



# PIONEERS OF NATIONAL RECONNAISSANCE

2 0 1 5





# PIONEERS OF NATIONAL RECONNAISSANCE

SUPRA ET ULTRA

2 0 1 5



# FOREWORD

April 2016

*The* National Reconnaissance Pioneer Program recognizes and honors individuals who have made significant and lasting contributions to national reconnaissance—pioneering contributions that were innovative, remarkable, and changed the direction and scope of the discipline and its practice. It is the highest honor in the field of national reconnaissance.

For the Pioneer Class of 2015, the Director of National Reconnaissance, Ms. Betty Sapp, selected Mr. L. Porter Davis, whose innovation in developing control moment gyro (CMG) devices for maneuvering and controlling the attitude of large spacecraft represented ground-breaking and novel vibration isolation technology—a technological breakthrough that attenuated CMG vibration and reduced the negative impact of vibration on payload performance.

Today's Heritage Recognition Ceremony formally inducts Mr. Davis, the 2015 Pioneer honoree, into NRO's Pioneer Hall. Pioneer Hall is a collection of commemorative medallions, one for each of NRO's Pioneer of National Reconnaissance. The medallions serve as enduring tributes to the pioneers' trailblazing contributions to the discipline of national reconnaissance. This booklet includes the words that appear on Mr. Davis' medallion and briefly explains the nature of Pioneer Davis' specific contribution. Mr. Davis' medallion now joins the other 91 medallions that commemorate the contributions of Pioneers from previous classes. When you visit Pioneer Hall, I encourage you to review the citations on the medallions to gain a sense of the scope of the Pioneers' contributions and the lasting impact they had on the NRO and our nation's national security.



Robert A. McDonald, PhD.  
Director, Center for the Study of National Reconnaissance



MR. L. PORTER DAVIS

# MEDALLION CITATION

Mr. L. Porter Davis, during the mid-1960s, pioneered the development of control moment gyros (CMGs) for maneuvering and controlling the attitude of large spacecraft. The CMGs provided the NRO with innovative technology that led to the development of more agile satellites, affording increased collection capacity, with improved pointing performance and longer mission life. These highly complex electro-mechanical systems enabled NRO satellites to accomplish their essential missions for the nation.

## L. PORTER DAVIS

During the late 1960s through the 1970s, Mr. Davis and his team designed and built the first control moment gyros (CMGs) used in national reconnaissance spacecraft. Prior to Mr. Davis' innovations, the NRO controlled spacecraft attitude by firing low precision, life-limited, liquid-fueled reaction control thrusters or by utilizing agility-limited reaction wheel assemblies.

Developing CMGs required precision design in electromagnetics, high speed bearings, lubrications, exquisite balancing, and advanced control algorithms that pushed the capabilities of existing onboard spacecraft computers. A key in the development of the large high-torque CMG was the shell rotor. Unlike a conventional flat disc rotor, the egg-shaped shell rotor could withstand high speed and high torque while maintaining precision balance and low vibration.

Several NRO programs have used this technology, known as "D-struts," to isolate payloads from a variety of disturbance sources. The innovation of the CMGs integrated the best of previous capabilities to develop larger, more agile satellites with improved pointing performance and longer mission life. The CMGs increased collection capacity by multiple factors and spacecraft lifetimes from months to decades.

Mr. Davis retired as a Senior Fellow and Chief Systems Engineer for Honeywell's Space Systems Division in Glendale Arizona. He holds a Bachelor of Science and Master of Science in Mechanical Engineering from Texas Tech University. He published some 32 technical papers and is nationally known as a leader in the vibration control community.

Career in National Reconnaissance: 1963 - 2012



# PIONEERS OF NATIONAL RECONNAISSANCE

## 2015

L. Porter Davis

## 2014

Thomas C. "Chris" Fitzsimmons  
John. R Stavlo

## 2013

William G. Montgomery  
Donald N. Simkins, Ph.D.

## 2012

Robert P. O'Donnell, Ph.D.

## 2011

Thomas A. Brackey  
Joseph J. Eash III, Col, USAF (Ret)  
Michael N. Parker, Ph.D.  
John W. Shipley, Ph.D.  
Richard C. Van Wagoner

## 2010

Robert H. Dumais  
Jack A. Gibbs, Brig Gen, USAF (Ret)  
Richard J. Randazzo, Col, USAF (Ret)

## 2009

James P. Campbell, Ph.D.  
Lacy G. Cook  
Michael F. Maguire

## 2008

Raymond E. Anderson, Col, USAF (Ret)  
Howard G. Brotherton  
Hilliard W. Paige, Sr.

## 2007

Paul G. Kaminski  
Sun Yet Wong

## 2006

Ingard M. Clausen  
Fred V. Hellrich  
David L. Klinger, Ph.D.  
Jane A. Wood

## 2005

Robert E. Eisenhauer  
Roger C. Marsh  
Edward A. Miller, Ph.D.  
Wayne L. Proffitt

## 2004

M. Sam Araki  
Harvey Cohen, Lt Col, USAF (Ret)  
Robert G. Kaemmerer  
James W. McAnally

## 2003

Carl L. Ferdensi, Jr.  
David Raspet, Col, USAF (Ret)  
James W. Stoner, Ph.D.  
Charles C. Tevis

## 2002

Vance D. Coffman, Ph.D.  
Lee M. Hammarstrom  
Robert L. Paulson, Col, USAF (Ret)

## 2001

Donald L. Cromer, Lt Gen, USAF (Ret)  
A.J. (Tony) Iorillo  
Vincent S. Rose  
John Walton

## 2000

James G. Baker, Ph.D.  
C. Lee Battle, Jr., Col, USAF (Ret)  
John T. Bennett  
John W. Browning, Col, USAF (Ret)

Jon H. Bryson, Col, USAF (Ret)  
A. Roy Burks  
Frank S. Buzard, Col, USAF (Ret)  
Cornelius W. "Connie" Chambers  
John O. Copley, Col, USAF (Ret)

Robert H. Crotser  
John J. Crowley

James C. de Broekert

Gary S. Geyer, Col, USAF (Ret)  
Thomas O. Haig, Col, USAF (Ret)  
Frederick H. Kaufman  
Robert J. Kohler  
Ellis E. Lapin

Lloyd K. Lauderdale, Ph.D.  
Richard S. Leghorn, Col, USAF (Ret)  
Walter J. Levison  
Howard O. Lorenzen  
Frank J. Madden

James T. Mannen, Col, USAF (Ret)  
Paul W. Mayhew, Ph.D.

Reid D. Mayo  
James E. Morgan  
Mark N. Morton  
Alden V. Munson, Jr.

Charles L. Murphy, Col, USAF (Ret)  
Frederic C.E. "Fritz" Oder, Col, USAF (Ret)

John Parangosky  
Julius P. "Val" Peline, Ph.D.

Robert M. Powell  
Edward H. Reese

Osmond J. "Ozzie" Ritland,  
Major General, USAF (Ret)  
Lee W. Roberts, Col, USAF (Ret)

Charles R. "Charlie" Roth

Robert W. "Rob" Roy, Col, USAF (Ret)  
Charles P. Spoelhof  
Forrest H. Stieg  
Marvin S. Stone, Ph.D.

Don F. Tang  
Albert D. "Bud" Wheelon, Ph.D.  
Peter G. Wilhelm

Roy H. Worthington, Col, USAF (Ret)  
Robert W. Yundt, Col, USAF (Ret)

*Pioneer Hall  
National Reconnaissance Office  
Chantilly, Virginia*





