

ASA-INCE/USA SYNERGY

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The roles and interests of the Acoustical Society of America (ASA) and the Institute of Noise Control Engineering of the USA (INCE/USA) have much in common. The very successful recent joint meeting of the two societies in Minneapolis demonstrates the mutual benefits of coordinated activities. This article reviews the history of the ASA-INCE/USA relationship and proposes several areas in which closer collaboration between them might provide greater benefit to their members, the global acoustics community, and society in general. The ASA was formed in 1929 with the purpose to increase and diffuse the knowledge of acoustics and promote its practical application.¹ The present membership, in excess of 7000, works in many diverse fields including physics, engineering, oceanography, biology, physiology, psychology, architecture, speech, and music. The ASA was one of the founding Member Societies of the American Institute of Physics (AIP) in 1931. The ASA promotes the use of technical groups and committees for intra-Society communication, holds regular professional meetings, publishes *The Journal of the Acoustical Society of America (JASA)*, supports the development of acoustics-related standards, offers awards for distinguished achievement in acoustics, re-prints out-of-print classic works, and keeps members apprised of acoustics news through its periodicals.

Likewise, the INCE/USA strives to advance the frontiers of knowledge, elevate the standards of professional excellence, stimulate technical progress, inform the public of technical developments, and apply technical progress to the satisfaction of the needs of mankind for a quieter environment in which to work and live.² At present, the Institute is organized similarly to ASA in that it is served by a group of volunteer officers, including five Vice Presidents, a Board of Directors, committees, and a paid staff. It publishes the bimonthly refereed journal

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Noise Control Engineering Journal (NCEJ) and the quarterly magazine *Noise/News International (NNI)*, as well as the proceedings from its NOISE-CON and INCE/USA-hosted INTER-NOISE meetings. An important function of INCE/USA is the recognition of noise control professionals through its rigorous board certification program; approximately 17% of the 1000-plus members are board certified. International INCE (I-INCE) was fostered by INCE/USA and founded in 1974.

Background³

In the 1950s and 60s, some acousticians were doing work in the area of acoustic noise and its control that led to the emerging discipline called noise control engineering. Unfortunately, the small group of noise control practitioners found that it was difficult to get their papers published in the research-oriented *JASA*. Through the leadership of then President Leo Beranek, the Society began publishing the magazine *NOISE Control* to provide a forum for noise and noise control papers. Nevertheless, there were members of the Executive Council who believed that the magazine should cease to exist because of the small percentage (~ 9%) of the membership

interested in noise. A compromise was reached that led to the re-naming of the magazine to *Sound, Its Uses and Control*, within which practical papers in all areas of acoustics were published. For various reasons the production of *Sound, Its Uses and Control* ended in 1963, and in 1972, ASA and INCE/USA cooperated in the publication of *Noise/News*, a bimonthly newsletter.

Even though the ASA Technical Council was formed to serve as a channel of communication between the technical committees and the Executive Council, the Technical Committee on Noise (TCN) during the 1960s was unable to meet the needs of the increasing number of noise control engineers. A major reason for this growth was the National Environmental Policy Act of 1968, which led to the establishment of the Office of Noise Abatement and Control within the Environmental Protection Agency. Many members of TCN realized that there would be significant emphasis on noise in the future, and that an organization was needed to promote professionalism in the field of noise control engineering.

In January 1971, a workshop on noise control engineering was held at Arden House in Harriman, NY with Leo Beranek as Chairman and William Lang as Co-Chairman. These individuals kept the ASA and other related societies fully informed of the goal of this workshop to form a new professional organization devoted to the practice of noise control engineering. The majority of the participants of the workshop were members of the ASA; it was easily agreed that a close relationship between ASA and the new organization would be fostered. The Institute of Noise Control Engineering of the USA was incorporated in Washington, DC in June 1971. Leo Beranek became the first President, while John Johnson, the President of ASA at that time, fully endorsed this incorporation. Dr. Johnson later served as President of INCE/USA in 1980.

The relationship between ASA and INCE/USA continues to be a strong one. In fact, an ASA-INCE/USA Agreement presently exists.⁴ The purpose of the Agreement, "...is to provide for cooperation in the holding of certain meetings and in the publication of certain educational periodicals." Because the Agreement will expire in June 2006, it is important to highlight some of the details of the present Agreement and also to suggest some areas that might be included in its next iteration.

Standards

The ASA is secretariat for American National Standards Institute (ANSI) Committee S12 Noise. INCE/USA is an S12 organizational member with a representative appointed by the INCE/USA Board of Directors.⁴ A recent example of ASA-INCE/USA collaboration in the area of standards is ANSI S12.60-2002 on classroom acoustics.^{5,6} This standard includes acoustical criteria and design requirements for control of noise and reverberation in classrooms and other learning spaces. There were 54 participants in the working group for this standard; 15 were members of both ASA and INCE/USA, 21 were members of ASA only, and 2 were members of INCE/USA only.

Participation of our organizations in the development of international standards in acoustics and noise control (through the International Electrotechnical Commission and the International Organization for Standardization) is less obvious. There is little participation of our acoustics experts in reviewing documents as they are being developed. Perhaps a reason for this is the financial commitment for experts to attend international meetings. The present author is not in a position to earmark ASA or INCE/USA funds for such travel, but the topic is one that needs discussion and resolution by the standards leaders from the our two organizations. This is important because it will benefit USA manufacturers, workers, and consumers.

The federal and state governments are expected to increase the funding for development of alternative sources of electrical power. An important candi-

date is the use of multiple wind turbines on wind farms. There have, however, been some significant violations of community and recreational land-use noise ordinances due to some of these wind farms now in operation. Several areas need input from acoustical experts.⁷ Acoustical standards must be developed for wind turbine noise measurement and for the instrumentation used to measure this noise. The microphones on most sound level meters are only useful down to 20 or 30 Hz, but wind turbines generate emissions at frequencies lower than 20 Hz. The proposed new standard will address this issue. The human and animal response to these very-low frequency sounds also needs careful study. Although not part of standards development *per se*, acoustical experts from INCE/USA, ASA, and the National Council of Acoustical Consultants (NCAC) should be available to assist local authorities in the development noise ordinances that are applicable to wind farms.

Meetings

The first collaborative meeting held by ASA and INCE/USA occurred on the occasion of the United States' bicentennial celebration in Washington, DC. The semi-annual ASA meeting and INTER-NOISE 76 were held back-to-back in different hotels. Unfortunately, different fees were charged for registration that made it impossible to have reciprocity of badges between the two meetings. Those conferees interested in attending both meetings were not happy because of the additional fees required; thus, there was little cooperation or interaction during these meetings. Fortunately, those early problems have been corrected and ASA and INCE/USA have had three fruitful joint meetings within the last decade: 1997 in State College; 2000 in Newport Beach; and 2005 in Minneapolis. In 2006, the 152nd Meeting of the ASA will be held back-to-back with INTER-NOISE 06 in Honolulu; both meetings are co-sponsored with the Acoustical Society of Japan and INCE/Japan, respectively.

Clearly, there are on-going efforts to continue holding joint meetings. We should strive to have two joint meetings per decade. A joint meeting is one of the

best ways to bring our members together for professional collaboration and social interactions. Joint meetings strengthen the ties between the Technical Council of ASA and the Technical Activities Board of INCE/USA because it is the members of these groups that suggest and organize the technical sessions of the meetings. The executive branches of ASA and INCE/USA must develop and refine the policy for holding joint meetings, including a master "memorandum of understanding" that can be used (with appropriate modifications) for each succeeding meeting. Key elements of the policy would include the selection of venues, dates, and chairs, hotel negotiations, financial management, short courses, seminars, manufacturer's exposition, social events, and management of printed materials including programs, proceedings, and CDs.

USA Noise Policy

The National Academy of Engineering (NAE) has initiated a project to collect and analyze data from government and private-sector sources on the impact of noise on the quality of life, on the current state of noise control technology, the role of noise control technology in international competitiveness, and the implications of all of the above on noise policy. The study is expected to develop recommendations for public- and private-sector action to reduce the adverse effects of noise. The development and execution of the NAE noise initiative is being undertaken in two distinct steps: (1) a project initiation (planning) workshop was convened on 13-15 September 2005; a prospectus for a consensus study has since been prepared and approved. (2) The consensus study will be conducted over a 30-month period of time by the NAE staff and an appointed committee made up of experts from several areas of acoustics and noise control. It will involve a variety of fact-finding activities such as additional workshops, background research, commissioned papers, and informal interviews. All of this will lead to the issuing of a consensus report with specific findings and recommendations for a follow-on implementation effort. This important project will involve many individuals from ASA, INCE/USA, and

other professional societies, e.g., the Society of Automotive Engineers (SAE), the American Institute of Aeronautics and Astronautics (AIAA), the American Industrial Hygiene Association (AIHA), and others. The teaming will surely be an opportunity for strong collaboration between ASA and INCE/USA, but it will also provide an opportunity for *outreach* to other professional organizations that deal with some aspect of acoustics or noise. The important end result of this teaming will be a possible new National noise policy that will replace the presently ineffective Noise Control Act of 1972.

Following this NAE consensus study, additional policies may need to be developed at the state and municipal levels because there are different needs. Again, ASA and INCE/USA acoustical experts should participate in these policy developments.

International activities

Over the years, the ASA and INCE/USA have encouraged growth internationally in both acoustics and noise control engineering. Our organi-

zations have contributed substantially to the International Commission on Acoustics, to International Congresses on Acoustics, and to International INCE; these are organizations that facilitate international cooperation. Most of the world's leading acoustical and noise control organizations are now members of I-INCE that promotes the annual INTER-NOISE series of conferences.

Over the past few years there has been an initiative within I-INCE to define, and promote the implementation of, a global noise control policy.⁸ The policy concentrates on three major areas: (1) occupational noise, (2) community and environmental noise, and (3) consumer product noise. It suggests that individual professional organizations help their respective governments establish local noise policies and regulations, while the international bodies should provide standards and criteria by which to evaluate the noises of concern. Many members of the ASA and INCE/USA have contributed significantly to this effort, and it is clear that their cooperative leadership role in this

crucial area will continue. More and more of our members will likely become involved in these types of activities as both the USA and global noise policies evolve and become legally enforceable. It is important that the Executive Council of ASA and the Board of Directors of INCE/USA continue to support this involvement by creating new, or maintaining existing, working groups and committees to work with the international community.

Publications

The present Agreement⁴ notes that INCE/USA and International INCE (I-INCE) jointly publish *NNI*, the magazine that replaced *Noise/News* in 1993. Although ASA has no financial obligation to *NNI*, it has agreed to provide information that may be published in it. Such information might include the list of the titles of recent *JASA* articles related to noise, news on standards, occasional publication of noise-related articles from *JASA*, meeting information, and other noise-related news of the ASA. As a member benefit, *NNI* is

VERY LOW-NOISE

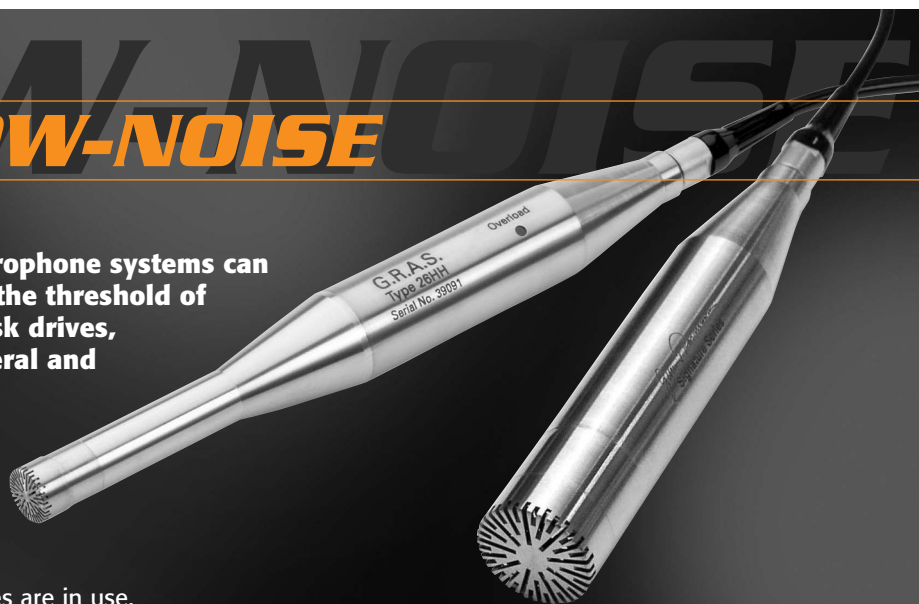
G.R.A.S. Low-noise level microphone systems can measure noise levels below the threshold of human hearing, e.g. from disk drives, computer equipment in general and in quiet rooms.

A quiet location can easily be subjected to intrusive noise when many otherwise "inaudible" devices are in use.

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Type 40HH has a dynamic range from 6.5 dBA to 113 dB (-8 dB 1/3-oct.) re. 20 μ Pa over a frequency range from 10 Hz to 16 kHz \pm 2 dB
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distributed (at a nominal cost to ASA) to those ASA members whose first interest is in noise but who are not members of INCE/USA.

As the two organizations prepare a new agreement of cooperation, it is important that the respective Editors of *JASA*, *NCEJ*, *NNI*, and *Acoustics Today* (*AT*) collaborate in preparing statements of mutual concern in the publications arena. It is very likely that *JASA* and *NCEJ* will remain independent of each other because their respective charters and readership. On the other hand, *NNI* and *AT* may share several areas of common interest. As noted in the previous paragraph, there is specific information that is to be provided by ASA for publication in *NNI*. It is recommended that such directives become reciprocal in the next iteration of the Agreement, e.g., *AT* could publish certain INCE/USA news items that would be of interest to ASA readers.

Hearing conservation

A final area of collaboration between ASA and INCE/USA is in the general area of hearing conservation. Some of the ASA members whose primary interests are in noise, physiology, psychology, and speech are deeply concerned about hearing loss due to acoustic phenomena. There are likewise many INCE/USA members who share this concern. One forum where collaboration might be enhanced is by way of representation on the Council for Accreditation in Occupational Hearing Conservation (CAOHC). This Council was organized to elevate and maintain the quality of occupational hearing conservation, to establish and implement standards, and to certify those who meet those standards. Although INCE/USA is one of the nine component professional organizations that make up CAOHC, the ASA is not. Because the two current CAOHC representatives from INCE/USA are also members of ASA, a degree of collaboration is presumably in place. Another forum for collaboration is during future joint meetings of the ASA and INCE/USA. It would be desirable to have the Technical Committees on Noise, Speech Communication, and Psychological and Physiological Acoustics sponsor joint sessions with any of several INCE/USA Technical Committees that are concerned with the effects of noise on mankind.

Summary

Since its founding, the ASA has experienced on three different occasions a migration of some of its membership to form new professional organizations. In the 1950s, the IEEE Signal Processing Society and the Audio Engineering Society started as spin-offs from the ASA. In 1971, INCE/USA was formed by a group of ASA members seeking professionalism in the new field of noise control engineering. Of these three new organizations, it has only been INCE/USA that has maintained a close working relationship with ASA. The two organizations work together in supporting the development of acoustics and noise standards, in international and national noise policy development, in the holding of joint meetings, and in the sharing of information in their publications. These and other areas of synergy exist because of the common goals of both organizations to increase and advance the knowledge of, attain professional excellence in, and meet the needs and

concerns of the general public and governmental bodies in a multitude of issues related to acoustics and noise control. This cooperation will surely continue into the distant future.**AT**

Acknowledgments

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References for further reading

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