

# History of the IEEE/AESS Gyro and Accelerometer Panel

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The year 1992 marks the 30th anniversary of the Gyro and Accelerometer Panel so it seems appropriate to recount its early beginnings.

A technical committee (EETC) of the Aerospace Industries Association (AIA) established a "Gyro Project" in June 1957 with goals of standardizing gyro terminology and gyro test techniques. Participants in the Gyro Project were representatives of AIA member institutions including both gyro suppliers and gyro users. Phase I of the Gyro Project resulted in the publication of nine documents which were:

1. Standard Gyro Terminology (June 1960);
2. Six (6) Gyro Test Instructions (June 1960-January 1962)
  - Integrating Gyro;
  - Rate Gyro;
  - Double Integrating Gyro;
  - Vertical Gyro;
  - Directional Gyro;
  - Free Gyro;
3. Essential Performance Criteria for Gyros in Typical Applications (January 1962); and
4. Report on the Results of the Gyro Industry Survey and Recommendations for Phase II Gyro Project Activity (1962).

Preparation for Phase II of the Gyro Project began in January 1961 with a survey of companies and government institutions regarding their knowledge of the Gyro Project and which also solicited recommendations for future activity and possible expansion of the scope of the Gyro Project during Phase II. The results of the industry survey were reported in the AIA publication cited in (4) above.

This industry survey consisted of a questionnaire of 14 questions and was sent to 89 companies and agencies of which 44 responded. From the results of this industry survey it was concluded that the Gyro Project should continue into Phase II and be expanded into the field of accelerometers.

In February of 1962 the Electronics Parts Committee (EPC) of the AIA authorized the establishment of a "Gyro and Accelerometer Panel" to supplant and expand the scope of the Gyro Project. The first meeting of the Gyro and Accelerometer Panel was held in Dayton, Ohio on 14 and 15 May 1962. Invitations to this meeting were sent to 91 individuals and organizations and resulted in the attendance of 32 participants. The Panel was organized as follows: A chairman was elected who appointed a secretary and a member to act in a liaison capacity between the Panel and other organizations. Three subcommittees were then established and staffed by volunteer participants as follows: A Gyro Terminology and Test Instructions subcommittee of 10 members, an Accelerometer Terminology and Test Instructions subcommittee of 5 members and a Gyro Specification Format and Standardization subcommittee of 5 members. The remaining 7 attendees were listed as "observers." Meetings continued in 1962 at Seattle in

July and at Cloudcroft, New Mexico in October with 41 persons attending. Work was started on a revision of the Standard Gyro Terminology, on a Rate Gyro Specification Format and on a Rate Gyro Test Procedure. Six meetings were held in 1963, usually alternating between east coast and west coast sites, with an average attendance of 39. In 1964, 5 meetings were held with an average attendance of 36. The revised Standard Gyro Terminology was published in September of that year followed by the publication of the Standard Accelerometer Terminology in October.

In the latter part of 1964 or the early part of 1965 the AIA reorganized internally and subsequently decided that the Gyro and Accelerometer Panel did not have a niche in their realigned organizational structure. The author, as Panel Chairman, then pursued other possible sponsors including the American Institute of Aeronautics and Astronautics (AIAA) and the Institute of Electrical and Electronics Engineers (IEEE). After many discussions and inquiries with members of both the AIAA and the IEEE a home was founded for the Panel as "Subcommittee 12.8" of the IEEE Navigation Aids Committee (April 1965).

For sponsorship of the Panel by the IEEE it was stipulated that the Panel Chairman be a member of the IEEE. Activities of the Panel were formalized in 1965 with the adoption of a Charter, Organization and Objective document. This document established an organization comprised of two subcommittees, membership requirements, meeting frequency, the purpose of the Panel and lists of document objectives. In early 1966 By-Laws were adopted which addressed the areas of membership, officers, meetings, voting, document generation procedure and rules-of-order. In the spring of 1968 the status of the Panel was upgraded from a subcommittee of the Navigation Aids Committee to a committee of the IEEE Aerospace and Electronics Systems Group, now Society (AESS).

Today the Gyro and Accelerometer Panel continues as a vital, dynamic working group and is the leading Panel of the AESS in the production of new and updated IEEE standards. Standards have been published for:

- Rate Gyros (1969);
- Linear Analog Accelerometers (1972);
- Rate Integrating Gyros (1974);
- Linear Digital Accelerometer (1978);
- Laser Gyros (1981);
- Inertial Sensor Terminology (1984);
- Nongyroscopic Angular Sensors (1985);
- Dynamically Tuned Gyros (1988); and
- Centrifuge Testing of Accelerometers (1992).

Work in-process includes a revision of the Inertial Sensor Terminology, a new Fiber Optic Gyro standard, a revision of the Laser Gyro standard and a new standard combining and revising the Analog and Digital Accelerometer standards.