies and quality assurance are increasingly critical, there is no sensible choice but to get on with the job.

Teddi O. Laurin

LEOMA's Contributions to the Industry: Past, Present, and Future

Since its inception in 1985, LEOMA* has undertaken a variety of projects for the benefit of North American manufacturers of lasers and optics. Many of these projects have benefited *all* such manufacturers, whether or not they have been members of the Association.

Economic Surveys

Markets and Sales

Before the LEOMA Economic Survey began, there was a striking lack of data available about the magnitude of the market for lasers and electro-optics, and about trends in that market. Although private market-evaluation firms regularly sold surveys of this market, the most reliable and complete information about the market was probably published openly in the trade journals such as *Laser Focus World* and *Photonics Spectra*. Even these surveys, however, are based on speculation and are often inaccurate.

The annual LEOMA Economic Survey, started in 1992, is a proprietary examination of well over one-half billion dollars in sales of participating laser and electro-optics manufacturers. These companies fill out detailed questionnaires with accurate data about their own sales since 1990, and then forward the questionnaires to an accounting firm. The raw data never leaves the accounting firm, and thus companies are assured that their data will remain confidential. The accounting firm totals the results in each category on the questionnaire, and turns only these totals over to LEOMA staff for analysis.

The result is a two-part report, published in April and October, respectively. The second part updates the data with results from the first six months of the year. Participating companies are able to evaluate trends of sales in geographic regions, for different types of hardware, and among different types of customers. They are also able to compare economic parameters at their companies – sales per engineering employee, for example, or research expenditures as a percentage of sales – with industry averages.

The LEOMA Economic Survey is open to non-members of LEOMA as well as to members. Non-members must pay a fee, \$750 in 1994, to receive the report. This fee will increase by \$250 each year.

Salaries and Benefits

1994 is the first year for the LEOMA Salary Survey and the LEOMA Benefit Survey. These surveys will address the salaries and benefits of employees unique to laser companies, with job titles like "Laser Manufacturing Engineer" and "Optical-Coating Product Manager." Salaries and benefits for such individuals are often different from other engineering professionals with similar education and experience.

* LEOMA started life as the "Laser Industry Council," a part of the Laser Institute of America. Because IRS regulations distinguish between professional societies and industry associations, the LIC became a separate corporation, the Laser Association of America, in 1985. The LAA Board of Directors decided in 1989 that the organization's name should reflect its involvement in the entire laser and electro-optics industry, and LAA became LEOMA on June 7, 1989.

✓ **Past and present contribution to the industry:**

The LEOMA Economic Survey has already established itself as the most accurate and complete analysis on the electro-optics market available anywhere. By providing accurate information on the financial dimensions of the market our companies address, the LEOMA Economic Survey contributes to the soundness of decisions made every day in our industry, and will enhance the confidence of outside investors and lenders.

✓ **Future contribution to the industry:**

The LEOMA Economic Survey will expand every year until, in 1995, it will include data from five consecutive years (1990 through 1994). Thereafter, it will always analyze the previous five years, providing Survey participants with a sound historical perspective of industry economic trends.

As they evolve, the LEOMA Salary Survey and Benefit Survey will take their place alongside the Economic Survey as the source of the most reliable information available for data about our industry.

A unified voice in Washington

There can be no question that federal policies have always had a profound effect on our industry, and that the current administration is seeking to amplify that effect. The Clinton administration has clearly signaled its intention to increase government investment in America's technology.

This policy has the potential to affect U.S. electro-optics manufacturers both indirectly and directly. Indirectly, many of our customers are precisely the targets of this new government policy. As the White House has emphasized repeatedly since the Clinton inauguration, flexible manufacturing, communication, information technology, as well as basic science and R&D activities, are all being targeted for significant investment. Robust expansion in these industries will surely have a major impact the laser and electro-optics industry.

But the policy will also affect electro-optics manufacturers directly, as we ourselves are its target. Among the stated goals of the Clinton administration are the creation of a business environment where technical innovation can flourish, and the coordinated management of technology all across the government. Without question, then, this new policy is a crucial issue to the U.S. electro-optics industry. Because it is so important to us, there is likewise no question that we should be as involved as possible in its formulation and execution. This is a task that can far better be undertaken by LEOMA than by individual, uncoordinated companies.

The 1994 LEOMA Executive Seminar was our first attempt to interact with a broad segment of the federal government, and it was highly successful. Held in February, the two-day Seminar provided a forum for several high-ranking federal officials to brief LEOMA members on emerging federal policies that directly affect us. These speakers included Lionel Johns, Director of Technology Policy at the White House Office of Science and Technology Policy; James Jensen, Director of Congressional Affairs for the Congressional Office of Technology Assessment; and L.N. Durvasula, Program Manager for Laser Programs at ARPA.

The Seminar also provided an opportunity for LEOMA members to visit their own senators and representatives, and key Congressional staff, to discuss issues of importance to them. For many of the participants, it was their first encounter with the members of Congress who represent them. Most of them felt that the initial contact provided by the Seminar was not an end in itself, but rather, as one participant put it, "the start of a long-term relationship."

Although LEOMA and its members are concerned about many aspects of federal policy, there are several we have chosen to emphasize during 1994. One of these is the future role of the national laboratories, especially the DoE nuclear labs, Lawrence Livermore, Los Alamos, and Sandia. LEOMA has adopted a position favoring the expansion of these labs' charter into civilian technologies, but only to the extent that they do not compete with companies in the private sector. During the Executive Seminar, we discussed this issue with many members of Congress and Congressional staff people. LEOMA supports a House bill (HR1432) on this subject, which will probably reach the floor during 1994. We will monitor the progress of this bill, and LEOMA will rally its members to contact their representative in support of the bill as it moves toward final vote.

Other issues that LEOMA members discussed with Congressional and administration officials during the Executive Seminar included our strong opposition to the proposal from the Federal Accounting Standards Board (FASB) to effectively eliminate stock options as a method of employee compensation; our advocacy of continuation of the R&D tax credit and the investment tax credit; and continuing support for basic science and R&D.

✓ **Present and future contribution to the industry:**

By bringing together the members of our industry to speak with a single voice to the federal government, LEOMA greatly enhances the effectiveness we have on Capitol Hill. Although individual companies might obtain some benefit by acting independently, only by acting together through LEOMA can the industry maximize the benefits to itself and to each individual company.

International laser and optics standards

In 1989, the countries of Europe, anticipating their economic unification in 1992, were hard at work creating a host of safety, measurement, and interface standards for lasers and laser optics. Fearing that these standards could impede imports from North America, LEOMA worked with the European standards organizations to activate the laser committee of the International Organization for Standards (ISO). The concept was that laser and laser-optics standards could be created first in the international forum — ISO — and then adopted verbatim as European standards. The advantage of this process for LEOMA was that Americans could have a direct role in creating European laser standards. For the Europeans, the advantage was that the new standards would be observed globally, and not just in Europe.

But there was a catch. In order for the plan to work, the newly activated ISO laser committee (designated “ISO TC172/SC9”) had to catch up with the European committee, which had been working on laser standards for more than two years. This was accomplished by scheduling SC9 meetings at six-month intervals during 1990 and 1991, rather than the normal interval of one year or longer. The pace of work between meetings was also greatly accelerated, with employees of LEOMA companies shouldering much of the work. In fact, employees of LEOMA members make up roughly half the attendees at international meetings of SC9, even though nine countries are participating members of the committee. LEOMA executive director Hitz accepted the responsibilities of the chair of SC9 in 1991.

The effort has paid off as dozens of standards affecting lasers and laser optics now approach completion. These standards are summarized in the table on the next page. Because LEOMA members have participated in the creation of every one of these standards, they are consistent with North American manufacturing practice, and will bolster, rather than hinder, international trade in lasers and electro-optics.

LEOMA’s role in international laser standards is not restricted to its work in SC9. The international standard of laser safety, known as “IEC 825,” is created and updated by a committee of the International Electrotechnical Commission, IEC TC76. While IEC 825 is observed throughout Europe and in much of the rest of the world, the relevant laser-safety standard in the United States is set by CDRH regulations. Although these regulations are similar to IEC 825, there are significant differences. These differences impose burdensome costs on U.S. manufacturers, who must follow one set of rules for domestic shipments and another for overseas shipments. LEOMA provides full financial support for Dr. Gerald Glen, the secretariat of IEC TC76. Dr. Glen, and other U.S. participants in TC76, are leading an effort to modify both IEC 825 and CDRH regulations to bring the two into complete congruence.

✓ **Past and present contribution to the industry:**

If LEOMA had not existed in 1989, U.S. laser and laser-optics manufacturers shipping their products to Europe would today be forced to comply with standards they had no part in creating. Of course, there is no way of knowing what the effect of these standards might have been. But it is instructive to note that many U.S. precision-optics manufacturers, who were unable to participate in the creation of optics-drawing standards, are now vastly dissatisfied with the existing international standard on optical drawings and specifications.

✓ **Present and future contribution to the industry:**

The need for new laser and laser-optics standards will arise, and existing standards will require updating. LEOMA will continue to lead the heavy North American involvement in SC9, ensuring that future standards promote international trade without favoritism to any region or nation.

✓ **Present and future contribution to the industry:**

As U.S. CDRH regulations are brought into congruence with IEC 825 over the next two years, multiple safety-conformance issues will cease to be a burden for U.S. manufacturers. Because LEOMA supports the U.S. secretariat of IEC TC76, U.S. manufacturers can easily track — and participate in, if they desire — the future evolution of IEC 825.*

Table 1. Standards under development in ISO TC172/SC9

LEOMA members have participated in drafting each of these standards:

- Terminology, symbols, and units of measurement
- Measurement of beam width, divergence, and propagation factor
- Measurement of beam power, energy, and temporal characteristics
- Measurement of laser beam polarization
- Measurement of laser beam position stability
- Measurement of laser beam spectral parameters
- Measurement of laser beam amplitude and phase distribution
- Measurement of radiation scattered by optical components
- Measurement of radiation reflected and transmitted by optical components
- Laser systems: Minimum requirements for documentation
- Laser systems: Mechanical interfaces
- Laser systems: Fiberoptic connectors
- Safety standard for machines using laser radiation to process materials
- Endotracheal tubes and catheters suitable for use with lasers
- Surfaces of surgical instruments suitable for use with lasers
- Surgical drapes and patient covers suitable for use with lasers
- Standard optical components for laser and laser equipment
- Measurement of damage threshold of optical surfaces
- Measurement of absorptance of optical components (single-pulse)
- Measurement of absorptance of optical components (multiple-pulse)
- Standard optical components for laser and laser equipment operating at IR wavelengths
- Integrated optics: Fundamental terms, symbols, and units of measure
- Interferometers: Fundamental terminology

* IEC directives require that after the (current) second amendment of a standard, the standard be renamed. Hence, the "future evolution" of IEC 825 includes a new designation for the standard.

National security and export controls

Export controls imposed on lasers and optics was another major issue addressed by LEOMA in the late 1980s. Collectively, the industry was spending many tens of thousands of dollars every year administering the process of licensing exports to friendly countries in Europe and Asia. The COCOM export regulations themselves were confusing, ambiguous, and often contradictory. Created by international negotiation among the COCOM countries (essentially the NATO countries plus Japan), the laser regulations were revised every three years, usually following a format devised by the United States.

Legislation passed in 1988 allowed U.S. industry to participate for the first time on the government committees that formulate the regulations. LEOMA was one of the very first organizations to capitalize on this opportunity when its executive director, Breck Hitz, was appointed to the Commerce Department's Electronic Instrumentation Technical Advisory Committee (EITAC). His proposal for a complete re-draft of the laser export regulations was eventually accepted by the U.S. government, and Hitz became a member of the U.S. negotiating team at the international COCOM laser sessions in 1989. Many of the LEOMA proposals were integrated into COCOM regulations. The resulting simplification of export controls reduced significantly the administrative burden on U.S. laser and optics manufacturers.

With the end of the cold war, export controls have become much less of an issue for U.S. manufacturers. It is worth noting, however, that there exists concern within the U.S. government that hardware shipped to friendly countries might wind up in unfriendly destinations such as Iraq, Iran, North Korea or Libya. Re-institution of export licensing is often suggested as a mechanism to prevent such shipments. LEOMA is opposed to such a move, and has directed Hitz to retain his position within the regulatory system (he currently chairs the DoC committee on laser export controls, LaserTAC) to minimize the effect such an eventuality.

✓ Past contribution to the industry:

LEOMA's involvement in laser and optics export controls greatly reduced the burden of these controls from 1989 until their effective demise in 1991 and 1992.

✓ Present and future contribution to the industry:

The U.S. government retains all the mechanisms to re-impose laser and optics export controls. In the event that national security concerns force such re-imposition, LEOMA's position as an "insider" on essential government committees will ensure that controls do minimum damage to the laser and optics industries.

The LEOMA Economic Survey

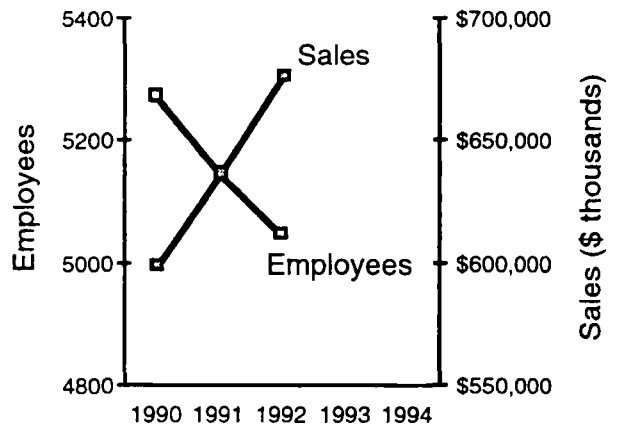
In 1993, LEOMA conducted its second annual Economic Survey, a proprietary examination of more than \$600 million in sales of participating LEOMA and non-LEOMA companies. These companies filled out detailed questionnaires about their sales in 1990, 1991, and 1992, and forwarded the questionnaires to an accounting firm. The raw data never left the accounting firm, and thus companies were assured that their data would remain confidential. The accounting firm totaled the results in each category in the questionnaire, and turned these results over to LEOMA staff for analysis.

The LEOMA Economic Survey examines two types of data, company financial data and market trends. Examples of each type are illustrated below. LEOMA members who provide data for the survey receive the survey at no cost. Non-members who supply data may purchase the report for \$750 in 1994. The purchase price for non-members will increase by \$250 per year: \$1,000 in 1995, \$1,250 in 1996, and so on.

Part I. Company financial data.

Climbing sales and falling employment lead to a "job-less recovery" in the laser and electro-optics industry, reflecting the national trend. (These figures, from the 1993 LEOMA Survey, express total sales in thousands of dollars. The figures were obtained by combining proprietary data from Coherent, Spectra-Physics, Lumonics, Newport, Melles-Griot, Uniphase, and 17 other leading laser and electro-optic manufacturers from around the world.)

Other data presented in the Survey include the companies' gross margin, pretax income, R&D expenses, cost of goods sold, G&A expenses, sales, service, and marketing expenses, and other parameters.

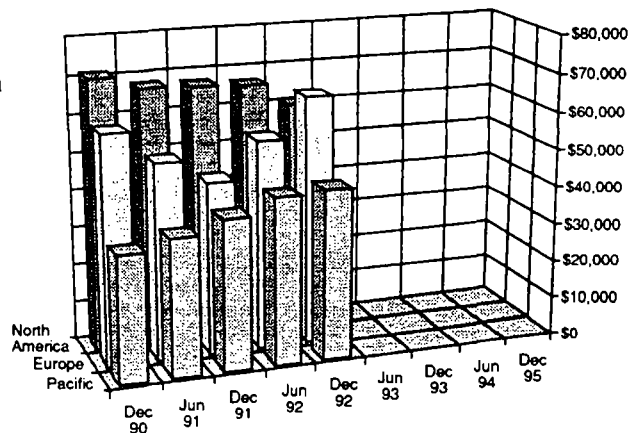


Part II. Market trends

These figures, also from the 1993 Survey, show sales of a particular product to a particular type of customer in different global regions. The bar height represents total sales during the 12 months ending on the date shown.

Product categories in the Survey are *lasers*, broken out by customer type, and *electro-optics*. Electro-optics includes precision optics and laser accessories (q-switches, optical benches, laser gases, and so forth), broken out by customer type.

The 1994 LEOMA Economic Survey will be published in two volumes. The first will include data from 1990 to the end of 1993. The second volume will add new data from the first half of 1994.



The LEOMA Executive Seminar

Held annually, the LEOMA Executive Seminar brings together executives from the electro-optics industry in a collegial environment to examine issues of interest to the industry. Until 1994, the Executive Seminar was held in a different location each year, but the 1994 Executive Seminar was held in Washington DC. That locale will be repeated for at least the next several years, as the Executive Seminar becomes an integral part of LEOMA's program to interact constructively with the federal government.

Some of the subjects and speakers at past Executive Seminars have included:

- *Technology Policy in the Clinton Administration*
Lionel Johns, Director of Technology Policy, White House Office of Science and Technology Policy (1994 Seminar)
- *U.S. Export-Control Policy for Electro-Optics*
Assistant Commerce Secretary James LeMunyon (1990 Seminar)
- *The European Market for Electro-Optics*
Klaus Derge, manager of Spectra-Physics' European operations (1992 Seminar)
- *High Technology and the U.S. Congress*
James Jensen, Director of Congressional Affairs, Office of Technology Assessment (1994 Seminar)
- *The Commerce Department's Strategic Partnership Initiative*
Susan Lipsky, SPI Director (1992 Seminar)
- *Manufacturing Lasers in Europe*
Samuel Simonsson, President, Rofin Sinar (1990 Seminar)
- *Global Competitiveness of U.S. Technology Firms*
Ed Zschau, President, Censtor Corp (1990 Seminar)
- *Financing Alternatives for the 1990s*
Roger Smith, President, Silicon Valley Bank
Sam Colella, Partner, Institutional Venture Partners
Masazumi Ishii, Managing Director, AZCA Inc.
Mike McCaffery, Managing Partner, Robertson Stephenson & Co.
Ron Emerick, Principal, Robertson Stephenson & Co.
(1991 Seminar)
- *Laser Programs at the Advanced Research Projects Agency*
L.N. Durvasula, Director of Laser Programs, ARPA (1994 Seminar)
- *The U.S. Economy under President Clinton*
Walter Hoadley, Hoover Institution (1993 Seminar)
- *The NIST Advanced Technology Program*
Marc Stanley, Deputy Director, Advanced Technology Program (1994 Seminar)
- *Transfer of Laser Technology from the National Labs*
James Davis, Deputy Director, Lawrence Livermore National Laboratory (1991 Seminar)

- *High Technology Manufacturing in the U.S.*
Nancy Mason, Deputy Undersecretary of Commerce for Technology
(1991 Seminar)
- *New Directions in National Technology Policy*
Stephen Cohen, Berkeley Roundtable for the International Economy
(1993 Seminar)

These Seminars offer a unique opportunity to meet with your counterparts in the industry, and the speakers provide a valuable frame of reference by addressing pertinent economic and regulatory issues. Additionally, the relaxed, informal atmosphere encourages the building of personal relationships across company boundaries.

ISO Laser Committee Standards Summary

Below is a summary of the standards created, or being created by the ISO Laser Committee (ISO TC172/SC9). The “status” indication of each standard can be interpreted as follows.

New Work Item (NWI): The committee has recently approved the concept of creating this standard. If any draft document exists, it is in very preliminary form.

Committee Draft (CD): The project leader is satisfied that this document covers the appropriate topics and contains no technical errors. Significant changes are still possible, however,

Draft International

Standard (DIS): Work on this document is essentially complete. Only minor editorial changes can be made.

Complete: This standard is finalized and available for purchase from ISO. Changes can be made only through the formal amendment procedure.

Terminology, symbols, and units of measurement

This standard establishes definitions, symbols, and units of measurement for lasers. The definitions set forth here apply to all laser standards, including IEC825, the international laser-safety standard. Some examples of terms defined:

- “polarized laser” (better than 90% polarized);
- “pulsed laser” (pulse duration must be less than 0.25 s or it’s considered “continuouswave”);
- “laser,” “laser device,” “laser assembly,” and “laser unit” (the onion-like stages of laser equipment, beginning with the bare resonator (“laser”) to the entire “laser unit” which includes power supply, beam-delivery optics, measurement and control systems, and parts-handling robots).

Status: DIS

Measurement of beam width, divergence, and propagation factor

This standard establishes measurement techniques for beam diameter and divergence, and for predicting the changes in these parameters as a beam propagates. One of the most technically challenging standards the committee has created, this standard allows meaningful and accurate comparisons of the “beam quality” of different lasers.

Status: CD

Measurement of beam power, energy, and temporal characteristics

This standard establishes measurement techniques for a number of important laser parameters, ensuring that measurements made on different lasers at different places are comparable. Among the parameters are power and energy for both pulsed and continuouswave lasers; pulse shape, pulse duration, and pulse repetition rate; and the long- and short-term stability of these parameters.

Status: DIS

Measurement of laser beam polarization

This standard establishes the measurement technique for a laser's polarization state, ensuring that measurements made on different lasers at different places are comparable. The straightforward technique utilizes simple polarizers and waveplates. An appendix of this standard describes measurement of the Stokes vector of a laser beam, which may be used as a more-sophisticated characterization of a laser's polarization.

Status: DIS

Measurement of laser beam positional stability

This standard establishes the technique for measuring the positional stability (both linear and angular) of a laser's beam, ensuring that measurements made on different lasers at different places are comparable. The technique described here is valid not only for traditional low-power lasers like helium-neon and argon, but also for the non-Gaussian beams of high-power carbon-dioxide and excimer lasers.

Status: DIS

Measurement of laser beam spectral parameters

This standard will establish techniques for measuring a laser's spectral parameters, ensuring that measurements made on different lasers at different places are comparable. The parameters to be addressed will include wavelength, spectral profile and spectral stability.

Status: NWI

Measurement of laser beam amplitude and phase distribution

This standard will establish techniques for measuring a laser's amplitude and phase distribution, ensuring that measurements made on different lasers at different places are comparable.

Status: NWI

Measurement of radiation reflected and transmitted by optical components

This standard will establish techniques for measuring light reflected and transmitted by optical components, ensuring that measurements made on different optical components at different places are comparable. The standard will allow potential buyers to make meaningful comparison among components, such as maximum-reflectivity mirrors, supplied by different manufacturers.

Status: NWI

Laser systems: Minimum requirements for documentation

This standard establishes what minimal information should be included in a laser's data sheet and instruction manual. Together with the measurement standards described above, it allows a potential buyer to make meaningful comparisons between lasers from different manufacturers, based on the products' data sheets.

Status: Complete

Laser systems: Mechanical interfaces

This standard specified the dimensions of mounting hole patterns for attaching external devices to the output face of a laser. It will facilitate combining accessories and lasers made by different manufacturers.

Status: Complete

Laser systems: Fiber-optic connectors

This standard will establish the minimal information that should be included in data sheets for fiber-optic connectors.

Status: pre-CD

Safety standard for machines using laser radiation to process materials

This standard establishes the safety requirements for high-power, material-processing laser systems. Although other international standards address safety requirements for lasers in general, and for machine tools in general, this standard deals with those safety issues unique to laser machine tools. Under the terms of the European Community's Safety Directive compliance with this standard will be mandatory for companies selling industrial lasers in Europe.

Status: Complete

Endotracheal tubes suitable for use with lasers

This standard establishes a technique for measuring an endotracheal tube's resistance to burning when exposed to a laser beam. The importance of high resistance is obvious, but there is currently no established measurement technique to allow comparison of the safety of different endotracheal tubes.

Status: CD

Surfaces of surgical instruments suitable for use with lasers

This standard defines the surface characteristics (roughness, concavity, reflectance, etc.) of surgical instruments suitable for use with lasers.

Status: CD

Surgical drapes and patient covers suitable for use with lasers

This standard establishes specific requirements for surgical drapes and patient protective covers used in laser surgery in order to minimize the chance of fire.

Status: CD

Standard optical components for laser and laser equipment

Intended to facilitate the supply of spare parts, this standard establishes "preferred" dimensions (diameter, thickness, etc.) for laser lenses, mirrors, and windows. The variety of tooling and inventory required by laser-optics manufacturers will be greatly reduced by this standard.

Status: DIS

Standard optical components for laser and laser equipment operating at IR wavelengths

Like the previous standard, this standard is intended to facilitate the supply of spare parts by establishing "preferred" dimensions. The previous standard addresses components intended for the wavelength range between 240 nm and 2100 nm. This standard addresses components intended for use at wavelengths between 2.1 mm and 15 mm.

Status: pre-CD

Measurement of absorptance of optical components

This standard defines calorimetric measurement techniques for determining the absorptance of optical components. Compliance with this standard will ensure that absorptance measurements made on different components in different laboratories are comparable.

Status: DIS

Measurement of damage threshold of optical surfaces (single-pulse)

This standard establishes a technique for determining the laser-induced damage threshold of optical surfaces. It is the intention to provide a method of obtaining consistent measurement results, which can be rapidly and accurately compared between different testing laboratories.

Status: Complete

Measurement of damage threshold of optical components (multiple-pulse)

Like the previous standard, this one establishes a technique for measuring the damage threshold of optical surfaces. The previous standard addresses single-pulse measurements, and this standard addresses multiple-pulse measurements.

Status: pre-CD

Integrated optics: Fundamental terms, symbols, and units of measure

This standard will establish definitions, symbols, and units of measure which are important for the manufacture, testing, and utilization of integrated optics.

Status: NWI

LEOMA Officers and Directors, 1994

President

Patrick Edsell, President, Spectra Physics Lasers

President-Elect

Desmond Bradley, VP for Finance and Administration, Lumonics Inc.

Past President

David Farrell, President and CEO, Burleigh Instruments

Treasurer

Randall Heyler, Marketing Director, Newport Corp.

Secretary

Donald Scifres, President and CEO, Spectra Diode Laboratories

Directors

Remy Aubert
President and CEO, Continuum

Martin Cohen
Vice President, Quantronix

Bernard Couillaud
VP and General Manager, Coherent Laser Group

Dennis Fortino
VP and General Manager, Spectra-Physics Lasers

Robert Gelber
VP and General Manager, Coherent Optics Group

Ben Graham
General Manager, Lexcel

Robert Greening
President and CEO, Omnicrome

Robert Hill
Division Manager, Union Carbide

Paul Kenrick
President and CEO, Melles Griot

Carlos Roundy,
President and CEO, Spiricon

Glenn Sherman,
President and CEO, Laser Power Corporation

John Wheeler
Senior Vice President, Melles Griot

LEOMA Membership List

Burleigh Instruments Inc.

Fishers NY

Candela Laser Corp

Wayland MA

Coherent Inc.

Palo Alto CA

Continuum Inc.

Santa Clara CA

Crystal Systems Inc.

Salem MA

Cynosure Inc.

Bedford MA

Directed Energy Inc.

Irvine CA

EG&G E-O Division

Salem MA

Electro Scientific Ind.

Portland OR

Gentec Inc.

Quebec Canada

Hughes Industrial Products Div.

Carlsbad CA

I.L. Med Inc.

Walpole MA

ILX Lightwave

Bozeman MT

Ion Laser Technology

Salt Lake City UT

Labsphere Inc.

North Sutton NH

Laser Diode Products

New Brunswick NJ

Laser Focus

Westford MA

Laser Mechanisms

Farmington Hills MI

Laser Photonics

Orlando FL

Laser Power Optics

San Diego CA

Laurin Publications

Pittsfield MA

Lee Laser Inc.

Orlando FL

Lexel Laser Inc.

Fremont CA

LiCONix Corporation

Santa Clara CA

Line-Lite Laser

Mtn View CA

Lightning Optical

Tarpon Springs FL

Litton Airtron Synoptics Group

Charlotte NC

Lixi Inc.

Downers Grove IL

Lumonics Inc.

Kanata Ontario CANADA

Melles Griot Inc.

Irvine CA

Micracor

Acton MA

Newport Corporation

Irvine CA

Omnichrome Corp.

Chino CA

Optics for Research

Caldwell NJ

Opto Power Corp.

City of Industry CA

OPTOVAC

North Brookfield MA

Oxford Lasers

Acton MA

Photon Inc

Santa Clara CA

Quantronix Corp.

Hauppauge NY

Research Electro-Optics

Boulder CO

Rolyn Optics Company

Covina CA

Semiconductor Laser International

Vestal NY

Scientific Spectrum Inc.

Laguna Hills CA

Spectra Diode Labs

San Jose CA

Spectra-Physics Inc.

Mountain View CA

Spire Inc.

Bedford MA

Spiricon Inc.

Logan UT

Synrad Inc.

Bothell WA

Teledyne-Brown Engineering

Huntsville AL

Union Carbide

Washougal WA

Uniphase Corp.

San Jose CA

Wilson Ventures

Chicago IL

XMR Inc.

Santa Clara CA

Zygo Corporation

Middlefield CT

An Invitation to Join LEOMA

If your company is not already a member of the Laser and Electro-Optics Manufacturers' Association, you are invited to join your colleagues who are already members. Membership is open to any North American manufacturer of lasers, laser systems, laser accessories, or laser optics. Associate membership is open to any company or individual, and Exhibitor Associate membership is open to any company that wishes to participate only in LEOMA's conference and exhibition activities.

All new members are entitled to a 50% initiation discount on their first year dues. Normal membership dues, and the 50% initiation discount dues are shown below.

Revenue from Laser/E-O Sales	Annual Dues	50% Initiation Discount
up to \$600,000	\$200	\$100
up to \$1M	\$400	\$200
up to \$2M	\$700	\$350
up to \$3.5M	\$1,250	\$625
up to \$6M	\$1,850	\$925
up to \$10M	\$2,900	\$1,450
up to \$20M	\$5,700	\$2,850
up to \$35M	\$10,000	\$5,000
up to \$60M	\$14,000	\$7,000
up to \$100M	\$18,000	\$9,000
up to \$200M	\$22,000	\$11,000
Associate	\$660	\$330
Exhibitor Associate	\$200	\$100

For more information, please contact the LEOMA headquarters office at 123 Kent Road, Pacifica CA 94044, phone 415 738-1492, fax 415 738-1592.

LEOMA Membership Enrollment Form

Company Information

Company Name: _____

Chief Executive Officer: _____

Title: _____

LEOMA Liaison (if different from above): _____

Address: _____

Description of Products or Services: _____

Membership Fees

Annual Revenues	Annual Dues	50% Discount	Total
up to \$600,000	\$200	\$100	
up to \$1M	\$400	\$200	
up to \$2M	\$700	\$350	
up to \$3.5M	\$1,250	\$625	
up to \$6M	\$1,850	\$925	
up to \$10M	\$2,900	\$1,450	
up to \$20M	\$5,700	\$2,850	
up to \$35M	\$10,000	\$5,000	
up to \$60M	\$14,000	\$7,000	
up to \$100M	\$18,000	\$9,000	
up to \$200M	\$22,000	\$11,000	
Associate	\$660	\$330	
Exhibitor Associate	\$200	\$100	

Please return, with your check payable to LEOMA, to:

LEOMA
123 Kent Road
Pacifica, CA 94044