



Interagency Advanced Power Group

The Interagency Advanced Power Group - A Valuable Resource

Allan B. Goldberg
US Army Research Laboratory
Electro-Chemistry Branch
agoldberg@arl.army.mil
301-394-3118
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Interagency Advanced Power Group

Purpose of the IAPG

*Federal membership organization initiated to facilitate exchange of information in the area of **Advanced Power** at the technical level of research and development programs in the member organizations to increase effectiveness of research efforts by avoiding duplications, identifying gaps, and sharing information.*



Interagency Advanced Power Group

- **Formed in 1958**
- **Structure modified as agency interests change**
- **Current members:**



Army



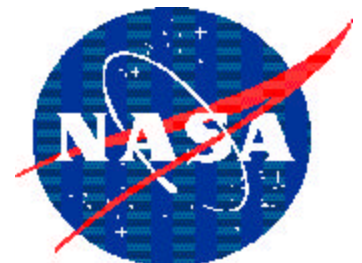
Air Force



Navy



DOE



NASA



Interagency Advanced Power Group

IAPG Steering Group

***Directs and authorizes activities of the IAPG
and its Working Groups.***

- **Member Organizations pay membership fee annually**
- **1 Representative & Alternate from each member organization**
- **Currently the Army chairs Steering Group**
- **Vice Chair from Air Force; will become Chair 10/03**
- **Chair/Vice Chair each serve two-year terms**
- **Reports to management of respective organizations**



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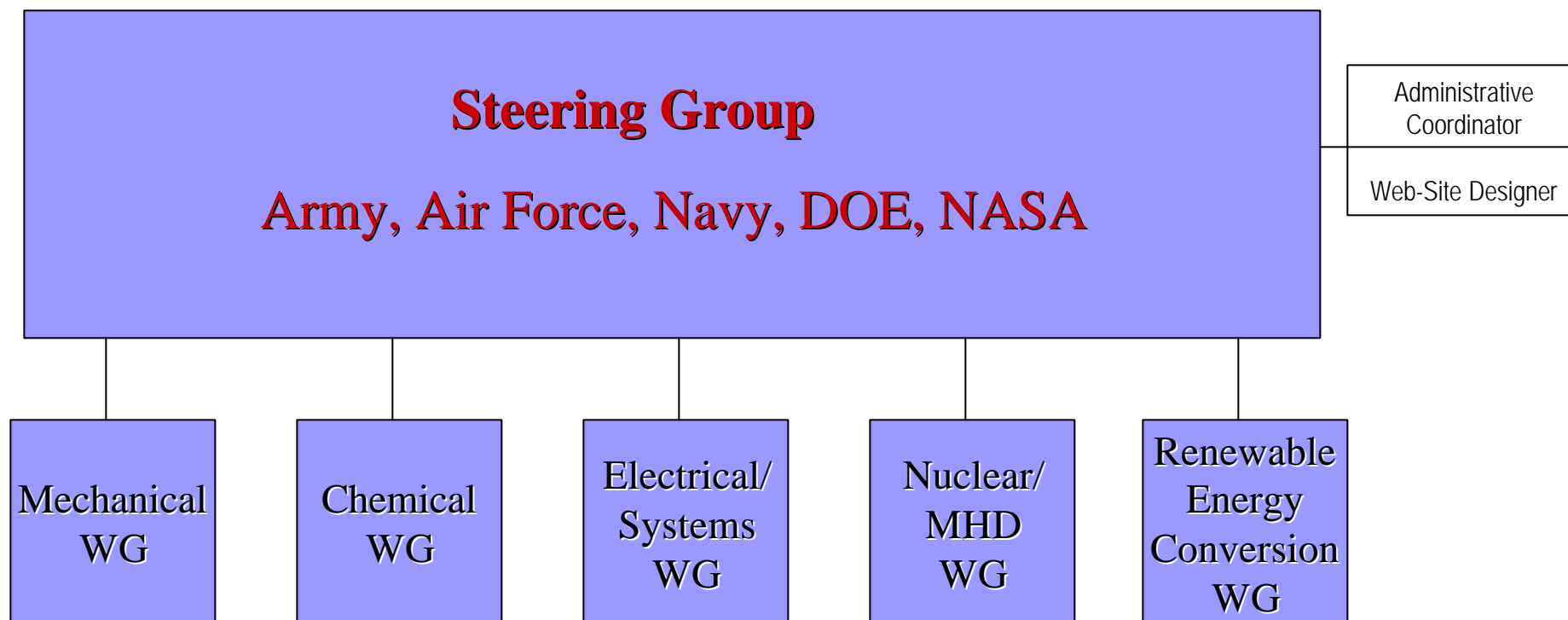
Steering and Working Groups

- **Steering and Working Groups meet 1-2 times per year**
- **Steering Group reports to management of member organizations**
- **IAPG is funded through annual nominal membership fee**



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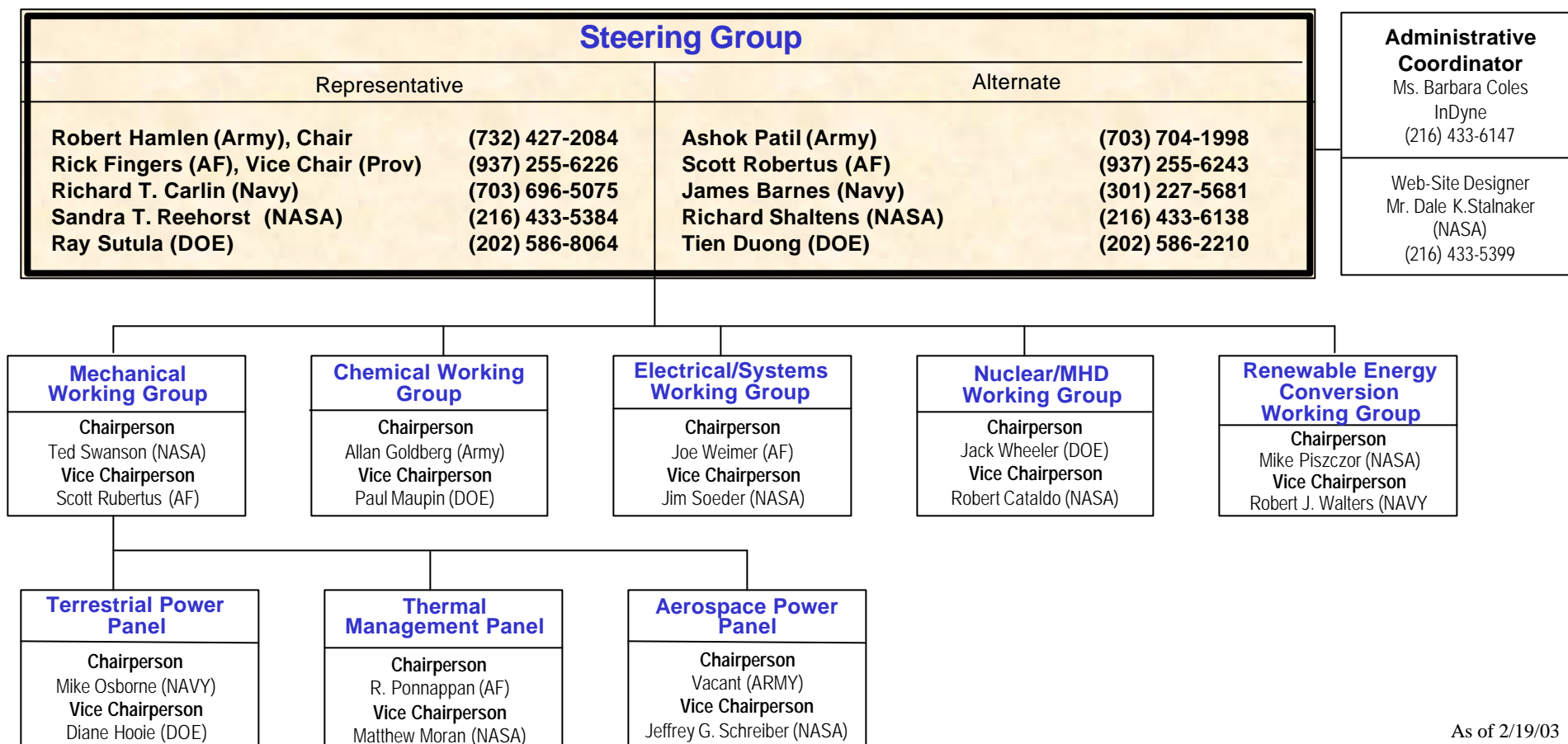
IAPG ORGANIZATION CHART





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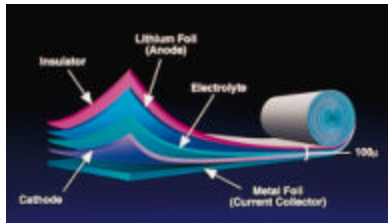
IAPG Working Groups

Bring together people in areas of technical interest to discuss status of current and planned research efforts.

- **Representatives from member/other Federal organizations**
- **Leadership rotates for Working Groups/Panels among participating member organizations**
- **Working Groups meet 1-2 times annually**
- **Participants report results to management/colleagues of respective organizations**
- **Working Groups form/reform as needs/interests arise/change**

Working Groups -- Chemical

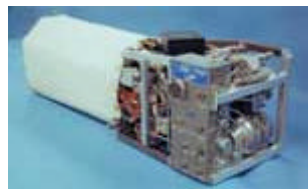
Addressing the nation's challenges
in developing electrochemical energy
storage & power generation technologies



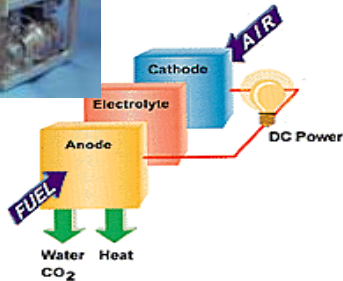
Advanced Batteries



Capacitors



Fuel Cells



Aerospace



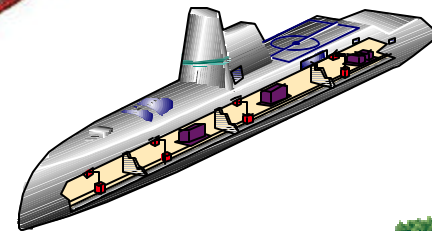
Aeronautics



Environment



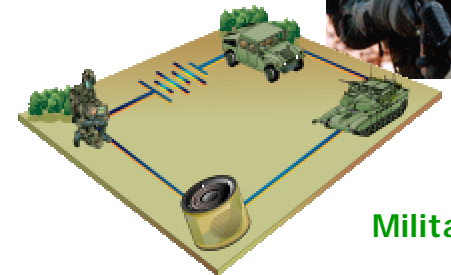
Energy



National Security



Military



Supporting technology transitions to meet
future agency-specific mission needs





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Working Groups -- Mechanical

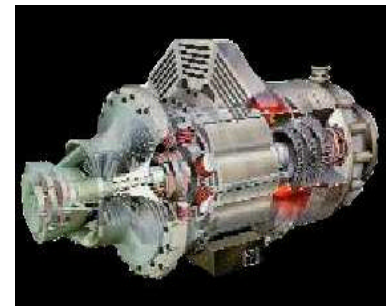
The **Mechanical Working Group** focuses on devices and processes for the mechanical conversion of energy, power transfer and the associated thermal management issues.



Two-phase thermal management systems on the Hubble Space Telescope and other spacecraft



Rotorcraft Drive System 21



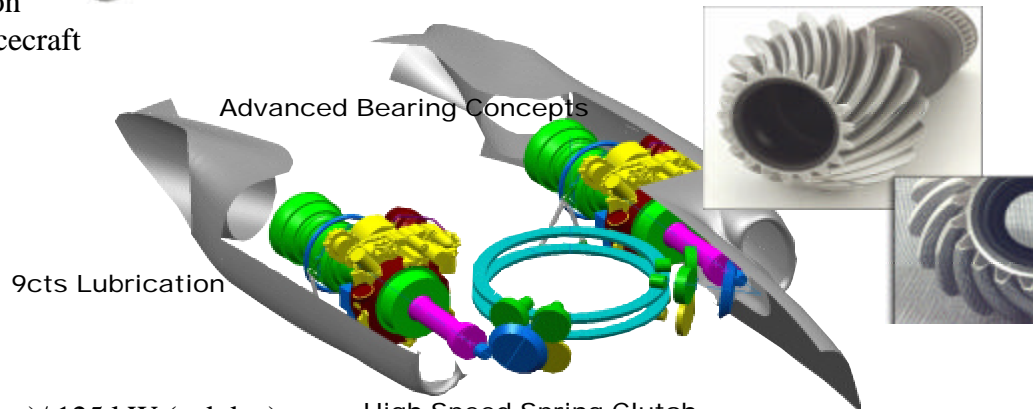
Honeywell IPU



GTCP36-155 Auxiliary Power Unit



Integrated Power Unit provides 200 kW (cold day)/ 125 kW (std day) board auxiliary emergency power without oil.



High Speed Spring Clutch



Army Common Engine



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IAPG Working Groups -- Electrical/Systems

Covers:

- **R&D programs in**
 - **power conditioning and distribution,**
 - **super-conductivity,**
 - **generators,**
 - **motors,**
 - **and power transmission.**
- **The Systems aspect of the group focuses on**
 - **complete electric power/energy systems, from source to user including**
 - **artificial intelligence and expert systems,**
 - **space power system designs,**
 - **systems modeling and analysis,**
 - **system architecture studies,**
 - **and critical technologies for space systems.**



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IAPG Working Groups -- Nuclear/MHD

- **Includes**

- **energy conversion from**
 - **fission,**
 - **fusion,**
 - **and radioisotope power sources**
- **other thermal systems that use thermoelectric or thermionic systems**
- **a focus on investigations of related plasma dynamics**

- **The MHD aspect of the group includes**

- **all energy conversion systems involving the magnetohydro-dynamic interaction between electromagnetic fields and electrically conducting fluid**
- **related energy sources, materials, plasma dynamics, magnet, and combustion**



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IAPG Working Groups -- Renewable Energy Conversion

- **Covers**
 - collection of solar radiation
 - storage of solar radiation
 - conversion of solar radiation to heat or other energy forms
- **Other energy areas encompassed are**
 - biomass power
 - wind/hydro power
 - fossil energy

IAPG Working Group Meeting Spin-Offs

**Institution of Interagency Program
Collaborations**

**Utilization of Interagency Expertise on
Technology Review Teams/Panels**

**Cross-Agency Utilization of Unique
Laboratory and Analytical Facilities**

**Programmatic Inputs to Various
Focused Mission or Technology
Assessment/Tool Teams**

**Feedback from Recent Working Group
Meeting Participants**

**Identification of Possible Redundancies in
Contractual R&D Efforts Being Funded
by Multiple Agencies/Need for Closer Monitoring**





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Examples of Working Group Meeting Spin-Offs

Institution of Interagency Program Collaborations:

- *NASA and DOD -- Advanced lithium-based/polymer battery technology development**
- *Army and DOE/Sandia -- Li-SO₂ batteries shelf life issues**
- *AFRL and NASA -- KC135 flights to study space cooling**
- *Hazardous materials disposal at Toxco -- availability for all agencies/users**
- *NASA and DOE -- Fuel cell development program**
- *AFRL and NASA -- joint flight experiments technology demonstrations in both battery and thermo-mechanical systems technology areas**

Identification of Possible Redundancies in Contractual R&D Efforts Being Funded by Multiple Agencies/Need for Closer Monitoring:

- *Advanced battery development areas**
- *Advanced battery component development**
- *Low-temp, fire retardant electrolyte development**

Feedback from Recent Working Group Meeting Participants:

- *A focused venue for dissemination of current programmatic information, networking and technical interchange**
- *A necessary forum for candid and open dialogue within a restricted attendance venue**

Cross-agency Utilization of Unique Laboratory and Analytical Facilities

Programmatic Inputs to Various Focused Mission or Technology Assessment/Tool Teams:

- *NASA Energy Storage Technology Review**
- *DOD/Tri-Services power sources analysis activities**

Utilization of Interagency Expertise on Technology Review Teams/Panels



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IAPG Calendar of Meetings **(2003 Not Yet Available)**

Steering Group

March 11, 2002
July 23-24, 2002

Washington DC @ DOE
NASA Glenn, Cleveland, OH

Mechanical Working Group

May 30-31, 2002

NASA Goddard, Greenbelt, MD

Chemical Working Group

June 13-14, 2002
July 24-25, 2003

In conjunction with 40th Power Sources Conference, Cherry Hill, NJ
In conjunction with Navy's 8th Workshop for Battery Development,
Portsmouth, VA

Electrical Working Group

October 31, 2002

In conjunction with 5th SAE Power Systems Conference, Coral Springs, FL

Nuclear/MHD Working Group

Jul 28-Aug 1, 2002

In conjunction with IECEC, Washington DC

Renewable Energy Conversion Working Group

May 20-24, 2002

In conjunction with 29th IEEE Photovoltaic Specialists Conference
New Orleans



Interagency Advanced Power Group

How do you contact IAPG?

IAPG Web Site

<http://www.grc.nasa.gov/WWW/IAPG/index.html>

IAPG Administrative Coordinator

Interagency Advanced Power Group (IAPG)

Attn: Barbara Coles, Administrative Coordinator

InDyne @ NASA John H. Glenn Research Center at Lewis Field MS 301-3

21000 Brookpark Road, Cleveland, OH 44135

Tel: 216-433-6147 Fax: 216-433-2306 E-mail: barbara.coles@grc.nasa.gov



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Back-up Slides



Interagency Advanced Power Group

IAPG Charter Signatories on 1 December 1960

Richard S. Morse
Director of Research and Development
Department of the Army

Frank K. Pittman
Director, Division of Reactor Development
United States Atomic Energy Commission

James H. Wakelin, Jr.
Assistant Secretary of the Navy
(Research and Development)
Department of the Navy

Robert C. Seamans, Jr.
Associate Administrator
National Aeronautics and Space
Administration

Courtland D. Perkins
Assistant Secretary of the Air Force
(Research and Development)
Department of the Air Force

Austin W. Betts, Brig. Gen.
Director
Advanced Research Projects Agency

1 December 1960

Subsequent Charter Signatories

Donald M. Kerr
Acting Assistant Secretary for Energy Technology
Department of Energy



Interagency Advanced Power Group

Membership Level 1

Level 1 – Employees of Federal member agencies

- **Member agency pays annual fee budgeted by Steering Group**
- **No cost to individual employees or their immediate organization**
- **Eligible to hold office**
- **IAPG members receive formal invitations to meetings; non-IAPG members may attend meetings**
- **May be invited to speak at IAPG meetings**
- **Have access to IAPG published/presentation materials**
- **Listed on IAPG roster on web site**



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Membership Level 2

Level 2 -- Employees of any Federal agency, Federally Funded Research and Development Center (FFRDC), or any Government-Owned, Contractor-Operated Facility (GOCO)

- **IAPG members receive formal invitations to meetings; non-IAPG members may attend meetings**
- **Some meetings (or portions of) may be government-only meetings**
- **May be invited to speak at IAPG meetings**
- **Have limited access to IAPG published/presentation materials**
- **Listed on IAPG roster on web site**



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Observers

Observers are individuals employed by Government contract or employees of research and development technology-related industries and institutions including colleges and universities.

- **May attend IAPG meetings at invitation of Working Group**
- **Some meetings (or portions of) may be government-only meetings not available to Observers**
- **May be invited to speak at IAPG meetings**