FRANK H. BRITTAIN

EDUCATION: B.S., Mechanical Engineering
University of Colorado, 1960

M.S., Theoretical and Applied Mechanics
University of Illinois, 1961

Ph.D., Theoretical and Applied Mechanics
University of Illinois, 1965

SUMMARY: 36 Years: Supervision, project management, program development, and solving complex interdisciplinary problems. Technical expertise includes noise and vibration control, measurement and instrumentation, field testing, architectural acoustics, environmental noise, computer applications, mechanical design, and teaching.

EXPERIENCE:

1994 - Present: Principal Noise Control Engineer. Dr. Brittain is responsible for measurement, prediction, evaluation, and control of noise and vibration. He has supervised or performed this work on over 200 projects, including 32 fossil fueled, 26 combustion turbine, 29 nuclear, 8 alternative fueled, and 4 hydroelectric power plants. He also provides noise control for pipelines, manufacturing plants, compressor stations, wastewater treatment plants, refineries, community facilities, laboratories, solid waste plants, office buildings, mining facilities, pipelines, production facilities, LNG plants, and airports. He also has extensive experience in supporting proposals, project development, risk assessment. and supporting cost estimating,.

During the design stage, Dr. Brittain defines the scope of work, selects noise criteria, and determines the extent of controls needed, and selects controls to meet the criteria. These controls are carefully evaluated for practicality and integrated into the facility design, including equipment specification, plant layout, insulation, and equipment maintainability. For operating plants, he is responsible for diagnostic measurements and retrofit solutions to noise and vibration problems. He is also responsible for environmental noise and architectural acoustics.

Dr. Brittain's recent projects include designing power plants to meet stringent noise limits, reducing installed costs for a combustion turbine exhaust silencer by $1 million, monitoring contractor's noise control for a utility plant as the owner's engineer, working with vendors to develop state-of-the-art ultra-low pressure-drop silencers for power plants, designing innovative controls to reduce low-frequency flow-induced vibration of a refinery flare header in India, reducing noise control cost of an outdoor power plant by more than $2 million, coordinating the noise control of all contractors for a major clean fuels expansion of a refinery, developing noise prediction models for refinery and LNG units and drawing noise contours, developing controls for piping noise, making measurements to verify power plants and refineries met their noise limits, retrofit silencing of a steam bypass line at two combined cycle-power plants, develop state-of-the-art retrofit control of noise from a diesel generator located in a hotel, and retrofit control of valve and piping noise for a gas plant.

1979 - 1994: Supervisor, Noise Control Engineering. Dr. Brittain was responsible for supervising measurement, prediction, evaluation, and control of noise and vibration. His projects included making noise and acoustic intensity measurements and controlling 29 noise sources at a compressor station, supporting environmental assessment and licensing for adding combined-cycle capacity to an existing simple-cycle power plant, predicting noise levels from power plants and refinery units, making measurements and calculations that demonstrated regulatory compliance of refinery units when measured levels exceeded allowable limits, designing a combined-cycle power plant in England to meet stringent noise limits, modal testing and designing additional pipe supports for reciprocating compressor piping, identifying and rank-ordering noise sources for an existing diesel power plant on Taiwan, predicting noise for integrated coal gasification and pulverized coal power plants, evaluating trade-offs between control of existing sources and a new expander train for a refinery, measuring noise and vibration to determine sources and transmission paths of community noise from ID fans, and working with regulatory officials to establish criteria for a trash-burning power plant, redesigning ID fan's cutoff bar to reduce noise, controlling construction and ventilation system noise for an underground wastewater treatment plant, measuring noise and selecting retrofit controls for community noise from HVAC ductwork and a chiller on a medical office building, designing a laboratory next to a runway to achieve acceptable interior noise levels, designing offices for acoustical privacy, and supervising high-technology consultants in pulsation and structural analysis for reciprocating compressor piping.

1976 - 1979: Supervisor of Noise and Testing, Dr. Brittain supervised structural testing, vibration, and instrumentation activities. Structural testing included structural dynamics and equipment tests. Vibration and instrumentation included performing NRC-mandated pipe dynamic and water-hammer tests, measuring mechanical vibrations, and consulting on instrumentation. His projects were to develop a new state-of-the-art noise control in power plants, write software and debug hardware for a digital noise monitor, measure vibration transmissibility to obtain design data, develop noise controls for a circulating fluidized bed power plant, manage development of computer programs to predict noise, write power plant startup procedures, measure and design safety valve installation to reduce vibration of power plant piping, and architectural acoustics for two international airports in Saudi Arabia.

1972 - 1976: Supervisor, Environmental Noise, in the Environmental Services Department. Dr. Brittain was responsible for measurement, prediction, and control of environmental noise. His responsibilities included technical support for a court case, long-term monitoring of construction noise, designing retrofit noise control for structure-borne noise from a transformer in the top floor of an office building, predicting and controlling construction equipment and site noise, measure ambient noise levels, and write noise provisions for environmental impact reports.

1964 - 1972: Iowa State University – As an Assistant Professor of Engineering Mechanics, he developed courses in Engineering Acoustics, and taught Mechanical Vibrations, Advanced Strength of Materials, Dynamics, and Fluid Mechanics. His research included a simple method for measuring transmission loss, preventing wind damage to mobile homes, and dispersion of stress waves in elastic rods. His consulting included noise measurement and control.

PROFESSIONAL DATA:

Dr. Brittain is a member of the Acoustical Society of America, Sigma Xi, Institute of Noise Control Engineers, and a former member of committee E-33 on Environmental Acoustics of American Society of Testing and Materials. He is a member of ISO and ASME working groups writing standards. He was also a Ford Foundation Fellow. He has authored over 30 presentations and papers, including 14 invited papers to national meetings of technical societies on measurement, instrumentation, and noise control. He has recently organized three special sessions on power plant noise.