

WHAT IS THE MEASUREMENT SCIENCE CONFERENCE?

The Measurement Science Conference is an annual two-day conference established to promote professionalism within the metrology community. It provides an open forum for the exchange of ideas, techniques, and innovative thinking to those involved with measurements.

There were several factors that contributed to the start of what is now recognized as the Measurement Science Conference, one of the best conferences of this kind held each year in the United States.

- There was a proven need for precise measurements.
- The first man had just stepped on the moon.
- The amount of precision measurements required to accomplish this feat defies description.
- The Vietnam war was heating up.
- The Cold War was still very real and the United States was involved in the arms race.
- Government contracts were invoking MIL-C and MIL-Q documents.
- Defense contractors were starting or expanding their measurements laboratories.
- There was a need to improve the knowledge of those engaged in making measurements.
- There were more job opportunities for trained measurements personnel than could be recruited.

Two recent measurements oriented conferences presented in Southern California by the Precision Measurements Association had been well received.

Today's Measurement Science Conference was originally called the CAL-POLY MEASUREMENT SCIENCE CONFERENCE and was held on the San Luis Obispo University campus. The Conference was sponsored by the University with their staff having responsibility for much of the work required.

The University was involved because of a Legislative Advisory Committee formed to provide information effecting proposed legislature on measuring devices and users of these devices. This committee called "The California Professional Metrology Committee" was composed of people in industry and government. The following persons served on that committee at some time during its existence. I am sure there are others and I offer my apologies to any persons left off the list.

Mr. Thurlow Morrow	Douglas Aircraft Co.
Mr. Robert Galley	Douglas Aircraft Co.
Mr. Gerald Geiger	California Farm Bureau Federation
Mr. Russell Journigan	California Department of Education
Mr. Jack Webb	Alameda Naval Air Station
Cmdr. Gerald T. White	Alameda Naval Aviation Overhaul & Repair Depot
Mr. DeWayne B. Sharp	International Business Machines
Mr. James E. Ross	Berkleonics, Inc.
Mr. Phillip Painchaud	
Mr. Lawrence Kreyer	EG&G
Mr. Raymond Williams	Legislative assistant, California Legislature
Dr. Harold Wilson	Administrative VP Cal-Poly SLO

In order to establish state controls over the measuring devices it was necessary or at least desirable to establish a degree program in metrology. Dr. Wilson, being with the University System and a key player on the committee, was in a position to provide the

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knowledge and resources needed for such a program. He was, through his position, also instrumental in getting the program located on the San Luis Obispo campus.

The Measurement Conference was started as a method to draw attention and students to the measurements program. Proceeds from registrations for the first conference was not quite adequate to cover Conference costs. The Precision Measurements Association and The National Conference of Standards Laboratories (NCSLI) added sufficient funds to cover the deficit and provide a small treasury.

The first five conferences were all held on the University campus at San Luis Obispo. These were all scheduled for a Friday and Saturday during November or early December. The number of laboratory supervisors on the advisory committee was an influence for the Friday, Saturday schedule. They were well received by the laboratory supervisors and managers but failed to attract a sufficient number of students for the measurements program. The participation on the technician level was always small, perhaps giving up their Saturday was an influence.

The University staff managed these early conferences with the help of many advisors from industry. I will undoubtedly leave some people off the list and again I apologize to those not listed but the following definitely were members on some of those advisory boards:

Bill Waddell	Computerized Urban Systems
Jerry L. Hayes	USN Metrology Engineering Center
Loring E. Gunderson	Higgins Scales Inc.
Robert L. Galley	Bechtel Corp.
W. M. Ferguson	Quality Control Co.
Robert M. Bishop	National Controls Inc.
Dean A. Brungart	Teledyne Systems Co.
Chet J. Crane	Teledyne Microelectronics Co.
Robert J. Couture	Rockwell International, Autonetics
Albert K. Edgerton	PMA
Leslie R. Evans	National Astro Labs.
Marlyn L. Hed	TRW Systems
Steve Kozich	Quality Audit Co.
J. David Mitchell	Rockwell International, Autonetics
George V. Main	Philco-Ford
Phillip Painchaud	Dynallectron Corp.
DeWayne B. Sharp	IBM Corp.
M. Jack Shoemaker	Lockheed Missiles & Space Co.
Hank P. Voznick	William Wahl Corp.
James E. Wiley	California Weights & Measures
Frank J. Ziol	Pasadena City College
Joe Jones	California Weights & Measures
Walt Watson	Bureau of Weights & Measures
Earl Kalar	County Weights & Measures, SLO county

The members of the California Professional Metrology Committee listed earlier were involved in these early conferences and several served on the advisory board.

The advisory Board for the 1974 Conference is listed here although most of the same people participated in the earlier advisory panels and have been listed above:

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Dean A. Brungart	Teledyne Systems Company	Northridge, CA
Robert J. Couture	Rockwell, Autonetics Group	Anaheim, CA
Albert K. Edgerton	Precision Measurements Assn.	Burbank, CA
Leslie R. Evans	National Astro Labs.	Burbank, CA
Marlyn L. Hed	TRW Systems Group	Redondo Beach, CA
Steve Kozich	Quality Audit	Whittier, CA
J. Dave Mitchell	Rockwell, Autonetics Div.	Anaheim, CA
George V. Main	Philco-Ford SAMTEC	Vandenberg AFB
Phillip A. Painchaud	Dynallectron Corp.	Norco, CA
Paul E. Sheffer	Cal. Poly State Univ.	San Luis Obispo, CA
DeWayne B. Sharp	IBM Corp.	San Jose, CA
M. Jack Shoemaker	Lockheed Missiles & Space	Vandenberg, AFB
H. P. Voznick	William Wahl Corporation	Los Angeles, CA
Walter S. Watson	Dept. of Food & Agriculture	Sacramento, CA
Fred Wolf	Cal. Poly State Univ.	San Luis Obispo, CA
James E. Wiley	Weights & Measures Sealer	Santa Barbara, CA
Frank J. Ziol	Instrument Society of Amer.	Pasadena, CA

This was the first Conference to have paid exhibitors; there were twelve of them. I will list them here though most of their names will be totally unfamiliar to the majority of you:

CALEX	CRAWFORD FITTING CO.	GENERAL RADIO
JULIE RESEARCH	METRA INSTRUMENTS	NATIONAL CONTROLS
PMA	TEKTRONICS	THERMETRICS
WAHL CORP.	WARD/DAVIS ASSOC.	WESTERN SCALE

The University staff that were responsible for the Conference or portions of it were:

Dr. Don Morgan	Head of Industrial Engineering
Dr. Harold O. Wilson	Administrative VP for SLO campus
Dr. Paul Scheffer	Professor in Industrial Engineering
Mr. Fred Wolfe	Music Dept. & Student Union Manager
Mr. George Beatie	

There were several things about these conferences that set them apart from later conferences. They were scheduled for a Friday and Saturday, this was to laboratory managers to send their employees with the idea that Friday would be paid but the employee would stay for the Saturday program on his/her own. There were scheduled sessions in the evenings. Many of the papers presented were repeated from prior conferences and were of excellent quality. At some conferences manufacturers were allowed time and space to display and demonstrate their latest instruments. The California Weights & Measures took an active part providing papers and developing sessions. There were no refreshments at breaks. Meals were usually served in the school cafeteria buffet style. The proceedings for the first conference were on microfiche. Some Conferences had no published proceedings.

In 1975 at or about the time of the Conference the University announced that they were no longer going to sponsor the Conference. This came as a surprise to most of us

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since the Conference had become established and was operating at a profit since Dean Brungart had sold some exhibits booths at the last Conference.

The Conference Advisory Board was available but not sure what they should do since no one had planned for this turn of events. It appeared that the Conference would cease to exist. There were efforts made to find some professional organization that would take over the conference and run it as a sponsored Conference. The most often mentioned was the Precision Measurements Association but the offer was declined.

Mr. Bob Couture called a meeting of the Advisory Board at the Long Beach University campus. The meeting was attended by a total of thirty-one people a large number of laboratory managers representing many California organizations were there. Discussion was regarding possible actions for saving the upcoming Conference and continuing future Conferences. The meeting resulted in a Conference Committee composed of the following:

COORDINATOR	Robert Couture	Rockwell, Autonetics
PROGRAMS CHAIR	Philip Painchaud	GIDEP
PROGRAMS ASS'T.	H. P. Voznick	Wahl Corp.
EXHIBITS CHAIR	Dean Brungart	Teledyne Systems
FINANCES	Leslie R. Evans	National Astro Labs.
PUBLICATIONS	William R. Fry	GIDEP
PUBLICATIONS ASS'T.	William Flatters	General Dynamics
ARRANGEMENTS	Arthur McBride	Bunker Ramo Corp.
GUEST PROGRAM	Chester Crane	Teledyne Micro. Co.
CAMPUS COORDINATOR and		
CAMPUS ARRANGEMENTS	Fred Wolf	Cal. Poly Univ. SLO
RESOURCE ADVISOR	Paul Scheffer	Cal. Poly Univ. SLO

The Sixth Conference was held December 3<sup>rd</sup> and 4<sup>th</sup> 1976 at the San Luis Obispo campus of California Polytechnic State University.

The Conference theme was "Measuring Our Independence"

Some things that make this Conference memorable:

The treasury at the beginning of the year was one thousand dollars less some seed monies provided by professional organizations if they requested repayment. The registration was about \$50.00 and everyone paid even some of the committee. We had paper stick on badges that cost about two dollars for enough to do the total registration.

First to have door prizes-the badges were numbered and the prizes were to be awarded using a computer generating random numbers. The first number called was Bob Couture, Director of the Conference, he declined but was embarrassed anyway. This was the first conference not run by the University. There were twenty-five exhibitors, a new high. The California Public Utilities Commission provided a luncheon speaker.

Dr. Churchill Eisenhrt from the National Bureau of Standards presented the Keynote Address on the early history of measurements.

Mr. Robert Couture provided transportation to several committee members in his "Winnie", some even substituted it for a hotel room.

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The Seventh Conference was definitely a MEASUREMENT SCIENCE CONFERENCE. It was held on the campus of California University at Long Beach December 2<sup>nd</sup> and 3<sup>rd</sup> 1977. This was a tremendously successful conference in most respects. There was nearly a one hundred percent increase in attendance. The large increase in number of attendees caused a severe strain on the facility since the committee was prepared for a probable four to five hundred as a maximum. The registration and finance was supposed to be handled by the people at the university. When the line for registration at the door was still eighty or ninety people long all of the registration materials were gone and the opening ceremonies were under way the registration people gave up and left the registration table. There was never an accurate count for attendance at the Conference but the banquet people said that they served five hundred and fifty lunches and a lot of people were unable to find a seat for lunch. They set up tables in the halls outside the room designated for lunch and in the registration area and still not everyone was able to find a seat. We estimated that about one-hundred people went downtown for lunch.

Some of the session rooms were too small and sessions had to be moved around to get the people into several of the more popular ones. This a large campus and some people were lost on campus, several others were unable to find the campus at all even though there were a number of signs at all entrances to it.

The Conference Committee was:

DIRECTOR	Phil Painchaud	Metron
PROGRAM CHAIRMAN	Frank Koide	Rockwell Autonetics
EXHIBITS	Dean Brungart	Teledyne Systems
SECRETARY	Don Greb	Consultant
FINANCE	Dave Buck	Lockheed Burbank
ARRANGEMENTS	Chet Crane	Teledyne Micro.
PUBLICITY	Harold Clark	Valhalla Scientific
GUEST PROGRAM	Bill Flatters	General Dynamics
PAST DIRECTOR	Bob Couture	Rockwell Autonetics
LIAISON	Bill Geist	Geist Co.
CAMPUS COORDINATOR	Fred Wolf	San Luis Obispo
	Glenn Hayes	Long Beach State
	Bob Irvine	Pomona

This was the first time that the conference had a large number of door prizes and because several committee members name was drawn, the rule was made that anyone's name listed on the letterhead was not eligible for a door prize. This was the door prize chairman's rule and it is still in force today.

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The eighth Measurement Science Conference was moved to the California Polytechnic State University campus in Pomona, specifically the Kellogg West Conference Facility. This was an excellent facility for a smaller Conference but the MSC severely taxed their capability and again some of the areas were crowded. The conference began under a dark cloud because of the untimely death of Andy Woodington. Andy was a strong supporter of the committee and was well liked by everyone.

Because of some scheduling conflicts at the facility it was necessary to move the Conference to November 3<sup>rd</sup> and 4<sup>th</sup>, 1978.

The theme selected for this conference “EXPANDING MEASUREMENT TECHNOLOGY” and many of the papers presented would be appropriate today.

The committee members responsible for the 8<sup>th</sup> MSC:

DIRECTOR	DeWayne Sharp	IBM
SECRETARY	Frank Koide	Rockwell Autonetics
PROGRAM	Larry Kreyer	EG&G
EXHIBITS	Dean Brungart	Teledyne Ssystems
FINANCE	Dave Buck	Lockheed Burbank
LIAISON	Bill Fry	GIDEP
PUBLICITY	Harold Clark	Valhalla
ARRANGEMENTS	Les Carlton	Dynalectron
PUBLICATIONS	Chet Crane	Teledyne Micro.
GUEST PROGRAM	Andy Woodington	Metrology Engr. Ctr.
REGISTRAR	Paul Messinger	ITT Cannon
AWARDS	Roland Vavken	Rockwell Autonetics
PAST DIRECTOR	Phil Painchaud	Metron
CAMPUS COORDINATOR	Bob Irvine	Cal Poly, Pomona
	Glenn Hayes	Cal. State Long Beach
	Fred Wolf	Cal Pol, San Luis

During the year the committee adopted as the official Conference logo the large stylized M designed by Mr. Frank Koide. Each member of the committee received a individualized coffee cup.

The conference attendees were welcomed by Dr. Hugh La Bounty, President of California State Polytechnic University, Pomona. The KEYNOTE ADDRESS was presented by John N. Grayson, President of UNIVOX-California, Inc.. Luncheon speakers were Dr. Fred J. Weibell, chief of the Veterans Administration Biomedical Engineering and Computing Center, Sepulveda, CA. and Mr. Ezio F. Delfino, Chief of the Measurement Standards Division of the California Department of Food and Agriculture.

There were twenty seven exhibitors squeezed into the exhibits area and there was not room for even one more.

A misstatement by one of the session presenters caused some consternation and resulted in a reprint of the proceedings.

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The ninth Measurement Science Conference was moved back to the California Polytechnic State University at San Luis Obispo. This completed the commitment made at the Advisory Board meeting held at Long Beach early in 1976. There was already discussion regarding the need to make a change in the general approach to presenting the Conference. It seemed the choice was either find more suitable facilities or limit registration to a number commensurate with the University capabilities. There were several negative comments regarding the facilities in the two previous years.

The Conference was held November 30<sup>th</sup> and December 1<sup>st</sup> 1979. The theme is not recorded in any of the documents I have but I believe it was "MEASUREMENT NEEDS FOR THE 80'S", if not something close.

### The Conference Committee for this year:

DIRECTOR	Lawrence S. Kreyer
DIRECTOR-ELECT	Frank Koide
CORRESPONDING SEC.	Don Greb
RECORDING SEC.	Rose Bernard
PROGRAM CHAIRMAN	Bill Strnad
ASSOC. PROG. CHAIR	Chrisie West
EXHIBITS CHAIRMAN	Dean Brungart
FINANCE CHAIRMAN	Dave Buck
LIAISON CHAIRMAN	Roland Vavken
PUBLICITY CHAIRMAN	Leslie W. Carlton
PUBLICATIONS	Bill Fry
AWARDS	Robert J. Couture
PAST DIRECTOR	DeWayne B. Sharp
HISTORIAN	Phil Painchaud
CAMPUS COORDINATOR	Fred Wolf

The attendees were welcomed to the campus by Dr. Warren J. Baker, President of Cal Poly State University.

The Keynote address was presented by Dr. Thomas A. Dillon, Deputy Director of U. S. National Bureau of Standards (NIST).

Our luncheon speakers were Mr. Sam F. Iacobellis, President of Energy Systems Group Rockwell International on Friday and Mr. Jerry L. Hayes, Director of U. S. Navy Metrology Engineering Center in Pomona, California.

After Jerry's luncheon presentation he performed the first ever "ANDREW WOODINGTON AWARD" to Laurel Auxier of Beckman Instruments.

There were twenty-nine exhibitors at the conference all arranged on stage behind the curtain of the student theater. Power cables and extension cords on the floors made for hazardous walking but a very successful conference and exhibit.

Several commercial organizations presented evening workshops introducing their latest instrumentation for those wishing to attend.

The following remarks are from the presentation of the first Woodington Award and are quoted from remarks made at the Saturday luncheon by Jerry L. Hayes

"The origin of the Andrew J. Woodington Award was at a meeting of the 1978 Measurement Science Conference Executive Board the night before the Conference was to convene.

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I had stopped in to request permission to speak to the Conference during opening ceremonies regarding Andy’s recent death some three days before. At the same meeting a spontaneous suggestion was made to name an award in Andy’s memory. The Board subsequently decided that the award should be for the measurement community’s recognition of an individual who symbolizes the highest level of professionalism and dedication to the profession of metrology. I might mention for the record that at a later time the NCSL also established an award in Andy’s memory, but it was for the Best Meeting Paper and Panel. The Measurement Science Conference Andrew J. Woodington Award is, therefore, similar to the NCSL William A. Wildhack Award. I recently had the honor of presenting Best Paper and Best Panel Awards at the recent NCSL meeting in memory of Andy Woodington and those of you who were there will recognize some of the same things that I have to say today as being said then.

Andy Woodington had come to an untimely death at the age of 56. (He died at the hands of a man finally convicted just two months ago of second-degree murder, for which he was sentenced to 8 years in Chino state prison.) Andy was a native of Topeka, Kansas, an Army Radar Technician and Tech. Sgt. And an EE graduate of Purdue. He had worked for Convair and General Dynamics Astronautics, San Diego, for 24 years as an EE and as Chief of their standards and Calibration labs, and was employed at the Navy Metrology Engineering Center at the time of his death.

He was very active in technical societies, as Chairman of the ASQC Metrology Committee, Director of the Instrument Society of America’s Metrology Division, and Member of the National Management Association. He published several Metrology Management papers. He was heavily supportive of several Measurement Science Conferences beginning in 1970 and helped initiate the metrology curriculum of Mesa College, San Diego, for calibration technician training.

He was active on the 1978 Measurement Science Conference Executive Board, was responsible for the Spouses’ Program and I am sure he would have continued his service to the Conferences in several capacities.

When we all remember Andy and what he stood for in the Metrology Community and his contributions to the Conference – I think these words come to mind:

Integrity	Truth	Honor	Courage
Forthrightness	Loyalty	Devotion	Dedication

And these:

Statesman	Mentor	Example
Advocate	Colleague	

And finally, Friend

For these words, for his meaning to this Conference, for the memories Andy Woodington leave us – we dedicate this Award.

The recipient of this year’s award was selected from a number of prominent candidates who were nominated by mail through advertisements placed in trade journals that reached upwards of 100,000 readers. The selection was made by the Board based on recommendations made by a select committee comprised of Past Conference Directors and a Public Member as Chairman. The Past Directors were DeWayne Sharp, Phil Painchaud and Bob Couture. The Public Member was myself. The Award consists of a special plaque, a certificate and an

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honorarium in the amount of \$500. And now for a few words about the 1979 MSC recipient of the Andrew J. Woodington Award.

He has been a:

- Member, ISA/PMA Conference Committee
- Section Vice President, Orange Section PMA
- President, Orange Section PMA
- Member, First PMA Conference Committee
- National Vice President , PMA
- Session Developer, ISA/PMA Conference
- National President, PMA
- Member, Second Annual PMA Conference Committee
- Past President/Senior Director, PMA
- Section Director, Orange Section , PMA
- Chairman NCSL Calibration Systems Management Committee
- Delegate to the NCSL Board of Directors
- NSCL Vice President
- NCSL Executive Vice President
- NCSL Past President

And he:

Organized and worked on a special PMA committee to define and standardize Metrology Personnel Lab Classifications.

He:

Attended a two-year program in electronics at National Schools, Los Angeles, and several special classes in calibration, metrology, data processing, quality control, and management at L.A. Trade Technical College, Fullerton College, Orange Coast College, UCLA and University of California at Irvine.

He has been employed by:

Hoffman Laboratories in Los Angeles, and Fairchild Controls in Los Angeles.

And since 1959, starting with two employees he has;

Created a corporate Metrology Laboratory with a current staff of 18

Set up a company-wide periodic calibration program which, starting with an inventory of about 1,000 instruments in 1960, has increased to over 12,000 items today.

Established an instrument library which has total control over his company's test equipment.

And established joint-company participation in the National Bureau of Standards'

Measurement Assurance Programs (MAPS) wherein his company is now a participant in seven MAP groups.

It gives me great pleasure to announce that the recipient of the First Andrew J. Woodington Award for Professionalism in Metrology is LAUREL M. AUXIER, Manager of the Instrumentation and Measurement Standards Department, Beckman Instruments, Fullerton, California.

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The tenth Measurement Science Conference should have been during 1980 however the normal period, November and early December turned out to be very busy times for the hotel in the area. It was learned however that from the middle of January to the middle of February was a very slow time for those same hotels and we were able to negotiate the best rates during that period. Several facilities were reviewed and the Inn at the Park was selected as the Conference site and January 30<sup>th</sup> & 31<sup>st</sup> were chosen as the dates.

The Conference theme was "INTEGRITY-BASIS OF MEASUREMENTS".

The Measurement Science Conference Executive Board:

DIRECTOR	Frank Koide	Rockwell International
DIRECTOR-ELECT	Bill Strnad	Metron Corporation
PROGRAM	Phil Painchaud	Consultant
FINANCE	Dave Buck	Lockheed California
REGISTRAR	Roland Vavken	Rockwell International
EXHIBITS	Dean Brungart	Teledyne Systems
SECRETARY	Don Greb	Lockheed Missiles & Space
PAST DIRECTOR	Larry Kreyer	H.D. & R.
ARRANGEMENTS	Chet J. Crane	Teledyne Microelectronics
PUBLICITY	Christie West	Metron Corporation
PUBLICATIONS	Les Carlton	Dynalectron
LIAISON	Bill Fry	GIDEP
ADVISOR	Jerry Hayes	Metrology Engr. Center
AWARDS	Arno Ehman	Beckman Instruments
DOOR PRIZES	Bob Couture	Rockwell International
GUESTS PROGRAM	Bob Irvine	Cal-Poly, Pomona
EVALUATOR	John Schulz	Ford Aeronutronic

This Conference boasts several firsts:

First held in a commercial facility not associated with any university.

First to be held in January.

First to be rained on, very light.

First that Mr. John Schulz provided a week of free use of a Lincoln Town car as a door prize.

The first to have tutorial sessions before the Conference, these were handled by the Precision Measurement Association utilizing Metron instructors. This was very well attended and was a financial success.

The first to have a sponsored wrap-up dinner for the Committee.

The Keynote speaker was Mr. Samuel White Jr., Director of Research for NASA.

The luncheon speakers were; on Friday Mr. Fred Hume, VP John Fluke Mfg. Co. and for Saturday Dr. Bruno Weinschel, President of Weinschel Engineering.

No Woodington Award was presented at this Conference.

The exhibits area was round and although it required scientific measurements to fit them in Dean was able to get them inside and have power to all of them, with some difficulty as I recall.

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The eleventh Measurement Science Conference was January 21<sup>st</sup> & 22<sup>nd</sup>, 1982. This was the first Conference scheduled for a Thursday and Friday format. It was held at the Vacation Village Hotel, Mission Bay San Diego, California. This year Ms. Stephanie Steele the Committee joined the committee as the Conference's first paid person. She assisted the Committee with site selection and registration. This was a beautiful location and the facility was very good. Sessions were held in individual buildings separated by green lawns and pools. This was very nice until we received a little rain and were required to dodge raindrops going from session to session.

There was only one room large enough to hold the luncheon and it was very long and narrow. There was a row of posts that obscured the speakers from those at the back tables but the sound system was good, we heard everything. Since this was the only room large enough for plenary sessions there was some difficulty in assigning session rooms because the banquet crew needs a minimum of one hour to change the room from conference setup to lunchroom setup.

During the year that the committee was preparing for the conference several important things occurred.

The organization adopted a constitution and a set of by-laws.

Led by Mr. Strnad they applied for and were granted incorporation in the state of California as a not-for-profit organization.

The constitution was dated June 1, 1981 and the stated purposes of the MSC are:

1. Plan, develop and conduct an annual Measurement Science Conference for the exchange of ideas, and
2. Promote education and professionalism in measurement.

With the leadership of Mr. Strnad this committee and Board accomplished a large task that has stood the organization well. There have been only small revisions in this document since its acceptance.

### The Board of directors for the Eleventh Measurement Science Conference:

CHAIRMAN	Frank Koide	Rockwell International
CONFERENCE PRES.	W. C. Strnad	Consultant
CHAIRMAN ELECT	Roland Vavken	Rockwell International
FINANCE	Dave Buck	Lockheed California
ADVISOR	Jerry Hayes	Metrology Engineering Center
MEMBER	John Schulz	Ford Aeronutronic
MEMBER	Dean Brungart	Teledyne Systems

### The Conference Committee for the Eleventh Conference:

PROGRAM	Stan Crandon	SAI Comsystems Inc.
ARRANGEMENTS	Chet Crane	Teledyne Microelectronics
REGISTRATION	Pete England	General Dynamics
SECRETARY	Don Greb	Lockheed M & S
EXHIBITS	Les Carlton	Dynalectron
PUBLICITY	Bill Brown	Marotta Scientific
LIAISON	Roland Vavken	Rockwell International
DOOR PRIZES	Bob Couture	Rockwell International
PUBLICATIONS	Bob Dunaway	Metrology Engineering Center
AWARDS	John Brady	Orange Coast College
EVALUATOR	Mark Abeyta	Ford Aeronutronic

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The theme for the Conference was “INNOVATIVE MEASUREMENT-TODAYS REQUIREMENT”.

Admiral Frank C. Collins, Jr., Executive Director of Quality Assurance Defense Logistics Command presented the Keynote address.

Luncheon speakers were:

Thursday—Dr. Robert A. Kamper, Chief of the Electromagnetic Technology Division, National Bureau of Standards.

Friday—Mr. Robert A. Peterson, AWACS Engineering Technology Manager, Boeing Aerospace Company.

There were thirty three exhibitors at the Conference.

The “BEST PAPER AWARD” went to:

David Todd—U.S.Navy and

John Minck—Hewlett Packard

This was the first time that the voting for Best Paper was exactly even.

The “ANDREW WOODINGTON AWARD” was presented to Albert K. Edgerton, Edge to the many that knew him.

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The Twelfth Measurement Science Conference was moved to the Bay Area. Held in the Hyatt Richeys Hotel in Palo Alto, California. The Conference was again scheduled for Thursday and Friday the 20<sup>th</sup> and 21<sup>st</sup> of January 1983. This was the first of the Measurement Science Conference, Incorporated Conferences to be held in the area. It was also the first and still the only to include a wine tasting party. There were several varieties of wine from two or three labels and some attendees tried them all. Some had trouble deciding on the best so they tried them over and over. I have no record of the headaches or the number of cases consumed but I heard ninety cases mentioned among those that would probably know.

The wrap-up dinner meeting was one that stands out as beyond expectations in my memory.

The theme for the Conference was "ACCURACY AND AUTOMATION" an exciting topic of that time when computers were becoming more common in test and calibration equipment. Still a provoking topic as automated equipment becomes more sophisticated with each new generation.

The facility was a nice hotel surrounded by beautiful ground, although January was not the greatest time for visiting this area it was still outstanding.

### The 1983 Measurement Science Conference, Inc. Board of Directors:

BOARD CHAIRMAN	Bill Strnad	Digital Applications Co.
CHAIRMAN-ELECT	Chet J. Crane	Teledyne Microelectronics
CONFERENCE PRES.	Roland Vavken	Rockwell International
FINANCE	Dave Buck	Lockheed California Co.
SECRETARY	Don Greb	Consultant
MEMBER	John Schulz	Ford Aeronutronic
MEMBER	Dean Brungart	Teledyne Systems
MEMBER	John Brady	Orange Coast College

### The 1983 Measurement Science Conference Committee:

SPEAKERS	Frank Koide	Rockwell International
ARRANGEMENTS	C. Quinn/C. Crane	Simco Elect./Teledyne Micro.
FINANCES	Dave Buck	Lockheed Calif. Co.
REGISTRAR	Bob Weber	Lockheed Missiles & Space
AWARDS	John Brady	Orange Coast College
PROGRAMS	Bob Monroe	USN Fleet Analysis Center
PUBLICITY	Bill Browne/ Ralph Worrell	Marotta Scientific
GUEST PROGRAM	Joann Quinn	Simco Electronics
DOOR PRIZES	Bob Couture	Rockwell International
SECRETARY	Don Greb	Lockheed Missiles & Space
PUBLICATIONS	John Schulz	Ford Aeronutronic
CONT. ED. CREDIT	Bob Irvine	Cal-Poly Pomona
EVALUATOR	Mark Abeyta	Ford Aeronutronic
PHOTOGRAPHER		

Mr. J. David Mitchell, Director of Advance Programs and Manufacturing at Rockwell International, provided the Keynote address.

The luncheon speakers were:

Thursday—Dr. Robert E. Larson, President of Systems Control Inc.

Friday—Dr. Joel Birnbaum, Director Computer Research Center, Hewlett Packard.

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There were forty-four exhibitors at the conference this was a record for exhibitor participation.

**BEST PAPER AWARD**—The best paper award went to Russel Shelton of E. Leitz, Inc. his paper was titled “high Speed Accurate Measurements on the Shop Floor:

**ANDREW WOODINGTON AWARD**—The Woodington Award was presented to Dr. Glenn F. Engen, Microwave Metrology Group, Electronic Technology Division, National Bureau of Standards.

## Measurement Science Conference History ---First Thirty Five Years

The lucky Thirteenth Measurement Science Conference was quite different. It was held following the Annual IEEE Instrumentation and Measurement Technology Conference. The IMTC was held on Tuesday and Wednesday the seventeenth and eighteenth of January. The Measurement Science Conference followed immediately on Thursday and Friday the nineteenth and twentieth. The site was the R.M.S. Queen Mary in Long Beach, California. This was an unique and slightly quaint site for a conference, yet it worked pretty well. There were not enough rooms large enough for sessions and some were very crowded. The air conditioning in some of the more crowded rooms was not adequate. Odd shaped rooms with low ceilings was a challenge to some of the speakers.

Guests at the hotel were treated to free tours of the ship and the adjoining "Spruce Goose" which was moved long ago to a location up North. Conference attendees were able to buy tickets at a reduced cost.

The consecutive conferences worked quite well with a number of attendees and some of the exhibitors staying for both. Some committee chairmen worked in conjunction with the chairs of the other Conference to cut cost and provide benefits perhaps not available to a two-day conference.

### The 1984 Measurement Science Conference Board of Directors:

BOARD CHAIRMAN	Roland Vavken	Rockwell International
CONFERENCE CHAIR.	Chet J. Crane	Teledyne Microelectronics
PUBLICITY CHAIRMAN	John Schulz	Ford Aeronutronic
EXHIBITS CHAIRMAN	Dean Brungart	Teledyne Systems
TREASURER	Don Greb	Consultant
PROGRAMS CHAIRMAN	Bob Weber	Lockheed, Sunnyvale
MEMBER	Bob Monroe	Navy Fleet Analysis Center

### The 1984 Measurement Science Conference Committee Chairmen:

ARRANGEMENTS	Carl Quinn	Simco Electronics
ARRANGEMENTS	Frank Mendoza	TRW, Redondo Beach
FINANCES	Dave Buck	Lockheed, Burbank
REGISTRAR	Bob Irvine	Cal Poly, Pomona
GUEST PROGRAM	Steve Kozich	Quality Audit Co.
AWARDS	Dale Rockwell	Metrology Engineering Ctr.
DOOR PRIZES	Bob Couture	Rockwell International
EVALUATOR/ PHOTOGRAPHER	Mark Abeyta	Ford Aeronutronic
SECRETARY	Bill Strnad	Digital Applications Co.
SPEAKERS	Joe Robinson	Naval Weapons Sta,
PUBLICATIONS	Dennis Faunce	Ford Aeronutronic

The Keynote speaker was Mr. William R. Thurston, President and Chief Executive officer of GenRad Incorporated. Mr. Thurston discussed with us the critical importance of real time quality management in today's rapidly changing electronics industry. He defined three levels of quality management -- Detection, Prevention and Integration --All based on a foundation of Automatic Test Equipment.

The Conference theme, appropriate for that particular period of time, was "AUTOMATION-QUALITY-PRODUCTION"

## Measurement Science Conference History ---First Thirty Five Years

Thursday's luncheon speaker was Mr. Joseph R. Cipreano, Director of Reliability and Maintainability, Quality Evaluation Office of Naval Sea Systems Command.

Friday's luncheon speaker was scheduled to be John Fluke Senior however his health prevented his being able to be at the conference. John sent a very capable substitute in Mr. Jerry Hayes, one of his most reliable and personable consultants to take his place.

Being the recipient of the "Woodington Award" then surprised Jerry Hayes. Everyone was very sorry that John Fluke was ill but it worked very well to assure that Jerry would be there without his being aware of the award.

There were fifty-six exhibitors for the conference and they were first class all the way.

The door-prize session set a new record with the estimated value of all the prizes given to attendees exceeding sixteen thousand dollars.

The Best Paper Award went to Karen Hartz Of Newark Air Force Base. Her Paper was titled "Error Reduction in Transfer Function Measurements for Accelerometer Calibration".

## Measurement Science Conference History ---First Thirty Five Years

The fourteenth Measurement Science Conference was our second one in the Bay Area. It was held in the Marriott Hotel, Santa Clara, California January seventeenth and eighteenth 1985

This Conference is memorable for the large number of exhibits and the really great exhibits area. A number of the exhibits areas at previous conferences had lacked the space and flexibility to be classed a “great” exhibits hall. Also memorable was the many attendees from Lockheed. I wonder if the Conference Chairman (President) had any influence on that? The Marriott was a great hotel and did so well that four of the next five conferences were booked at Marriott Hotels.

The 1985 Measurement Science Conference Board of Directors:

BOARD CHAIRMAN	Chet J. Crane	Teledyne Microelectronics
PRESIDENT	Bob Weber	Lockheed Missiles & Space
SECRETARY/ TREASURER	Don Greb	Consultant
MEMBER	John Schulz	Ford Aeronutronics
MEMBER	Dean Brungart	Teledyne Systems Co.
MEMBER	Bob Monroe	Navy Fleet Analysis Ctr.

The 1985 Measurement Science Conference Committee:

PRESIDENT	Bob Weber	Lockheed Missiles & Space
EXHIBITS	Dean Brungart	Teledyne Systems Co.
PUBLICITY	John Schulz	Ford Aeronutronic
ARRANGEMENTS	Carl Quinn	Simco Electronics
FINANCES	Roland Vavken	Rockwell International
SPEAKERS	Frank Koide	Rockwell International
PROGRAMS	Wendell Seal	TRW E & D
REGISTRAR	Darlene Diven	Lockheed Missiles & Space
DOOR PRIZES	Bob Couture	Rockwell International
SECRETARY	Stan Crandon	SAI Comsystems
GUEST PROGRAM	Joan Quinn	Simco Electronics
PUBLICATIONS	Bob Irvine	Cal-Poly Univ. Pomona
AWARDS	Dale Rockwell	Navy MEC
EVALUATOR	Mark Abeyta	Ford Aeronutronic

The door prizes donated by various supporters of the Conference had a total estimated value of nearly fourteen thousand dollars with several expensive and very desirable prizes.

There were fifty-nine exhibitors at this conference setting another record for Mr. Brungart, Dean just keeps upping the mark

The Conference theme was “CHNGE AND CHALLENGE”.

Mr. Tomas C. McDermott, Vice President, Quality and Reliability Assurance, Rockwell International presented the Keynote address.

The luncheon speakers were:

Thursday—Mr. Richard W. Anderson, General Manager Microwave & Communications Instrument Group, Hewlett Packard Co.

Friday—Mr. Barry J. Shillito, Chairman Teledyne International. (retired)

BEST PAPER AWARD—The best paper award went to Mr. William A. Messina of IBM for his paper titled “USE OF TRIMMED MEANS FOR MANUFACTURING PRODUCTION”.

ANDREW WOODINGTON AWARD:

## Measurement Science Conference History ---First Thirty Five Years

The Woodington Award this year went to two very deserving people and their nominations were so alike and so convincing that the selection committee was unable to separate either one as more deserving of the award. The Board had to agree and this year the honor went to Mr. Norman Belecki and Mr. Woodward Eicke , both of the National Bureau of Standrds.

## Measurement Science Conference History ---First Thirty Five Years

The fifteenth Measurement Science Conference was presented in the Marriott Hotel, Irvine, California on January twenty third and twenty fourth 1986.

This Conference was so well organized and went so smooth that we immediately signed up for a second year.

This was the first Conference to present the proceedings with all the other materials at the time of registration. The proceedings were presented in a loose-leaf binder making it convenient for the attendee to insert late papers in their proper sessions.

The 1986 Measurement Science Conference Board of Directors:

BOARD CHAIRMAN	Bob Weber	Lockheed Missiles & Space
CONFERENCE CHAIRMAN	Dean Brungart	Teledyne Systems
CHAIRMAN-ELECT	John Schulz	Ford Aeronutronic
SECRETARY/ TREASURER	Don Greb	Consultant
MEMBER	Carl Quinn	Simco Electronics
MEMBER	Roland Vavken	Rockwell International
MEMBER	Chet J. Crane	Teledyne Microelectronics

The 1986 Measurement Science Conference Committee:

PRESIDENT	Dean Brungart	Teledyne Systems
FINANCE	Roland Vavken	Rockwell International
PUBLICATIONS	Chet J. Crane	Teledyne Microelectronics
SPEAKERS	Jerry Hayes	Science Applications Intl.
PROGRAMS	John VanDeHouten	TRW E & D
EXHIBITS	Ray Kellick	Teledyne Systems Co.
ARRANGEMENTS	Frank Mendoza	TRW E & D
SECRETARY	Steve Kozich	Quality Audit Co.
REGISTRAR	Dennis Pinnecker	Rockwell International
GUESTS PROGRAM	Bob Irvine	Cal Poly Univ. Pomona
AWARDS	Stan Crandon	Science Applications Int.
DOOR PRIZES	Bob Couture	Rockwell International
EVALUATOR	Ray Wade	Ford Aeronutronic

The theme selected for the Conference was "METROLOGY THE FOUNDATION FOR QUALITY".

Dr. Ernst Ambler, Director of the National Bureau of Standards, presented the Keynote address.

Dr. Ernest Ambler became the eighth Director of the National Bureau of Standards in February 1978. At the request of Secretary of Commerce Malcolm Baldrige, he has continued as Director for the Reagan Administration. Dr. Ambler joined NBS in 1953 and has worked throughout his career to make NBS increasingly valuable scientific and technical resource for industry, business, government, education, and the public.

The Luncheon Speakers were:

## Measurement Science Conference History ---First Thirty Five Years

Thursday-- Congressman George E. Brown, Jr. (D-Riverside) a native of California, born in Holtville in the Imperial Valley. He graduated from the University of California at Los Angeles with a degree in Industrial Physics. Before entering politics, Mr. Brown was employed by the City of Los Angeles, where he worked for 12 years in personnel, engineering, and management.

Friday-- Gerry Iangeler is a co-founder of Mentor Graphics Corporation and is its Executive Vice President. He is a graduate of Cornell University with a BA in Chemistry and holds a Masters in Business Administration from Harvard. & He was previously associated with Tektronix where he was Marketing Manager for Software.

**ANDREW WOODINGTON AWARD**—The Woodington Award was awarded to Mr. Frank Koide, a long time supporter and hard worker for the Measurement Science Conference.

I felt that this would be an appropriate place to insert the “MSC RECOLLECTIONS BY DEAN BRUNGRT”

The Measurement Science Conference was initially started by Dr. Don Morgan and Harold Wilson (V.P. of Administration) of the California Polytechnic University at San Luis Obispo for the purpose of promoting their new measurement science course.

With the help of an Advisory Committee chaired by Thurlow Marrow of Douglas Aircraft Co., the first MSC was held at Cal Poly in November of 1970. The second was scheduled for 1971, but was canceled due to lack of apparent interest. Dr. Morgan received an overseas assignment and turned the program over to Professor Paul Scheffer of Cal Poly. At this time, I was asked to join an expanded advisory committee chaired by Phillip Painchaud. Others I remember on the committee were Steve Kozich of Quality Audit Company, Dwayne Sharpe of IBM, Donald Greb of Lockheed Missile & Space Co., Administrator Fred Wolf of Cal Poly, Cliff Koop and Bob Couture of Rockwell International, Harold Clark of Valhalla Scientific, and Walter Watson of the State Weights & Measurements Organization (I am sure I am forgetting some of the contributors, but memory fails with age).

The MSC was a successful joint venture of Cal Poly University and the Industry Advisory Committee, but their proposed measurement science course was not. Therefore, since the conference was not meeting their intended purpose, Cal Poly decided to drop their sponsorship. Most of the Advisory Committee were members of the Precision Measurement Association, and it was suggested that PMA take over and make it PMA's conference. Bob Couture, who was then the PMA President, couldn't convince the PMA Board to accept it.

Therefore, a group of us on the Advisory Committee felt that the MSC was too good a conference to drop, and we decided to do it ourselves. Cal Poly San Luis Obispo offered to let us use their facilities, (*editors comment this was not rent free*) and in 1976 we put on our first independent MSC with Bob Couture serving as Conference Chairman, Phil Painchaud as the

## Measurement Science Conference History ---First Thirty Five Years

Program Chairman, and I chaired the exhibits. This is the first time we really had exhibits of any consequence, and we squeezed them on to the theatre's stage with only the curtain separating the exhibitors from the speakers.

California State University at Long Beach (CSULB) and Cal Poly Pomona were both interested in hosting the conference so we decided to hold the 1977 conference in Long Beach, the 1978 conference in Pomona, and return to Cal Poly San Luis Obispo for 1979.

The 1977 Conference in Long Beach was an outstanding success and, until recently, held the attendance record. Cal Poly Pomona was also a fabulous success, but was dampened by Andy Woodington (a prominent member of the Conference Committee) being shot the day before the conference opened.

When we returned to Cal Poly San Luis Obispo in 1979, we really bulged at the seams and overflowed everything, including the dining hall. The Cal Poly President asked us to either limit the size of the conference or move it elsewhere.

We then decided to use a commercial hotel for the first time, but Christmas parties interfered with our usual December time for the Conference. January was chosen as an alternative and we chose the "Inn at the Park" hotel in Anaheim as the site. Thus the MSC which would have been held in December 1980 was held in January 1981 instead. The January/February time period apparently was a good choice as the conference has prospered with continual growth ever since.

Since I was Exhibit Chairman, I remember the conferences most of the challenges in laying out and selling exhibit spaces. For example, at the Inn at the Park we used a large completely round building in the middle of the hotel's patio area which had been a bar, and we had to work around the bar facilities. Of course there never was anything like the stage at Cal Poly. The square or rectangle ballrooms used today don't represent the challenge we faced in the late seventies and early eighties.

Others may remember the Inn at the Park as the place where I backed the brand new Lincoln John Schulz had acquired from Ford as a door prize (the use of) into a concrete pillar during a break and in front of most of the attendees.

Mostly, I remember the fabulous lunches the committee held and John Schulz's chocolate deserts.

This was signed by Dean and I deeply appreciate his input. Dean has been a long time friend and a mentor for me through a major part of my own career. The editor.



## Measurement Science Conference History ---First Thirty Five Years

The sixteenth Measurement Science Conference was again held at the Marriott Hotel in Irvine, California January 29<sup>th</sup> & 30<sup>th</sup> 1987.

The Conference theme was "MEASUREMENTS FOR TECHNOLOGICAL GROWTH".

### **Thoughts of the 1987 MSC – John Schulz, President**

The 1987 MSC was the seventh conference to be held at a facility large enough for our ever increasing attendance (previous conferences were held at college campuses with smaller facilities). The conference was held at the Irvine Marriott and there were concerns that it was not large enough to accommodate our 650 attendees (which was the largest attendance up to that time). One of the highlights of the conference was a door prize awarded by Ford Aerospace which allowed the winner the use of a top-of-the-line, new Lincoln automobile for one week (no restrictions).

The conference was well attended but our processes were antiquated. Registration was done on the spot by lots of typists and long lines. The proceedings were large, heavy books and the A/V was not very sophisticated.

But the MSC was on the way up; for the next 10 years the attendance increased and the processes got better.

JC Schulz

The 1987 Measurement Science Conference Board of Directors:

BOARD CHAIRMAN	Dean Brungart	Teledyne Systems
CONFERENCE CHAIRMAN	John Schulz	Ford Aeronutronic
TREASURER	Roland Vavken	Rockwell International
MEMBER	John VanDeHouten	TRW E & D
MEMBER	Carl Quinn	Simco Electronics
MEMBER	Jerry Hayes	SAI Corp.
MEMBER	Chet J. Crane	Teledyne Microelectronics

The 1987 Measurement Science Conference Committee:

PRESIDENT	John Schulz	Ford Aeronutronics
PROGRAMS	John VanDeHouten	TRW E & D
PUBLICITY	Carl Quinn	Simco Electronics
FINANCE	Roland Vavken	Rockwell International
AWARDS	Chet J. Crane	Teledyne Microelectronics
LIAISON	Bob Weber	Lockheed Missiles & Space
PUBLICATIONS	Ray Wade	Ford Aeronutronics
EXHIBITS	Ray Kelllick	Teledyne Systems Co.
ARRANGEMENTS	Frank Mendoza	TRW E & D
SPEAKERS	Steve Kozich	Quality Audit Co.
REGISTRAR	Dennis Pinnecker	Rockwell International
PUBLICITY	Denis Faunce	Ford Aerospace
GEST PROGRAM	Stan Crandon	SAI, Corp.
DOOR PRIZES	Bob Couture	Rockwell International
DOOR PRIZE, ASS'T	Ken Morrison	Northrup Corp.
SECRETARY	Nicholas Farnum	Fullerton State Univ.

EVALUATOR

Kevin Ruhl

TRW E & D

Dr. Dale L. Compton, Deputy Director of the NASA Ames Research Center presented the Keynote address titled "The Role of Instrumentation on the Design and Acceptance Testing of the National Full-scale Aerodynamic Complex". Dr. Compton received his BS, MS, and PHD from Stanford University and had served NASA as a Research Scientist for over fifteen years. He has held several key management positions at Ames.

The luncheon speakers were:

Thursday—Mr. Peter Stein, President of Stein Engineering Services Inc. Mr. Stein will talk on "How to be a Ring Master in Tomorrows Measurement Circus."

Friday-- Mr. Gilbert Hamblet is Vice President of Industry and Regulatory Affairs at TRW. Mr. Hamblet will talk about "Things I Shouldn't Do".

The BEST PAPER AWARD was presented to Martin J. Girard, and Pierre R. Delajoud of DH Instruments Inc. for their paper titled "Multiplying and Dividing Techniques for Improved Definition of Pressure in the Extreme Ranges".

ANDREW WOODINGTON AWARD—The Woodington Award for 1987 was presented to Dr. Klaus Jaeger.

At this time I would like to present a brief overview of Dr. Jaeger's professional career and highlight some of his contributions and accomplishments in the field of metrology. Klaus was raised in Lubeck, West Germany. He immigrated to the United States in 1958. He received his undergraduate degree in physics from Syracuse University and later earned his M.S. and Ph.D. degrees in high-energy physics from Syracuse as well. For twelve years, Klaus was active in the field of experimental particle physics at the Argonne Brookhaven Fermi, and Stanford Accelerator Centers. One of his assignments was Project Manager for 4 of the twelve foot super conductive magnets first assembled at Argonne and later redesigned and moved to Stanford. During this period he wrote twenty-three papers as well as numerous technical reports. In 1982 Klaus left the world of high energy physics and joined Lockheed's Metrology organization in Sunnyvale, California. He has advanced through a series of technical and management assignments to his current position as Manager of the Primary Standards Laboratory. Dr. Jaeger is a member of the Instrument and Measurement and Elementary Particle Groups of the American Physical Society. He has been very active within the Measurement Science Conference (MSC), National Conference of Standards Laboratories (NCSL), and IEEE organizations as a committee chairman for, and contributor to, workshops and presentations. He has served as Chairman of the Temperature and Pressure subcommittee of the National Measurement Requirements Committee (NMRC) organized by the NCSL. He currently holds the position of Chairman of the NMRC. He has been appointed to the IEEE Awards Committee and is a member of the IEEE Electro-Optics Requirements Committee. Klaus has been active in the investigation of physical constants as they pertain to metrology and has prepared a paper regarding the proposed  $h/e$  ratio as it will affect the DC voltage and resistance standards within the measurement community. He has written a summary article, which was published in the IEEE transactions for the Conference on Precision Electrical Measurements (CPEM). He also assisted in writing "A Primer for Mass Metrology", which is an NBS publication, and is preparing a similar paper for temperature. Although relatively new to the metrology field, Dr. Jaeger has gained the respect of the

## Measurement Science Conference History ---First Thirty Five Years

measurement community for his accomplishments and innovative approach to measurement problems. Klaus, it is my privilege as

## Measurement Science Conference History ---First Thirty Five Years

The seventeenth Measurement Science Conference was held January twenty-eighth and twenty ninth 1988. The Conference was in the Hyatt Regency Hotel Long Beach California.

The theme for the Conference was "TOTAL QUALITY THROUGH MEASUREMENT SCIENCE"

This Conference is memorable for the Exhibits area. The exhibits were expanded into the lobby in front of the Ballroom. Fronted by a wall of glass this area looked out on the swimming pool and the Pacific Ocean. As the attendees descended from sessions to the breaks on a rather long escalator they were treated to a great view of the Long Beach Harbor. Although the area for exhibits was limited they were well arranged and outside of a few electrical problems with the Hotels Engineering it worked great.

Some of the Conference functions were on floors two escalator rides up and the transition from the bottom to the top created a time problem. The hotel location and the banquet service made up for any shortcomings with a great view and good food.

The 1988 Measurement Science Conference Board of Directors:

BOARD CHAIRMAN	John Schulz	Ford Aeronutronics
CONFERENCE CHAIRMAN	John VanDeHouten	TRW E & D
TREASURER	Roland Vavken	Rockwell International
SECRETARY	Stan Crandon	SAI, Corp
MEMBER	Frank Mendoza	TRW e & D
MEMBER	Jerry Hayes	SAI, Corp.
MEMBER	Chet J. Crane	Teledyne Microelectronics

The 1988 Measurement Science Conference Committee:

PRESIDENT	John VanDeHouten	TRW E & D
EXECUTIVE VP	Frank Mendoza	TRW E & D
ARRANGEMENTS	Frank Mendoza	TRW E & D
FINANCE	Roland Vavken	Rockwell International
LIAISON	Jerry Hayes	SAI, Corp.
GUEST PROGRAM	Chet J. Crane	Teledyne Microelectronics
PROGRAMS	Pete England	General Dynamics
SPEAKERS	Bob Weber	Lockheed Missiles Space
REGISTRAR	Dennis Pinnecker	Rockwell International
EXHIBITS	Ray Kellick	Teledyne Systems
PUBLICATIONS	Nicholas Farnum	Fullerton Sate Univ.
PUBLICITY	Kevin Ruhl	TRW E & D
AWARDS	Ray Wade	Ford Aerospace
DOOR PRIZES	Ken Morrison	Northrup Corp.
EVALUATOR	David Lorenzen	McDonnell Dougl's

The Keynote address was titled "SPACE SHUTTLE PROGRAM UPDATE" and was delivered by Mr. George A. Rodney, Associate Administrator for Safety, Reliability, Maintainability and Quality Assurance NASA Headquarters. In his position he is responsible for overseeing safety, reliability, and quality assurance functions related to all NASA activities programs. In addition, he is responsible for the direction of reporting and documentation of problems, problem resolution and trends associated with safety.

The luncheon speakers:

Thursday—Jack Jackson President of Jack Jackson and Associates, Inc. Mr Jackson's address was on "Managing in Today's Changing Environment" This was a very informative talk in addition to being exceptionally entertaining.

Friday—Dr, Jacob (Jake) Srendi, Dr. Srendi's talk was on "Transforming Data into Information"

Best Paper award—

ANDREW WOODINGTON AWARD: The Woodington Award was accepted by the family of Mr. Algie Lance since Algie had passed away just over a month previously. The MSC Board of Directors decided to rename the Best Paper Award to the "Algie Lance Best Paper Award" and with the help of Ballantine Laboratories, Inc., to increase the honorarium for the best paper to \$500, effective immediately.

The following is the presentation of the award as presented by the Board Chairman at the Thursday luncheon program. The 1988 Woodington Award recipient has distinguished himself as a true professional in the field of metrology in the tradition of Andy Woodington.

Some of the outstanding accomplishments of this year's recipient are: 36 years of professional experience dedicated to the measurement science community;

- Author and co-author of many microwave books;
- Over 30 papers published and presented at MSC, PMA, IEEE and other meetings and conferences;
- Served as a "contributor" in PMA, IEEE and ADPA.

For his exceptional qualities, it is the unanimous decision of the Board of Directors of MSC to confer the Woodington Award to Mr. Algie Lance.

A brief overview of Algie Lance's professional career, contributions and accomplishments are as follows:

His professional career began in 1951 as an electronics instructor at Western Electric, teaching radar/missile systems and electronic circuit analysis courses. In 1952 he went to General Electric, Utica, N.Y. where he was involved in the design and development of analog/digital coding equipment for radar systems. Algie Lance joined Hughes Aircraft in 1955 as a standards engineer in the Primary Standards Lab, where he designed and developed microwave measurements and calibration systems. Since 1969 TRW Electronics & Defense, Redondo Beach, California, where he held various positions including Section Head responsible for the RF & Microwave Standards Lab, Low Frequency & DC Standards Lab and the General Instrumentation Lab, have employed him. His last assignment was Senior Scientist of the TRW Metrology Lab. Mr. Lance taught Microwave Measurements at Los Angeles Trade-Technical College, Santa Monica College and Pierce College.

He is the author of "Introduction to Microwave Theory & Measurements" and another book entitled "Microwave Experiments" He is a contributing editor to three other books. He was the keynote speaker at the 1982 European Microwave Conference in Germany. He was invited by DOD to make a special briefing to the Under-Secretary of Defense dealing with National capabilities in the area of millimeter wave measurement, he received the "IEEE Career Award" in 1984 for his work on automated measurement systems.

Measurement Science Conference History ---First Thirty Five Years

The 1989 Measurement Science Conference was held at the Anaheim Marriott Hotel, Anaheim, California the twenty-sixth and twenty-seventh of January 1989. The Conference theme was "MEASUREMENT QUALITY, THE COMPETITIVE EDGE".

This was a memorable conference because it brought to the committee the assistance of Diana Conti of VIP Meetings and Conventions. She assisted in setting up arrangements and the Guest Program. There was a lot of favorable comment from those participating in the guest's trips.

There was also an outstanding exhibits area and sixty-nine great exhibits booths.

There was also a very memorable reception with entertainment in the big hall that is remembered by many attendees.

The 1989 Measurement Science Board of Directors;

BOARD CHAIRMAN	John VanDeHouten	TRW
PRESIDENT	Frank Mendoza	TRW
TREASURER	Bob Weber	Lockheed M & S
SECRETARY	John Schulz	Ford Aerospace
EXECUTIVE VP	Dennis Pinnecker	Rockwell International
MEMBER	Stan Crandon	Consultant
MEMBER	Jerry Hayes	Hayes Technology

The 1989 Measurement Science Conference Committee:

PRESIDENT	Frank Mendoza	TRW
FINANCE	Dennis Pinnecker	Rockwell International
ARRANGEMENTS	Stan Crandon	Consultant
PUBLICITY	John Schulz	Ford Aerospace
SPEAKERS	Bob Weber	Lockheed M & S
LIAISON	Jerry Hayes	Hayes Technology
PUBLICATIONS	Ray Wade	Ford Aerospace
PROGRAMS	Kevin Ruhl	TRW
REGISTRATION	Chet J. Crane	Teledyne Microelectronics
EXHIBITS	Ray Kellick	Teledyne Systems
AWARDS	Lynette Wyrick	Creative Data
SECRETARY	Bob Tobias	TRW
DOOR PRIZES	Ken Landis	Hughes Aircraft
EVALUATOR	David Lorenzen	McDonnell Douglas
GUEST PROGRAMS	Diana Conti	VIP Meetings & Conventions

Mr. Hanson Vice President and General Manager, Instruments Group Tektronix, Inc. provided the Keynote address. In July 1988 Tektronix announced the consolidation of the Portables and Components Group with the Instrument Systems Group (ISG), reporting to Mr. Hanson. In November 1986 the decision was made to further flatten the group structure. Since January 1988, with the appointment of a new President and restructuring of the company,

Mr. Hanson continues to head the Instruments Group, including all of the company's scopes and instrument accessories divisions, general-purpose test instruments, and display devices (DDO). He also led Tek's Competitive Advantage project (TCAP). Mr. Hanson holds a B.S.E.E. and a M.S.E.E., both from Utah State University.

## Measurement Science Conference History ---First Thirty Five Years

The luncheon Speakers were:

Thursday—Mr. Gene Perret, Humorist and Writer, his presentation was very witty and the laughs were numerous.

Friday—Mr. Raymond A. Sokolov, Editor, The Wall Street Journal, Mr. Sokolov's address was titled "Measure for Measure".

ALGIE LANCE BEST PAPER AWARD—

ANDREW WOODINGTON AWARD—The Woodington award for 1989 went to a long time Conference supporter and worker Mr. Dean Brungart.. Dean is also a recent recipient of the "WILLIAM WILKHACK AWARD" He was at the time the Metrology Director and associate Quality Control Director at Teledyne Systems Company in Northridge, California. Dean started the Exhibits program in both MSC and NCSL, which has kept both organizations solvent without the registration fees going up beyond belief. Mr. Brungart grew up in Pennsylvania but graduated from USC. He held almost every office in the Precision Measurements Organization, The National Conference of Standards Laboratories, and Measurement Science Conference. He is highly respected and well liked by everyone.

Measurement Science Conference History ---First Thirty Five Years

The 1990 Measurement Science Conference was again at the Anaheim Marriott Hotel but due to an earlier commitment by the hotel our conference had to be moved into February. It was held on the eighth and ninth of February 1990 and after the Conference it was generally agreed that this was better than the middle of January. Prior years had shown that it was better to keep the same location and change the date than to keep the date and change the location. The Conference President made the choice which the entire Board agreed was the correct one.

There were seventy-one exhibits booths sold which was another record at that time and the exhibits committee reported that there was a waiting list.

Theme selected for the 1990 Conference was "MEASUREMENT SCIENCE— TECHNOLOGY FOR TQM" getting in as many of the current buzzwords popular at the time as would fit. Also it fit with the requirement for industry and government labs to become dedicated to the concept of "Total Quality Management".

The 1990 Measurement Science Conference Board of Directors:

BOARD CHAIRMAN	Frank Mendoza	TRW
CONFERENCE CHAIRMAN	Dennis Pinnecker	Rockwell International
TREASURER	Bob Weber	Lockheed
SECRETARY	John Schulz	Ford Aerospace
MEMBER	Chet J. Crane	Teledyne Microelectronics
MEMBER	Kevin Ruhl	TRW
MEMBER	Ken Landis	ESI Industries

The 1990 Measurement Conference "Conference Committee "

PRESIDENT	Dennis Pinnecker	Rockwell International
EXECUTIVE VP/	Kevin Ruhl	TRW
REGISTRAR	Kevin Ruhl	TRW
PUBLICITY	John Schulz	Ford Aerospace
DOOR PRIZES	Ken Landis	ESI Industries
LIAISON/GUEST PROG.	Chet J. Crane	Teledyne Microelectronics
PUBLICATIONS	Ray Wade	TRW
EXHIBITS	Ray Kellick	Teledyne Systems Co.
SECRETARY/EXEC. VP	Bob Tobias	TRW
TUTORIALS	Roger Hickey	McDonnell Douglas
EVALUATOR	David Lorenzen	McDonnell Douglas
FINANCE	Chris Wagner	Rockwell
PROGRAMS	John Gerhard	Rockwell
AWARDS	Julius Gargyi	John Fluke Co.

Keynote Speaker—

The luncheon speakers were:

Thursday—Mr. William A. Witword, Director, Business Unit T & M Phillips International B. V.. Mr. Whitward's Topic-- "THE CHALLENGES OF ALLIANCES & PARTNERSHIPS "

Friday—Captain David Carey, USN (Ret'd), President, David Carey & Associates  
Captain Carey's TOPIC: MEETING YOUR CHALLENGES

ALGIE LANCE BEST PAPER AWARD—

ANDREW WOODINGTON AWARD-- the recipient of the 1990 Woodington Award - Dr. Charles Tilford. Dr. Tilford, a native of Washington State, came to the National Bureau of Standards in 1970 after having received a B.S. from Notre Dame and a Ph.D. from Iowa State, both in Physics. His entire career at NBS has been devoted to scientific advances in the measurement of pressure and vacuum. For the past ten years, Dr. Tilford has directed the Vacuum and Leak Rate research program at NIST. The esteem with which this program is held across the nation and throughout the world is primarily due to Dr. Tilford's personal insight and his leadership of the superb staff that he has assembled to meet the nation's measurement needs in low pressure. His group and the measurement services that they provide are clearly recognized as among the very best in NIST. The work is of the highest level of technical excellence, but over and above that he is recognized for his dedication to determining and then meeting the measurement community needs now and in the future. Dr. Charles Tilford is also personally involved in the day-to-day research required to advance the state-of-the-art in measurement science. Among his major accomplishments are the development of the Ultrasonic Acoustic Interferometer Manometer (this development was chosen to receive an Industrial Research IR-100 Award in 1981), and the Orifice-Flow Primary High Vacuum Standard. He has thirty-seven publications in scientific and engineering journals. He was awarded a Department of Commerce Bronze Metal in 1981 and a Silver Medal in 1987. The latter is the second highest award from the Commerce Department. In summary, Charles has provided superb technical guidance in bringing standards in vacuum and leak measurements to the high state they are today in the United States. Through his creative leadership and personal energy, the National Institute of Standards and Technology provides the most advanced vacuum and leak rate metrology services in the world. He has made important contributions to the development of standards through his work in the national and international organizations. In every sense of the word, Dr. Charles Tilford is among the very best of the nation's "Metrology Professionals."

## Measurement Science Conference History ---First Thirty Five Years

The 1991 Measurement Science Conference was moved to a new site, one whose name is quite familiar to everyone worldwide, "Disneyland". Although it was only a move across Katela Boulevard it seems almost a different world. The 1991 Conference was held in the Disneyland Hotel Convention Center Anaheim, California January thirty-first and February first.

The 1991 Conference theme, "CONTINUOUS IMPROVEMENT IN MEASUREMENT SCIENCE" was chosen in keeping with the requirement for industry and government to dedicate themselves to Continuous improvement, a key component of TQM.

There were sixty-nine exhibits booths sold and the exhibits area was large with wide aisles and great presentations by exhibitors. Which allowed room for everyone to visit demonstrations and speak with booth personnel.

### The 1991 Measurement Science Conference Board of Directors:

BOARD CHAIRMAN	Dennis Pinnecker	Rockwell
CONFERENCE CHAIRMAN	Kevin Ruhl	TRW
TREASURER	Bob Weber	Lockheed
SECRETARY	John Schulz	Lorel Aeronutronic
EXECUTIVE VP	Bob Tobias	TRW
MEMBER	Chet J. Crane	Teledyne Micro.
MEMBER	Ken Landis	Electro Rent

### The 1991 Measurements Science Conference "Conference Committee"

PRESIDENT	Kevin Ruhl	TRW
EXECUTIVE VP/	Bob Tobias	TRW
REGISTRAR	Bob Tobias	TRW
SPEAKERS	Bob Weber	Lockheed
PUBLICITY	John Schulz	Lorel Aeronutronic
LIAISON/GUEST PROG.	Chet J. Crane	Teledyne Micro.
DOOR PRIZES	Ken Landis	Electro Rent
PUBLICATIONS	Ray Wade	TRW
EXHIBITS	Ray Kellick	Teledyne Systems
SECRETARY	Dan Smith	General Dynamics
TUTORIALS	Roger Hickey	McDonnell Douglas
ARRANGEMENTS	Frank Mendoza	TRW
EVALUATOR	David Lorenzen	McDonnell Douglas
FINANCE	Chris Wagner	Rockwell
PROGRAMS	John Gerhard	Rockwell
AWARDS	Julius Gargyi	John Fluke Mfg. Co.

John Fluke Jr. immediate past Chairman of the Board for the John Fluke Manufacturing Company and current member of the Board provided the Keynote address.

The Luncheon speakers were:

Thursday—Mr. Bill Coplin, Speaker and Entertainer BILL COPLIN received his BS in education from PSU Pittsburg, Kansas, and his MS in Speech and Drama from ESA, Emporia, Kansas.

Friday-- LARRY MOSS, a leading Hollywood diction/dialect coach and speech consultant, with credits that include over 200 television and feature films.

ALGIE LANCE BEST PAPER AWARD—The best paper award was presented to Mr. Brian Conroy of Teledyne Systems for his paper titled “A Round-Robin Measurement Assurance Process or Thread Gage Pitch Diameter Measurements”.

ANDREW WOODINGTON AWARD-- The 1991 winner is GARY DAVIDSON. He exhibits the necessary requisites of the professionalism each of us strive for. His contributions have - as most of the recipients of the past -been made in areas wider than his employment. He has participated in the Measurement Science Conference in the past as a speaker, panelist and chairman of a committee. Perhaps his role in shaping the National Conference of Standards Laboratories (NCSL), though, is his best-known activity.

He has served the company he works for in ways most of us are unaware of. To mention just three of his contributions to the field of Metrology:

1. He was appointed by the National Research Council to the prestigious Board of Assessment for NIST.
2. He has served as president of NCSL, as chairman of a number of important committees, including Measurement Assurance, Government Affairs, and currently – TQM Committee on Calibration System Requirements.
3. He developed a Data Base Program for Equipment Control Management, claimed by many to be one of the best in the industry, and is currently Manager of the Calibration Service Department in TRW's Equipment Management Center.

Measurement Science Conference History ---First Thirty Five Years

The theme for the conference in held at “The Disneyland Hotel Convention Center” January 30<sup>th</sup> and 31<sup>st</sup> 1992 was “Striving for Global Metrology”. This was very appropriate since there was a move to coordinate all the European National Laboratories.

The Board of Directors for the 1992 Conference:

CHAIRMAN	Kevin Ruhl	TRW
PRESIDENT	Bob Tobias	TRW
EXECUTIVE VP	John Gerhard	Rockwell International
TREASURER	Ken Landis	Electro Rent
DIRECTOR	Ray Wade	TRW
DIRECTOR	Chet J. Crane	Teledyne Microelectronics
DIRECTOR	John Schulz	Loral Aeronutronic

The Conference Committee for the 1991 Conference:

PRESIDENT	Bob Tobias	TRW
EXECUTIVE VP	John Gerhard	Rockwell International
SECRETARY	Tom Anderson	MKS Instruments
FINANCE	Chris Wagner	Rockwell International
PROGRAMS	John Gerhard	Rockwell International
EXHIBITS	Ray Kellick	Teledyne Systems
ARRANGEMENTS	Frank Mendoza	Aerojet General
PUBLICITY	John Schulz	Loral Aeronutronic
PUBLICATIONS	Ray Wade	TRW
REGISTRAR	Dan Smith	Rain Bird Corp.
TUTORIALS	Roger Hickey	McDonnell Douglas
GUEST PROGRAM	Alan Ho	Loral Aeronutronic
AWARDS	Julius Gargyi	MetroMation
DOOR PRIZES	Ken Landis	Electro Rents
EVALUATOR	Dave Lorenzen	McDonnell-Douglas
LIAISON	Alan Ho	Loral Aeronutronics
HISTORIAN	Chet J. Crane	Teledyne Microelectronics

WOODINGTON AWARD:

This years winner is a past president of the Precision Measurements Association and a past president of the Measurement Science Conference. He holds a Bachelor of Science degree in Industrial Technology from California State University-Long Beach and a Masters in Business Administration from Pepperdine University. He retired from Rockwell International in 1989 after serving the company for more than 30 years. During these years, he progressed from a technician in the electrical lab to Engineering Manager of Rockwell's metrology facility here in Anaheim, California. This years Woodington Award winner is Robert J. Couture. A significant achievement during Bob's career was the development of Rockwell's unique system of test equipment design analysis, documentation and verification characterized by the calibration service specification. Bob was also a primary contributor to the Rockwell control system or calibrated test equipment which resulted in one of the first industrial 4 applications of interval adjustment of individual items of test equipment. Bob was known for his attention to all details of a project and was a stickler for accuracy and quality in every

## Measurement Science Conference History ---First Thirty Five Years

aspect of a job. Not just of the work itself but also of the documentation. This meticulous characteristic was one he first applied to himself and his own work and then to his subordinates and their work. The result was an engineering function which was renowned for the high caliber of its standards development and calibration work.

The Keynote Speaker at this conference was Steve D. Doherty, Major USAF the title of his presentation was "Managing Change: the Role of the Leader".

The Luncheon speakers were:

Thursday- Rod Machado who addressed "The Lost Art of Thinking"

Friday- Danny Cox- Mr. Cox presented a talk titled "Leadership When the Heat's On"

This was the first year for the Measurement Science scholarship awards.

This was the year the first issue of the MSC History was published.

This was the first year that so many people filled up on the great food at the Fluke reception that Fluke ran out and the MSC reception had food left over.

## Measurement Science Conference History ---First Thirty Five Years

The 1993 Measurement Science Conference was held in the Marriott hotel in Anaheim California. The weather was not cooperative at all and it rained so hard the water from the street was sidewalk to sidewalk.

The 1993 Board of Directors:

CHAIRMAN	Bob Tobias	TRW
PRESIDENT	John Gerhard	Rockwell International
EXECUTIVE VP	Ray Wade	TRW
TREASURER	David Lorenzen	McDonnell-Douglas
SECRETARY	John Schulz	Loral Aeronutronic
DIRECTOR	Alan Ho	Loral Aeronutronic
DIRECTOR	Kevin Ruhl	TRW

The 1993 Measurement Science Conference Committee:

PRESIDENT	John Gerhard	Rockwell International
EXECUTIVE VP	Ray Wade	TRW
SECRETARY	Tom Anderson	MKS Instruments
FINANCE	Alan Ho	Loral Aeronutronics
PROGRAMS	Roger Hickey	McDonnell-Douglas
EXHIBITS	Ray Kellick	Teledyne Systems
SPEAKERS	Bob Tobias	TRW
ARRANGEMENTS	Frank Mendoza	Aerojet
PUBLICITY	John Schulz	Loral Aeronutronics
PUBLICATIONS	Ray Wade	TRW
REGISTRAR	John Bowman	John Fluke Mfg.
TUTORIALS	David Lorenzen	McDonnell-Douglas
GUEST PROGRAM	Nidal Kerdiya	Teledyne Relays
DOOR PRIZES	Ken Landis	Electro Rent
EVALUATOR	Ida Kantor	McDonnell-Douglas
LIAISON	Nidal Kerdiya	Teledyne Relays
HISTORIAN	Chet Crane	Teledyne Microelectronics

WOODINGTON AWARD:

He began his career at NBS, during his career he has been awarded several patents and has published papers on a wide range of subjects. He was a leader at NBS in various electrical standards groups where he earned a reputation as both an innovator and as being politely outspoken and subtly opinionated a trait, which continues to endear him to his friends and co-workers. His career advanced at NBS where he became chief, circuits standards section. He left NBS in the early seventies to start his own company and in 1978 decided to take his knowledge, business acumen and subtle opinions, to The John Fluke Manufacturing Company. His accomplishments continued at the Fluke Company where he was a leader in establishing the solid-state voltage reference as an accepted replacement for standard cell banks, He is known at Fluke for "scrapping his standard cells and never looking back". He is highly regarded at work and is recognized for keeping Fluke at the leading edge in process metrology and new technology. He attends MSC regularly where he has presented many technical papers. Les Huntley is this year's Woodington Award recipient.

## Measurement Science Conference History ---First Thirty Five Years

Mr. John H. Kirkpatrick presented the keynote address. Mr. Kirkpatrick has served the military as Rear Admiral in the U.S.Navy, the cabinet as Special assistant for Total Quality Management to the Assistant Secretary of Defense (Production and Logistics) and the measurement community. He is Process Management and also is still a consultant in the Office of the Assistant Secretary of Defense.

Luncheon Speakers:

Friday- Mr. David Zach- Mr Zach is one of the few professionally trained futurists in the United States with a Masters Degree in Futures Research from the University of Houston. He is President and owner of "Innovative Futures.

## Measurement Science Conference History ---First Thirty Five Years

The 1994 Measurement Science Conference was in the Pasadena Convention Center. This was our first trip to Pasadena and the Conference was treated very well on each of our visits before the Conference. This center fits the Conference in a number of ways. There is enough room for everything except plenary sessions. The area for large sessions and luncheons is the same area and the change from one function to the next requires some time and therefore some extra planning for the program to fit around the banquet needs. The Opening session was moved into the Pasadena Auditorium at no extra charge because there was some damage to other areas of the center caused by a large earthquake in Northridge just a few days before the Conference. It was obvious that a lot of people were still very nervous when there was a small aftershock during the opening session and a number of them jumped up and started up the aisle. Fortunately it was over before they got to the door.

The 1994 Measurement Conference Board of Directors:

CHAIRMAN	John Gerhard	Rockwell International
PRESIDENT	Ray Wade	TRW
EXECUTIVE VP	Roger Hickey	McDonnell-Douglas
TREASURER	Alan Ho	Loral Aeronutronics
SECRETARY	John Schulz	Safetran Systems
DIRECTOR	Ray Kellick	Teledyne Systems
DIRECTOR	Kevin Ruhl	TRW

The 1994 Measurement Science Conference Committee:

PRESIDENT	Ray Wade	TRW
EXECUTIVE VP	Roger Hickey	McDonnell-Douglas
SECRETARY	Julius Gargyi	Metromation
FINANCE	Alan Ho	Loral Aeronutronic
PROGRAMS	Roger Hickey	McDonnell-Dopuglas
EXHIBITS	Ray Kellick	Teledyne Systems
SPEAKERS	John Gerhard	Rockwell International
ARRANEMENTS	F.Mendoza/D.Hebert	Aerojet/So Cal. Edison
PUBLICITY	John Schulz	Safetran Systems
PUBLICATIONS	Tom Anderson	MKS Instruments
REGISTRAR	John Bowman	John Fluke
TUTORIALS	Dave Lorenzen	McDonnell-Douglas
DOOR PRIZES	Nidal Kerdiya	Teledyne Relays
LIAISON	Miriah Arther	Rockwell International
HISTORIAN	Chet J. Crane	Teledyne Microelectronics

WOODINGTON AWARD:

John Donaldson of NIST provided the Keynote address. John became Chief, Standards Code and Information in November 1989. He directs a program providing standards information, technical analysis and assistance, and reference work publications. He also represents NIST nationally and internationally as an expert in conformity assessment principles and practices. Mr. Donaldson is actively involved in domestic, foreign and international organizations concerned with standardization, weights and measures, and related measurement activities. He is past chairman of the

Committee on Research and Technical Planning of the American Society for Testing and Materials and has served on the Board of Directors of the American National Standards Institute.

LUNCHEON SPEAKERS:

THURSDAY- Sir Phillip Richardson

Sir Phillip Richardson was born in London. His father, Sir Charles Richardson, was an aide to Winston Churchill and had a role in the planning of Operation Overlord, the landing on Normandy's beaches.

FRIDAY- Jeffrey Armstrong

Jeffrey Armstrong created Saint \$ilicon, the world's first high-tech comedian, to save himself from the adverse effects of working seven years in the computer industry. He's the embodiment of a certain idealism. Like most saints, \$ili/Armstrong has rather an odd resume. The Detroit native holds a degree in psychology and creative writing from Eastern Michigan University, and history and comparative religions from University of California at Santa Cruz. A former street poet and vice president of a garment company, Armstrong was planning to teach when federal budget cuts dried up positions in the humanities. He then became Middle East sales representative of Apple. Later, he was marketing manager for Corvus Systems, then Nestar Systems, two Silicon Valley Firms.

Measurement Science Conference History ---First Thirty Five Years

Conference number 25, the 1996 Measurement Science conference was back at the Marriott Hotel in Anaheim, California. It was held Thursday and Friday January 25<sup>th</sup> & 26<sup>th</sup>. The attendance for the Conference was 835.

The Conference theme "Twenty-Five years of Education in Measurement Science"

PRESIENT	John Bowman	John Fluke Mfg.
EXECUTIVE VP	Miriah Arther	Wavetek
PROGRAM CHAIRMAN	John Gerhard	Rockwell
SPEAKERS	Roger Hickey	McDonnell-Douglas
EXHIBITS	Ray Kellick	Teledyne Systems
SECRETARY	Julius Gargyi	Metromation
FINANCE	Alan Ho	Loral Aeronutronics
ARRANGEMENTS	Chet J. Crane	Teledyne Micro.
PUBLICITY	John Schulz	Safetrans
PUBLICATIONS	Nidal Kerdiya	Teledyne Relays
GUEST PROGRAM	Dewain Wilcox	Rockwell (Ret.)
AWARDS	Kevin Ruhl	TRW
DOOR PRIZES	Pam Tames	
REGISTRAR	Steven Phleger	TRW
EVALUATOR	Roger Hickey	McDonnell-Douglas
EDUCATION CREDITS	Dr. Jackson Henry	CSUDH
SPONSOR LIAISON	Ray Wade	TRW
TUTORIALS	Dave Lorenzen	McDonnell-Douglas
HISTORIAN	Chet J. Crane	Teledyne Micro.
SCOLARSHIPS	Dr. Jackson Henry	CSUDH
OPERATIONS	Thomas Neal	John Fluke

WOODINGTON AWARD:

This year's Woodington Award winner is Mr. Phillip Painchaud, Phil has had a long and colorful career, it is difficult to condense it into the time allotted to give this presentation. So I will give the highlights and leave the details to the written word.

From 1948 to 1953 he started working for Northrup Aircraft, Special Weapons Division in Hawthorn, California as a Research Analyst in Electro-Optical interface problems and did extensive research and development work on automatic celestial navigation equipment, photometric, and optical electronic problems. He managed several field test operational sites. His final assignment before transfer to Anaheim, was personal Staff Assistant to the Chief of Special Weapons Component Development Department. From 1953 to 1957 he worked at Northrup Aircraft, Anaheim Division as Assistant to Chief Engineer for Air Force Projects. He later became Senior Technical Specialist and finally Senior Engineer. From 1957 to 1965 He worked as General Supervisor of the Metrology Branch of Northrup Nortronics Division in Anaheim where he pioneered the implementation of the concepts of "Total Pooling of Instruments" and "Product Orientation of Reference Standards". At this time he was the Chairman of the Northrup Corporate Metrology Board, which, among other things, sets corporate wide policies for metrology. In 1965 he was promoted to Corporate Director of Quality Assurance where he had full responsibility for the entire corporate Quality Assurance organization.

In 1965 he went to E+H Research Laboratories in Oakland, California as Director of Corporate Standards where he was assigned to the personal staff of the President. He had personal responsibility for the development, analysis, certification and promotion of artifact standards of risetime and transient response. In 1971 he went to Fort Worth, Texas as Senior Scientist, Bio-Medical Metrology for Alcon Laboratories. Here he provided technical guidance to a well established major ophthalmic pharmaceutical organization. In 1972 he wandered back to California where became a Corporate Principle for Metron Corporation in Montclair.

From 1974 to 1978 he worked as a Staff Metrologist for Dynallectron Corporation, in Norco, California. Here he served as staff consultant furnishing engineering support to the Government-Industry Data Exchange Program. He also headed the joint study team for the disposition of Project SETE (the Secretariat for Electronic Test Equipment). He has served the Measurement Community at large as one of the founding members of the Precision Measurements Association, as such he had held many positions including President and is the only living Charter Life Fellow . He is a Life Senior Member of the Institute

of Electrical and Electronic Engineers and currently a member and advisor of the Executive Committee. He is also a Senior Life Member of the Instrument Society of America and has held several executive positions. He is a Senior Member of the American Society of Quality Assurance and a Metrology Education Columnist for the Measurement Quality Division newsletter : "The Standard".

He has held leadership positions with the National Conference of Weights and Measures, International Society for Weighing and Measuring, International Electrotechnical Commission, California Professional Metrology Committee, Metrology Advisory Committee to the California State Secretary of Agriculture and Services, National Conference of Standards Laboratories, and the American National Standards Institute.

He was one of the founding members of the original Measurement Science Conference Advisory Committee and served as Conference Director in 1977. On September 13, 1995 Butler Community College created the Painchaud Chair of Metrology. This Chair was established through a grant by Phil to enable the bringing erudite polymathic professionals in Metrology to the campus for upgrading the levels of existing technologies and introducing new disciplines.

Noted for his wit and wisdom and wry ability to get right to the point, we can all appreciate the efforts and contributions **Phillip Painchaud** has made to the Measurement Community.

There were some problems with having enough meetings space and the exhibits area was becoming crowd when some of the space was taken away by meetings. This was to be our last conference at the Marriott in Anaheim.

Dr. Peter L.M. Heydemann Director, Technology Services National Institute of Standards and Technology (NIST) provided the Keynote address.

#### LUNCHEON SPEAKERS:

Thursday—Larry Wilde, humorist speaker, and author of more than fifty books  
Friday—Terry L. Paulson, PhD, CSP president of Paulson & Associates, Inc.

## Measurement Science Conference History ---First Thirty Five Years

I have received the following input regarding this Conference from the President Mr. John Bowman, a personal friend, hard worker, and long time contributor to the success of the Conference.

In 1977, my employer of one month asked me to display a prototype instrument at a conference. I drove a newly arrived calibrator to the conference venue at the California State University campus at Long Beach. The next morning, it seemed as if every attendee had hundreds of questions for me about the new multifunction calibrator. I could hardly answer one question. Fortunately, a knowledgeable company engineer joined me and addressed the questions. That was my introduction to the Measurement Science Conference.

Some twenty years later, I had the distinct honor of being the President for the Silver Anniversary of the Measurement Science Conference. The venue was the Marriott Hotel in Anaheim California. The conference had expanded from a modest two-day event to a full five days with the inclusion of the Tutorial Workshops and NIST Seminars. The conference once again delivered an excellent technical program. The highlight of the 25<sup>th</sup> Anniversary Conference was the Past Presidents reunion. All but three of the invited past Measurement Science Presidents were able to attend. The twenty-one Past Presidents were introduced, along with some special guests, at the luncheon. Brought to my attention by a number of the past presidents was the friendly and informative advice as to how we should conduct the conference. Some ten years later, the conference is celebrating its 35th anniversary with that welcomed advice.

My employer from 1977 did send me to multifunction calibrator training after the conference. I can now answer those questions!

The 2002 Measurement Science Conference was held January 24 and 25 at the Disneyland Hotel in Anaheim, California. The theme for the conference was "Turning Measurement Science Information into Knowledge". This was a very different conference that took place at a very remember able time in our history. This conference was planned with a vision and the reality of being different. Some of the differences were required others was hoped that it would enhance the overall experience of the conference and help return to a state of normalness. With these changes came risk; with risk came opportunities and challenges.

## Measurement Science Conference History ---First Thirty Five Years

The 26<sup>th</sup> Measurement Science Conference was held January 26<sup>th</sup> and 27<sup>th</sup> 1997 at the Pasadena Convention Center. The memories of the Northridge earthquake were dimming and the evidence was gone, there were also a number of improvements. Many of the functions were moved to the Doubletree Hotel, which made the Conference a better fit for the facility but this caused the attendees to need transportation between the hotel and the Conference Center. We did have a light rain on one of the days and some people complained about the lousy weather. This was a very successful Conference with almost one thousand registered for the Conference and one hundred ninety for the Tutorials. The tutorials were so well received that some people were unable to attend their first choice.

The Conference theme was: "NEW DIRECTION IN MEASUREMENT SCIENCE"

The first "Joe Simmons Scholarships were presented at this conference, the names of the recipients are Dennis Antunes, winner and Brentt Orr and Gerri Hoffman were runners up. All three were students at Butler Community College in Pennsylvania.

The MSC scholarships were awarded to Luis Rodriques, Audrey Prosser, and Patrick Covert, all students at Cal State University Dominguez Hills.

### THE 1997 MEASUREMENT SCIENCE CONFERENCE BOARD OF DIRECTORS:

CHAIRMAN	John Bowman	John Fluke Mfg.
PRESIDENT	J. Miriah Heatherington	Wavetek Corp.
EXECUTIVE VP	Steve Phleger	TRW
TREASURER	Alan Ho	Lockheed Martin Aeronutronic
SECRETARY	John Schulz	Safetran Systems
DIRECTOR	John Gerhard	Boeing North American
DIRECTOR	Roger Hickey	McDonnell-Douglas

### THE MEASUREMENT SCIENCE CONFERENCE COMMITTEE

PRESIDENT	J. Miriah Heatherington	Wavetek Corp.
EXECUTIVE VP	Steve Phleger	TRW
SECRETARY	Dewain Wilcox	Rockwell International (Retd)
FINANCE	Alan Ho	Lockheed Martin Aeronutronic
PROGRAMS	John Gerhard	Boeing North American
EXHIBITS	R. Kellick/M.Samman	Litton/Global Net Solutions
SPEAKERS	John Bowman	John Fluke Mfg.
ARRANGEMENTS	Chet J. Crane	Consultant
PUBLICITY	John Schulz	Safetran Systems
PUBLICATIONS	Nidal Kerdiya	Teledyne Electronic Tech.
REGISTRAR	Duane Allen	Naval Weapons Assessment
TUTORIALS	Dave Lorenzen	McDonnell-Douglas
GUEST PROGRAM	Steve Phleger	TRW
AWARDS	Kevin Ruhl	TRW
DOOR PRIZES	Pamela Thames	E. I. L. Instruments
EVALUATOR	Thomas Neal	Thomas Neal Test
LIAISON	Mike Magin	So. Cal. Edison
HISTORIAN	Chet J. Crane	Consultant
SCHOLARSHIPS	Dr. Jackson Henry	CSUDH

WOODINGTON AWARD: 1997 Woodington Award Winner - Ms. Georgia Harris of NIST long time director of the U.S. Bureau of Weights and Measures.

Algie Lance Best Paper Award was presented to Mr. James Potzick of NIST for his paper titled "New NIST-Certified Small Scale Pitch Standard"

Runners-up: "A Method for Measuring Density of Volume of Laboratory Weights" presented by Mr. Randall M. Schooner

"Gage Block Calibration by Optical Interometry" presented by Dr. Jennifer Decker of the National Research Council

Mr. Jerry Hayes presented the keynote address on quite short notice due to travel someone's travel problems. Jerry did his usual great job and then took a few swings with the new golf club presented to him by the Chairman, John Bowman.

LUNCHEON SPEAKERS:

Thursday: Stephanie Edwards, star of the movies, television, and radio. Also she is a person that I have watched and listened to for about thirty hours of Rose Parade coverage. She is married to Actor-Composer Murray MacLeod resides with her husband in Santa Monica. California.

Friday: Dr. Robert Payne, Dr. Payne is a native of Georgia. He attended Duke University for both his undergraduate and graduate degrees, and Georgetown University for his Ph.D. Dr. Payne is presently serving as special advisor and consultant to the President's Council on Economic Development in Washington, D.C. Dr. Payne's unique ability in dealing with the federal government led him to being named to the Bush-Clinton Transition Team.

Famous firsts, this was the first time the Conference had a lady president or Chairman. This was the first conference to sell more than one hundred exhibits booths. The first Joe Simmons Scholarship awards.

## Measurement Science Conference History ---First Thirty Five Years

The 27<sup>th</sup> Measurement Science Conference was held February 5<sup>th</sup> and 6<sup>th</sup> in the Pasadena Conference Center and the Pasadena Doubletree Hotel. The theme for this conference was "Measurement in the ISO Environment". I remember this Conference for the delicious reception provided by the President and the one in the John Fluke Suite, also the hugely popular "Ice Cream Social" presented by Wavetek with games and entertainment.

### The 1998 Measurement Science Conference Board of Directors

CHAIRMAN	J. Miriah Heatherington	Wavetek
PRESIDENT	Steve Phleger	TRW
EXECUTIVE VP	Nidal Kerdiya	Teledyne Electronic Technologies
TREASURER	Alan Ho	Lockheed Martin Aeronutronics
SECRETARY	John Schulz	Safetrans Systems
DIRECTOR	John Bowman	John Fluke Mfg.
DIRECTOR	Roger Hickey	McDonnell-Douglas

### The 1998 Measurement Science Conference Committee

PRESIDENT	Steve Phleger	TRW
EXECUTIVE VP	Nidal Kerdiya	Teledyne Electronic Technologies
SECRETARY	Dewain Wilcox	Consultant
FINANCE	Linda Hansken	Boeing North American
PROGRAMS	Roger Hickey	McDonnell-Douglas
EXHIBITS	Muhamed Samman	Global Net Solutions
SPEAKERS	Miriah Heatherington	Wavetek
ARRANGEMENTS	Chet Crane/Ken Landis	Consultant/Electrorents
PUBLICITY	John Schulz	Safetrans Systems
PUBLICATIONS	Mike Magin	So. Cal. Edison
REGISTRAR	John Bowman	John Fluke Mfg.
GUEST PROGRAM	Pamela Thames	Signal Enterprizes
AWARDS	Nidal Kerdiya	Global Net Systems
DOOR PRIZES	Alan Ho	Lockheed Martin
EVALUATOR	Thomas Neal	Test Specialists
LIAISON	Duane Alan	Naval Warfare Assessment
NIST LIAISON	John Gerhard	Boeing North American
SCHOLARSHIPS	Kevin Ruhl	Boeing North American

### AWARDS:

WOODINGTON AWARD: Mr. Patrick Nolan Mr. Patrick Nolan received his electrical engineering degree in June 1960 from Gonzaga University. He joined the Boeing Development Center near Seattle at that time as an Associate Engineer. While at Boeing, Pat continued his studies for a Master Degree, which was granted in December 1963 by the University of Washington (MSEE). In November 1963, Mr. Nolan joined the Lockheed Company in Sunnyvale, California as an instrumentation engineer for RF and Microwave calibration services. Pat has stayed with this department until the present day. He is now a senior staff engineer reporting directly to the manager of metrology. During the last 35 years, Pat has always continued his education by enrolling in related course work and tutorials. He has and is participating in several professional Societies including the MSC, NCSL and ARFTG (Automatic RF

Techniques Group). He has presented papers, participated as panel member and has been active on various committees. Since 1982, Pat has either participated with or chaired the NCSL subcommittee for RF and Microwave of the National Measurement Requirements Committee. His last contribution to the latest published report of the committee was in 1997. His support for the MSC and NCSL and measurement science as a whole has been continuous, unwavering, and always of top quality. Pat has also been very active within the ARFTG. He was elected to the Executive Committee in 1992 and has served as Secretary since that date. His responsibilities include the publication of the ARFTG Newsletter twice a year. He has served as conference chair for the 43rd ARFTG conference in San Diego and is hosting the 52nd conference in 1998 in San Jose, CA. Mr. Nolan has and is supporting various activities with Measurement Comparison Programs (MCPs). He has participated in all connector type MCPs and has coordinated the associated activities for the type N connector, involving 42 facilities, since 1991. With a solid 35 years experience in RF and Microwave calibration technologies, Pat has grown into a national resource for that technology. Many people and facilities seek after his advice and his recommendations. His frank, open, and realistic communication has and is serving all of metrology in this country.

ALGIE LANCE BEST PAPER AWARD: Winner John Barr of Raytheon for his paper titled "Capturing the Sub Micro-Radian"

RUNNERS-UP: John Hurd of Los Alamos and Arthur Strang of NIST

The Measurement Science Conference Scholarships went to the following students at Cal State University Dominguez Hills: John F. Salvagno, Gary E. Olsen, William W. Jones, and Diana C. Moore. Also Mr. Brian R. Veit of Cal Poly Pomona was honored with a scholarship.

The guest program paid a visit to the Getty Center and the Long Beach Aquarium of the Pacific from what the guests said I intend to go.

## Measurement Science Conference History ---First Thirty Five Years

The 28<sup>th</sup> Measurement Science was presented at the Disneyland Hotel on January 28<sup>th</sup> and 29<sup>th</sup> 1999. The theme for this Conference was “A Century of Measurements”  
I remember that the Conference Committee was the largest ever and the Committee meetings were fun with many laughs

### The 1999 Measurement Science Board of Directors

CHAIRMAN	Steve Phleger	TRW
PRESIDENT	Nidal Kerdiya	Global Net Systems
EXECUTIVE VP	Alan Ho	Boeing
SECRETARY	John Schulz	Safetran Systems
DIRECTOR	Mike Magin	So. Cal. Edison
DIRECTOR	Roger Hickey	Boeing
DIRECTOR	John Bowman	John Fluke Mfg.

### The 1999 Measurement Science Conference Committee

PRESIDENT	Nidal Kerdiya	Global Net Systems
EXECUTIVE VP	Alan Ho	Boeing
SECRETARY	Dewain Wilcox	Consultant
FINANCE	Linda Hansken	Boeing North American
PROGRAMS	John Gerhard	Boeing North American
EXHIBITS	Muhamed Samman	Global Net Solutions
SPEAKERS	Steve Phleger	TRW
ARRANGEMENTS	Chet Crane	Global Net Systems
PUBLICITY	John Schulz	Safetran Systems
PULICATIONS	Mike Magin	So. Cal Edison Co.
REGISTRAR	John Bowman	John Fluke Mfg.
TUTORIALS	Dave Lorenzen	Boeing
GUEST PROGRAM	Pamela Thames	Signal Enterprises
AWARDS	Kevin Ruhl	Boeing North American
DOOR PRIZES	Mark Kashef	Teledyne Electronic Tech.
EVALUATOR	Roger Hickey	Boeing
LIAISON	Doug Sugg	Naval Weapons Assessment
EDUCATION	Karen Jackson	GIDEP
PLANNING	Ray Wade	Red Inc.
OPERATIONS	Thomas Neal	Test Specialists
NIST LIAISON	Jeff Smith	TRIAD Solutions

### AWARDS:

WOODINGTON AWARD: **Dr. Charles David Ehrlich** , The 1999 winner is Dr. Charles David Ehrlich of the National Institute of Standards and Technology (NIST). Dr. Ehrlich has earned this award through his achievements, professionalism and dedication to the Metrology profession. Dr. Ehrlich earned his Ph. D. in Solid State Surface Physics from the University of Pennsylvania in 1979. His thesis is titled "A Measurement of the Absolute Tunneling Current Density in Field Emission from Tungsten 110". Dr. Ehrlich is currently the Deputy Chief of the NIST Technical Standards Activities Program in the Office of Standards Services. Dr. Ehrlich has worked in a variety of measurement fields both in industry and at NIST. He has authored several technical papers and has

participated on a variety of standards writing committees. Dr. Ehrlich has supported the MSC as a presenter, session developer and panelist. He is also active in the National Conference of Standards Laboratories (NCSL) and co- chaired the Recommended Practices Committee on Deadweight Pressure Gauges. Dr. Ehrlich has had positive impact on the Metrology profession and deserves the honor of being 1999 Woodington Award winner.

ALGIE LANCE BEST PAPER:

JOE SIMMONS BEST SESSION:

**LUNCHEON SPEAKERS:**

**Thursday**--Marsha S. Ivins, NASA Astronaut

Marsha Graduated from Nether Providence High School, Wallingford, Pennsylvania, in 1969; received a Bachelor of Science degree in aerospace engineering from the University of Colorado in 1973.

Ms. Ivins has been employed at the Lyndon B. Johnson Space Center since July 1974, and until 1980, was assigned as an engineer, Crew Station Design Branch, working on Orbiter Displays and Controls and Man Machine Engineering. Her major assignment in 1978 was to participate in development of the Orbiter Head-Up Display (HUD). In 1980 she was a flight engineer on the Shuttle Training Aircraft and a co-pilot in the NASA administrative aircraft (Gulfstream- 1).

**Friday**-- Andre Bormanis, Mr. Bormanis received a B. S. degree in Physics from the University of Arizona in 1981, and an M. A. degree in Science, Technology, and Public Policy from the George Washington University in 1994. He currently works as science consultant for the Star Trek: Voyager and Star Trek: Deep Space Nine television series, and the Star Trek: The Next Generation feature film series. He has written several stories and teleplays for Star Trek: Voyager, and is the author of a book, Star Trek Science Logs, published by Pocket Books in February 1998. Mr. Bormanis is also a consultant to the San Juan Institute, a non- profit planetary science research laboratory located in San Juan Capistrano, California, and The Planetary Society, the world's largest non- profit space education organization, based in Pasadena, California. In August, 1991, Mr. Bormanis was awarded a NASA Space Grant Fellowship to conduct research for the Space Policy Institute of the George Washington University in Washington, D. C. He is co- author, with the Institute's director, Dr. John Logsdon, of "Emerging Policy Issues for Long- Duration Human Space Exploration: Background Paper" and co- editor, also with John Logsdon, of Conference Proceedings: Emerging Policy Issues for Long- Duration Human Space Exploration, both published in December, 1992, by the Space Policy Institute.

These were the eight outstanding Tutorial Workshops offered on Wednesday before the Conference:

**Metrology on the Internet - A "How To" Introduction to Implementation**

Developer: Philo Smith, GIDEP Operations Center, Technical Support

**How to Have In-house Training for Low-cost, High-quality Measurement Science Training**

Developer: Herb O'Neil Ridgewater College

**Applying the KISS Principle to the Start-up Calibration Lab**

Developer: Fred Hubbard Fluke Corporation

**Fundamentals of Vibration and Shock Measurements and Calibration**

Developer: Wayne Tustin Equipment Reliability Institute

**Selection, Use, and Maintenance of Mass Standards**

Developer: Georgia Harris NIST, Office of Weights and Measures

**Selection, Use, and Maintenance of Weighing Instruments**

Developer: Georgia Harris NIST, Office of Weights and Measures

**Hardness Standardization - Part 1: Traceability to NIST**

Developer: Sam Low National Institute of Standards & Technology

**Hardness Standardization - Part 2: Uncertainty**

Developer: Sam Low National Institute of Standards & Technology

The Measurement Science Conference again hosted NIST Seminars on January 25 and 26, 1999, the Monday and Tuesday prior to the conference. The seminars at the hotel are lecture and discussion format

Time and Frequency Seminar

NIST Dimensional Seminar

NIST Seminar on Easy and Not-So-Easy Statistical Methods for Uncertainty analyses

The NIST Pressure Seminar and Workshop will be hosted by Southern California Edison at their Westminster laboratory and is a lab-based hands-on format.

## Measurement Science Conference History ---First Thirty Five Years

The 29<sup>th</sup> Measurement Science Conference was again at Disneyland in Anaheim, California on January twenty and twenty-first 2000. The Conference theme was "A NEW MILLENNIUM OF MEASUREMENTS"

### The 29<sup>th</sup> Measurement Science Board of Directors:

CHAIRMAN	Nidal Kerdiya	eDoc Publish Inc.
PRESIDENT	Alan Ho	Boeing North American
EXECUTIVE VP	Mike Magin	So. Cal. Edison
TREASURER	Dave Lorenzen	Boeing
SECRETARY	John Schulz	Safetran Systems
DIRECTOR	Doug Sugg	Naval Warfare Assessment
DIRECTOR	John Bowman	Fluke Corporation

### The 2000 Measurement Science Conference Committee:

PRESIDENT	Alan Ho	Boeing
EXECUTIVE VP	Mike Magin	So. Cal. Edison
SECRETARY	Dewain Wilcox	Consultant
FINANCE	Doug Sugg	Naval Warfare Assessment
PROGRAMS	Mark Kaufman	Naval Warfare Assessment
EXHIBITS	Rob Parchinski/ Muhammed Samman	Boeing Global Net Solutions
SPEAKERS	Nidal Kerdiya	eDoc Publish Inc.
ARRANGEMENTS	Chet J. Crane	eDoc Publish Inc.
PUBLICITY	John Schulz	Safetran Systems
PUBLICATIONS	Jeff Smith	T.R.I.A.D.
REGISTRAR	John Bowman	John Fluke Mfg.
TUTORIALS	Dave Lorenzen	Boeing
GUEST PROGRAM	Pamela Thames	World Traveler
AWARDS	Kevin Ruhl	Boeing
DOOR PRIZES	Jim Smith	Boeing
EVALUATOR	Mark Kashaf	Teledyne Electronic Systems
LIAISON	Karen Jackson	GIDEP
NIST LIAISON	Mike Magin	So. Cal. Edison
LOGISTICS	Ray Wade	Red Inc.
SCHOLARSHIP	Rick Careyette	Teledyne Electronic Systems

### AWARDS:

WOODINGTON- Mr. John A. Wehrmeyer of Eastman Kodak Company

ALGIE LANCE BEST PAPER—Gisela Lin of JPL and Russel Lawton of JPL

JOE SIMMONS BEST SESSION—Paul Williams of NIST

### **Keynote Speaker-Alan R. Robertson**

Alan Robertson was born in England and obtained his B. Sc. and Ph. D. in Physics from the University of London. He has worked at Canada's National Research Council for 34 years, first as a research scientist in the Photometry and Radiometry Group specializing in color science and color measurement, and later as Director of the Chemical and Mechanical Standards Section. He is now Senior Advisor on Metrology in NRC's Institute for National Measurement Standards.

**Luncheon Speakers:**

**Thursday-** Steve Kaye shows people how to create success “Brains on Learning”. What’s special is he thinks out of both sides of the brain. With a Ph. D. in chemical engineering from Carnegie Mellon University, Steve builds solid programs based on proven content. The material is well researched, innovative, and practical.

**Friday-** Bob Anderson, JPL/ NASA –“An Overview of the Mars Pathfinder Mission” Dr. Anderson was born in Anchorage Alaska and raised in Newport News, Virginia. He attended Old Dominion University in Norfolk Virginia where he received his Bachelor of Science degree in geology in 1979. In 1985, he received a Master of Science from Old Dominion University in geology with emphasis on mapping tectonic features surrounding the Tharsis region of Mars. In 1995, he received a Doctor of Philosophy from the University of Pittsburgh in geology and remote sensing. His research was centered on mapping young surfaces around the Whipple Mountains of Southwestern Arizona.

There were seven good tutorial workshops at this conference:

**“The Language of Precision in Dimensional Measurements-“**

Developer: George Schuetz--Federal Products Co.

**“Real World Calibration of Dimensional Measuring Equipment”**

Developer: LeRoy Britain --Quality Training and Consulting, Inc.

**“Pressure Calibration Fundamentals”**

Developer: Mike Bair--DH Instruments, Inc.

**“Back to Metrology Basics: Why your Perfect Measurement, Isn’t”**

Developer: Fred Hubbard--Fluke Corporation

**“Microwave Power and Attenuation Measurements”**

Developer: Steve Phleger--TRW

**“Measurement Uncertainty – Fundamentals”**

Developer: Dilip A. Shah--E = mc<sup>3</sup> Solutions

**“Measurement Uncertainty -- Applications and Misconceptions”**

Developer: Ricardo Nicholas--The Boeing Company

**“RF & mW Spectrum and Network Analysis Basics”**

Developer: Paul Stafford --Agilent Technologies, a subsidiary of Hewlett- Packard Co.

**MSC Outstanding Service Award**

Purpose:

This award is a special award to David Lorenzen for his many years of outstanding service on the MSC Board of Directors and Committee including presenting one of the first technical papers at the first MSC in 1970.

**ALGIE LANCE BEST PAPER AWARD:**

Thomas F. Wunsch, Sandia National Laboratories

**JOE SIMMONS BEST SESSION AWARD:**

John P. Clark

The 2001 Measurement Science Conference was at the Disneyland Hotel January eighteenth and nineteenth.

The 30<sup>th</sup> Conference Board of Directors:

CHAIRMAN	Alan Ho	Boeing
PRESIDENT	Mike Magin	So Cal. Edison
EXECUTIVE VP	Doug Sugg	Naval Weapons Assessment
TREASURER	Dave Lorenzen	Boeing
SECRETARY	John Schulz	Safetran Systems
DIRECTOR	John Bowman	John Fluke Mfg.
DIRECTOR	Mark Kaufman	Naval Weapons Assessment

The 2001 Measurement Science Conference Committee

PRESIDENT	Mike Magin	So. Cal. Edison
EXECUTIVE VP	Doug Sugg	Naval Weapons Assessment
PROGRAMS	Mark Kaufman	Naval Weapons Assessment
SPEAKERS	Alan Ho	Boeing
EXHIBITS	Rob Parchinski	Boeing
SECRETARY	Dewain Wilcox	Consultant
FINANCE	Karen Jackson	GIDEP
ARRANGEMENTS	Tama Stevens	Naval Weapons Assessment
PUBLICITY	John Schulz	Safetrans
PUBLICATIONS	Muhamed Samman	Global Net Solutions
GUEST PROGRAM	Pamela Thames	Consultant
AWARDS	Nidal Kerdiya	eDoc Publish Inc.
DOOR PRIZES	Jim Smith	Boeing
REGISTRAR	John Bowman	John Fluke Mfg.
LIAISON	Jeff Smith	T.R.I.A.D.
TUTORIALS	Dave Lorenzen	Boeing
SCHOLARSHIPS	Rick Careyette	Teledyne Electronic Sys.
NIST LIAISON	Bob Fritsche	Naval Weapons Assessment
PLANNING	Ray Wade	Red Inc.
EXHIBITS CO-CHAIR	Bob Johnson	Naval Weapons Assessment
ARRNGMNT. CO-CHAIR	Chet J. Crane	eDoc Publish Inc.

**WOODINGTON AWARD:** Dr.David Braudaway

This year's Woodington Award winner has been active in the field of metrology for nearly 40 years. He was born in the great state of Nebraska where as a young man he displayed his talent early, winning an Honorable mention in the Westinghouse Science Talent Search. This award lead to a scholarship from the University of Colorado where

he earned a [BSEE] While a student at the Univ. of Colorado, he was employed by NBS, Boulder as a junior Engineer where he worked in cryogenic Engineering, calibrating vacuum measuring equipment and designed vacuum monitoring and safety protection apparatus. He later went on to earn his masters and doctorate degrees in Electrical engineering from the University of New Mexico. He is a registered professional engineer in the state of New Mexico and a member of numerous technical organizations, including ISA and IEEE. During his career with Sandia National Laboratories, he has authored or co-authored numerous technical papers on a variety of topics.

A small sampling includes papers on diverse topics such as "An Automatic Standard Cell Comparator", "Superconductivity and the Josephson Volt", "Application of a High-Precision Universal Measuring Machine in Standards Laboratory Measurements, "Standards Laboratory Environments "and "Basis for Buoyancy Corrections".

He has contributed to numerous standards publications including those on Electrical and Electronic Measuring and controlling Instrumentation,

Direct Current Ratio Devices, AC-DC Transfer Instruments and converters and many others. He was contributing member of USTAG,

United States Technical Advisory Group developing the guide to the "Expression of Uncertainty" as well as the "International Vocabulary of Basic and General Terms in Metrology (VIM)", as well as the major

contributor to NCSL RP7, "Recommended Practice Laboratory Design".

He was awarded the Distinguished Member of Technical Staff by Sandia National Laboratory in 1985, the NCSL Wildhack award in 1988, and was elected an IEEE Fellow in 1990.

Although recently retired, our Woodington Award winner continues serving the measurement community as an international consultant in Electrical measurements serves to NCSL as a Committee Co-Chair on Laboratory Facilities, and here at the Measurement Science Conference as a technical session developer. Needless to say, our Woodington Award winner is a professional in every sense of the word, one who is truly dedicated to the metrology profession and highly deserving of this award.

### MSC Outstanding Service Award

Purpose:

This award is a special award to David Lorenzen recognizing his many years of outstanding service on the MSC Board of Directors and Committee including presenting one of the first technical papers at the first MSC in 1970.

**ALGIE LANCE BEST PAPER AWARD:** : “*RECENT ADVANCES IN AC-DC TRANSFER MEASUREMENTS USING THIN-FILM THERMAL CONVERTERS*” **Thomas F. Wunsch** \* ,

\* Sandia National Laboratories

**JOE SIMMONS BEST SESSION AWARD:**

John P. Clark of NIST

**MSC Scholarship Awards:**

Awarded to: Julie Conway, Kirk Hodge, Eric Malone, Michael Romios, and Gregory Wallace

Memories: Not long before the Conference date the President returned from a trip to Ireland, he gave each committee person an Irish coin; I hope to get a chance to spend it in Ireland. The wrap-up session was conducted outside and some of the committee complained of the temperature. Mr. Magin did get to kiss the blarney stone; I have his word on that.

The 2002 Measurement Science Conference was held January 24 and 25 at the Disneyland Hotel in Anaheim, California. The theme for the conference was “Turning Measurement Science Information into Knowledge”. This was a very unique conference that took place at a very memorable time in our history. This conference was planned with a vision and the reality of being different. Some of the differences were required; other differences occurred in the hope that they would enhance the overall experience of the conference and help return to a state of normalcy. With these changes came risk; with risk came opportunities and challenges.

A very large number of opportunities, as well as challenges, were a part of this conference. The 2002 Measurement Science Conference took place at a time in history that we will always remember. Three months prior to the conference, September 11, 2001, became a date that will always be fixed in the life of America; a date that so many Americans lost their lives at the World Trade Center in New York. The date in which all air travel stopped and left us to examine our lives and our priorities.

The world had changed. Many conferences in September, October, and November were cancelled; others suffered greatly from a significant reduction in attendance. Over the months, both the economy and travel began to improve while world events still remained a concern. American Leaders asked America to return to their normal lives and not live in a state of fear. The Measurement Science Committee of 2002 took this challenge and successfully continued to plan for the conference in January. The MSC Board of Directors and Conference Committee really made this conference a success. The members are as listed:

The 2002 Measurement Science Conference Board of Directors:

BOARD CHAIRMAN            Mike Magin                    Cutler-Hammer

## Measurement Science Conference History ---First Thirty Five Years

PRESIDENT	Douglas Sugg	NSWC Corona Division
EXECUTIVE VP	Mark Kaufman	NSWC Corona Division
TREASURER	Alan Ho	Boeing Space System
SECRETARY	John Schulz	INVENSYS/Safetran Systems
DIRECTOR	John Bowman	Fluke Corporation
DIRECTOR	Richard Careyette	Teledyne Electronic Technologies

### The 2002 Measurement Science Conference Committee:

CONFERENCE CHAIRMAN	Douglas Sugg	NSWC Corona Division
SPEAKERS	John Fishell	NSWC Corona Division
SPEAKERS	Alan Ho	Boeing Space Systems
OPERATIONS	Mark Kaufman	NSWC Corona Division
CONFERENCE EVALUATION	Robert Johnson	Verizon Logistics
PUBLICITY	John Schulz	INVENSYS/Safetran Systems
EXHIBITS	Rob Parchinski	Boeing Space Systems
ARRANGEMENTS	Mike Magin	Cutler-Hammer
REGISTRATION	John Bowman	Fluke Corporation
PROGRAM/NIST LIAISON	Robert Fritzsche	NSWC Corona Division
SCHOLARSHIPS	Richard Careyette	Teledyne Electronic Technologies
FINANCE	Karen Jackson	GIDEP
PUBLICATIONS	Muhamed Samman	Global Net Solutions
AWARDS	Nidal Kerdiya	eDOC Publishing, Inc.
DOOR PRIZES	Jim (Smitty) Smith	Boeing Space Systems
LOGISTICS	Ray Wade	Red, Inc.
GUEST PROGRAMS	Pamela Thames	Consultant
TUTORIALS	Mark Kashef	Teledyne Electronic Technologies
ARRANGEMENTS	Tama Stevens	NSWC Corona Division
COMMITTEE SECRETARY	Dewain Wilcox	Consultant
MARKETING & REGISTRATION	Cindy Becker	NSWC Corona Division
WEBSITE PLANNER	Rich Schumacher	Verizon Logistics
MARKETING	Debora DeDen	DynCorp
FINANCE CO-CHAIR	Samir Hijazi	The Renaissance Continuum

By the time the conference took place, many adjustments had been made. Security at Disneyland was very tight. An inspection was required for all vehicles, including the all the trucks bringing in exhibits. Time delays were common. Travelers were still very nervous. Plans were constantly changing.

Changes became a normal part of the 2002 Measurement Science Conference. For the first time, we had a 2002 Exhibits Opening Speaker. Mr. Patrick Rummerfield from Intersport's ARETE Amateur and Athlete of the Year 2000, provided a very motivational and heart felt speech titled, "The Will to Win". Following the speech, some attendees thought that having a marching band lead the crowd to the opening of the exhibit hall was positive; others felt it was a little much, but when the doors opened, the exhibit hall had over 100 exhibitors and a very large number of attendees.

## Measurement Science Conference History ---First Thirty Five Years

We were very fortunate after 9/11 to have as the 2002 Keynote Speaker, Mr. F. Whitten Peters, the Secretary of the Air Force from July 30, 1999 to January 20, 2001. Mr. Dennis Casebier followed as the Thursday Luncheon Speaker with a very interesting historical collection of desert history. The Luncheon Speaker on Friday, Mr. Joe Malarkey, provided some interesting entertainment on "Choose to Lose". This title was also fitting for the 2002 Measurement Science Conference because we did not lose, but rather moved forward with so many other Americans after 9/11.

The Andrew Woodington Award was presented to Mr. Dave Agy, from the Fluke Corporation, for his many years of professionalism and dedication to the field of measurement.

The text for Mr. Agy's award:

David Agy was born in Washington D. C. in 1943. His Dad worked as a physicist at NBS, Washington. However, his family moved shortly thereafter and he grew up in the then little town of Boulder Colorado. He was there long enough to get a BS degree in 1964 and an MS degree in 1967 from the University of Colorado in electronic engineering. Before and after graduation he worked for NBS Boulder from 1962 until 1970 on rf and microwave metrology projects. After about four years there, he came to work for the Navy's Metrology Engineering Center. While there he was instrumental in the development and fielding of a highly accurate microwave power and attenuator calibrator for support of the Phoenix missile test system, of intercomparison standards and methods for the early automated network analyzers and he coordinated all rf and microwave R& D projects with counterparts in the other military services and with NBS technical personnel.

**2003 Algie Lance Best Paper Award:**

The Algie Lance Best Paper Award went to Mrs. Georgia Harris of NIST, Physical Scientist, Weights & Measures Division, for her paper entitled "Development of a CD-ROM Metrology Course at NIST".

and

The Algie Lance Best Paper Award went to Mr. Dilip A. Shah of E= mc<sup>3</sup> Solutions, for his paper entitled "Gage R. & R. vs. Anova".

**2003 Joe Simmons Best Developer Award**

The Joe Simmons Best Developer Award went to Mr. John P. Clark of the Westinghouse Savannah River Company. Mr. Clark developed Session **IV- C, Measurement Modeling Uncertainty.**

and

The Joe Simmons Best Developer Award went to Mr. Thomas M. Kegel of the Colorado Engineering Experiment Station, Inc (CESSI). Mr. Clark developed Session **IV- A, Flow Measurement.**

The 2003 Measurement Science Scholarships were awarded to:

Jenny M. Brown,	Loyola Marymount
Monica E. Iskander,	Loyola Marymount
Gary B. Huffman,	CSU Poly Pomona
Ami S. Garcia,	CSU Northridge
Joshua M. Ward,	CSU Los Angeles
Gregory S. Sheldon,	CSU Long Beach

The theme for the 2004 Measurement Science Conference is “**Measurements and Continuous Education**”

The 2004 Measurement Science Conference Board of Directors:

<b>Chairman of the Board</b>	Mark Kaufman	NSWC Corona Division
<b>President</b>	Muhamed Saman	Global Net Solutions
<b>Director</b>	Mark Kashef	Teledyne Electronic Tech.
<b>Board Secretary</b>	John Schulz	INVENSYS Safetran Systems
<b>Board Treasurer</b>	Alan Ho	Boeing
<b>Director</b>	John Bowman	Fluke Corporation
<b>Executive VP</b>	Robert Johnson	Verizon Logistics

The 2004 Measurement Science Conference Committee:

<b>Speakers</b>	Mark Kaufman	NSWC Corona Division
<b>Registration</b>	John Bowman	Fluke Corporation
<b>Marketing &amp; Registration</b>	Cindy Becker	NSWC Corona Division
<b>Intranet Administration</b>	Debora DeDen	CSC
<b>Committee Secretary</b>	Dewain Wilcox	Consultant
<b>Finance</b>	Alan Ho	Boeing Space Systems
<b>Conference Evaluation</b>	Miguel Cerezo	Amgen
<b>A/ V Meetings, Special events, Sponsorship</b>	Karen Jackson	GIDEP
<b>Exhibits</b>	Robert Johnson	NSWC Corona Division
<b>Programs</b>	Mark Kashef	Teledyne Electronics Tech.
<b>Awards</b>	Nidal Kerdiya	eDoc Publishing Inc.
<b>Arrangements</b>	Frank Mendoza	Boeing
<b>Publications</b>	Douglas Sugg	NSWC Corona Division
<b>Publicity</b>	John Schulz	Safetran Systems Corp
<b>Intranet &amp; E-commerce</b>	Rich Schumacher	NSWC Corona Division
<b>Door Prizes</b>	Roger Hickey Sr.	B Braun Medical
<b>Scholarship</b>	John Fishell	NSWC Corona Division
<b>Guest Programs</b>	Pamela Thames	Consultant
<b>Tutorials</b>	Chet Crane	eDoc Publish Inc.
<b>NIST Chairman</b>	Bob Fritzsche	NSWC Corona Division
<b>NSCL Liason &amp; Logistics</b>	Cathy Oaxa- Hoote	NSWC Corona Division
<b>NIST Liaison</b>	Georgia Harris	NIST

2004 Keynote speaker **Dr. Seton Bennett** is the Deputy Director of the National Physical Laboratory and a member of the board of NPL Management Ltd. Dr. Bennett's speech is entitled "Everybody Needs Good Measurements." Dr. Bennett rejoined NPL as Deputy Director, with particular responsibility for the Laboratory's international links in October 2001. Dr. Bennett is a member of the CIPM (International Committee of Weights and Measures) and sits on the Executive Committee of EUROMET, the European metrology cooperation. Dr. Bennett has been elected chairman of EUROMET for the period 2004- 2006.

2003

**WOODINGTON AWARD:** Dr. David Braudaway

This year's Woodington Award winner has been active in the field of metrology for nearly 40 years. He was born in the great state of Nebraska where as a young man he displayed his talent early, winning an Honorable mention in the Westinghouse Science Talent Search. This award led to a scholarship from the University of Colorado where he earned a [BSEE] While a student at the Univ. of Colorado, he was employed by NBS, Boulder as a junior Engineer where he worked in cryogenic Engineering, calibrating vacuum measuring equipment and designed vacuum monitoring and safety protection apparatus. He later went on to earn his masters and doctorate degrees in Electrical engineering from the University of New Mexico. He is a registered professional engineer in the state of New Mexico and a member of numerous technical organizations, including ISA and IEEE. During his career with Sandia National Laboratories, he has authored or co-authored numerous technical papers on a variety of topics.

A small sampling includes papers on diverse topics such as "An Automatic Standard Cell Comparator", "Superconductivity and the Josephson Volt", "Application of a High-Precision Universal Measuring Machine in Standards Laboratory Measurements, "Standards Laboratory Environments "and "Basis for Buoyancy Corrections".

He has contributed to numerous standards publications including those on Electrical and Electronic Measuring and controlling Instrumentation,

Direct Current Ratio Devices, AC-DC Transfer Instruments and converters and many others. He was contributing member of USTAG,

United States Technical Advisory Group developing the guide to the "Expression of Uncertainty" as well as the "International Vocabulary of Basic and General Terms in Metrology (VIM)", as well as the major contributor to NCSL RP7, "Recommended Practice Laboratory Design". He was awarded the Distinguished Member of Technical Staff by Sandia National Laboratory in 1985, the NCSL Wildhack award in 1988, and was elected an IEEE Fellow in 1990. Although recently retired, our Woodington Award winner continues serving the measurement community as an international consultant in Electrical measurements serves to NCSL as a Committee Co-Chair on Laboratory Facilities, and here at the Measurement Science Conference as a technical session developer.

Needless to say, our Woodington Award winner is a professional in every sense of the word, one who is truly dedicated to the metrology profession and highly deserving of this award

2004 **LUNCHEON SPEAKERS;**

**Thursday--Comedian Michael Pasternak** will take a look at the humorous side of metrology. Mr. Pasternak has appeared in NYPD Blue, Martial Law, Masked Rider, Hill Street Blues, American Dreams, and Strong Medicine.

**Friday-- LtCol Juliano, USMC** will talk about calibration in Kuwait. Her talk is entitled "The Few, The proud, The Warrior Calibrators"

LtCol Marie G. Juliano, USMC is the Program Manager for the Test, Measurement and Diagnostic Equipment Program at Marine Corps Systems Command, Quantico, Virginia. As Program Manager, she and her staff are responsible for the for the research, analysis, acquisition, fielding, sustainment, and lifecycle management of all ground Test Systems, Calibration Standards, Tool Sets, and Visual

Information Systems and Equipment, which are provided, to the operating forces and supporting establishments. Duties include strategic planning, acquisition campaign plans (POM efforts), acquisition strategy and implementation, resource/ project management, and the administration and oversight of the Marine Corps Metrology program and all logistics support efforts.

#### 2004 **NIST Seminars**

##### **Time and Frequency Measurements and Applications**

Presenters: Michael Lombardi and Andrew Novick

##### **Selection, Calibration, and Use of Contact Thermometers Presenters:**

Presenters: Greg Strouse and Karen Garritty

##### **Flow Measurement**

Instructors: G. E. Mattingly (NIST) and T. Kegel (CEESI)

##### **Overview of Mass & Weighing**

Val Miller and Georgia Harris

#### 2004 Tutorials

##### **Pipette Calibration and Use: New Methods for Reducing Variability via Uncertainty Analysis and Bench- top Verification.** Developer: George Rodrigues

##### **Measurement Uncertainty: Fundamentals and Application.**

Developer: Dilip A. Shah E= mc<sup>3</sup> Solutions

##### **Very Low Pressure Calibration**

Developers: Michael Bair & Karl Kurtz

##### **The Calibration Technician Meets Accelerometers.**

Developer: Wayne Tustin

##### **Dynamic Pressure Calibration.**

Developer: John S Wilson

##### **Aerospace Standard for Screw Threads.**

Developer: Dave Lorenzen

##### **Uncertainty Three Examples**

Developer: Emil Hazarian

##### **"Interval Analysis - Concepts and Methods?"**

Developer: Dr. Howard Castrup

##### **ASQ Calibration Technician Test Preparation**

Developer: Duane Allen

**Force measurement instrumentation for biomedical use**

Developer: Guido Pagnacco

**Coordinate Measuring Machine**

Developer: Jim Salsbury

**Screw Thread Inspection and Gage Calibration Technology**

Developer: Eric Johnson

**Gas Flow Calibration and Uncertainties Using molbloc/ molbox**

Developers : Larry Renda & Greg Secord

**Introducing a Computer Program for Determining Process Capability**

Developer: Akram Hossain

**Humidity Measurement Workshop**

Developer: Ken Soleyn

**Force Calibration**

Developer: Mike Tovey

**pH and Conductivity Measurements**

Developer: Don Ivy

- . I remember that the committee took an evening cruise around the Long Beach Harbor on a showboat that was thoroughly enjoyed by all.
- . I remember that Mr. Wilcox was extremely helpful when I had a truck loaded with MSC materials and I could find no one else.
- . I remember having difficulty with names at the speakers breakfast. People don't always look like they sound.

## Measurement Science Conference History ---First Thirty Five Years

### The 2005 Measurement Science Board of Directors:

CHAIRMAN	Muhamed Samman	Global Net Solutions
PRESIDENT	Bob Johnson	NSWC Corona Division
EXECUTIVE VP	John Fishell	NSWC Corona Division
TREASURER	Alan Ho	Boeing Space Systems
SECRETARY	John Schulz	Safetran Systems Corp.
DIRECTOR	Bob Fritzsche	NSWC Corona Division
DIRECTOR	John Bowman	Fluke Corporation
ALTERNATE	Nidal Kerdiya	eDoc Publish Inc.

### The 2005 Measurement Science Conference Committee:

PRESIDENT	Bob Johnson	NSWC Corona Division
EXECUTIVE VP	John Fishell	NSWC Corona Division
PROGRAMS	Chet Franklin	CSC
FINANCE	Alan Ho	Boeing Space Systems
PUBLICITY	John Schulz	Safetran Systems
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NIST LIAISON	Georgia Harris	NIST
A.V., MEETINGS & SPECIAL EVENTS	Karen Jackson	GIDEP
EVALUATION & NCSL LIAISON	Miguel Cerezo	Amgen
GUEST PROGRAM	Pamela Thames	Consultant
e-COMMERCE	Richard Schumacher	NSWC Corona Division
SPONSOR LIAISON	Arman Hovakemian	NSWC Corona Division

MANY FINE TUTORIAL WORKSHOPS ON WEDNESDAY BEFORE THE CONFERENCE

#### **WORKSHOP A: Measurement Uncertainty: Fundamental Applications**

Developer: Dilip Shah, E=mc<sup>3</sup> Solutions

#### **WORKSHOP B: Laboratory Accreditation to ISO/IEC 17025**

Instructor: Hersh C. Brewer, International Accreditation Service, Inc. (IAS)

#### **WORKSHOP C: Extreme Mass Measurements**

Instructor: Emil Hazarian, NSWC Corona Division

**WORKSHOP D: Very Low Pressure Calibration**

Instructors: Mike Bair and Karl Kurtz, DH Instruments, Inc.

**WORKSHOP E: Gas Flow Calibration and Uncertainties using molbloc/molbox**

Instructors: Larry Renda and Greg Secord, DH Instruments, Inc.

**WORKSHOP F: Fundamentals of Temperature Calibration**

Instructor: Ron Ainsworth and Tom Wiandt, Hart Scientific

**WORKSHOP G: Humidity Measurement Tutorial**

Instructor: Ken Soleyn, GE Infrastructure Sensing

**WORKSHOP H: Introduction to Measurement Uncertainty for Managers and Supervisors**

Instructor: Benny Smith, Inch-Worm Solutions

**WORKSHOP I: Managing Your Process**

Instructors: George Carter, Consultant and Sheryel Eberwein, Computer Sciences Corp.

**WORKSHOP J: Metrology 101:Back to Basics - How to Measure**

Instructor: Tim Mason, Southern California Edison

**WORKSHOP K: Running an Effective Laboratory - Measuring Performance**

Instructors: Malcolm Smith, Northwest Calibration Systems, Inc., and Greg Powell, The Signal Group.

## Measurement Science Conference History ---First Thirty Five Years

I appreciate the inputs that I received from many of the past Presidents. Without their thoughts and memories this would have been even more dull.

I did not keep a record of all that provided me with input, however I will list those that I remember. In no Particular order.

Dean Brungart, John Schulz, John Bowman, and a special mention for Phillip Painchaud. Phil provided much of the information for the pre-conference and early conferences.

I wish to thank Bob Johnson for the opportunity to do this again and if I am around I will do the fifty years.

Thanks also to the current committee and all the past committees and advisory boards that I served with. You are some of the finest people that I know, I am pleased to have known you and to be able to call you friend.

Chet J. Crane