and S. Raciti presented an extensive survey article on the recent advances in vibration and buckling of laminated beams and plates. A reexamination of some of the unsolved nonlinear vibration problems of composite material cylindrical shells was studied by Drs. Y. Hirano and J. R. Vinson. Dr. R. L. Citerley examined the imperfection sensitivity of composite cylinder shells using the PVRCK computer program. Finally, Dr. C. C. Chang, R. S. Sandhu, R. L. Sierakowski, and W. E. Wolfe examined free-edge delamination using the finite element method.

In the micromechanics and failure category, Drs. A. K. Roy and S. W. Tsai studied the design of "thick" composite cylinders for maximizing the burst pressure. Drs. R. R. Arnold and J. C. Parekh examined the theoretical prediction of ultimate strength of composite curved frame members. A nonlinear constitutive model for metal matrix composites was presented by Drs. H. Murakami and G. A. Hegemier. Professor J. J. Engblom studied the effects of damage due to transverse cracking at the layer level as opposed to the laminate level. An optical method for the nondestructive evaluation of damage in composites was presented by Drs. F. Bremand, J. A. Smith, and C. P. Burger.

David Hui

Thomas J. Kozik

Performance and Evaluation of Light Water Reactor Pressure Vessels, ASME Special Publication PVP-Vol. 119, ASME, New York, 1987.

The unique importance of reactor pressure vessel integrity has been recognized throughout three decades of commercial nuclear power development in the United States. Initially, the industry sought high reliability in pressure vessels through careful attention to design, materials selection, and fabrication. A few changes and improvements were made in later vessels, in response to service experience and results of parallel research and development. However, operating experience with all reactor pressure vessels has been very good, to the credit of their designers and manufacturers. Today there is keen interest, for economic reasons, in extending the useful service life of these vessels.

The objective of this Symposium was to review a variety of subjects pertaining to the reliability and fitness-for-service evaluation of reactor pressure vessels. These invited papers are intended to summarize the current technology and the experience base which presently support long-term operation of pressure vessels now in service.

The papers can be fit broadly into three categories. They provide first, a background of historical practice and experience; second, a review of possible cause of in-service damage or degradation; and third, a discussion of techniques for evaluating the current condition of the vessel.

An introductory paper by Stahlkopf et al. reviews past practice and progressive developments in materials and fabrication. Papers by Gordon et al. and by Bamford et al. review service and integrity issues for BWR and PWR vessels, respectively.

Four papers deal with potential in-service damage mechanisms. Irradiation embrittlement, discussed by Odette, is a well-known problem for which control measures are in place. The general subject of corrosion-assisted cracking, discussed by Ford, has been a focus of recent research because it can accelerate fatigue damage processes. Van Der Sluys and Cullen discuss fatigue crack growth data more specifically. Finally, Gosselin and Siegel discuss fatigue damage in the context of ASME III design criteria for nuclear pressure vessels, but taking into account differences between actual service conditions and design conditions.

A third group of four papers describes means for acquiring information on the present condition of the reactor pressure vessel for use in fitness-for-service evaluations. Papers on in-service flaw detection (Willetts and Ammirato) and flaw evaluation (Riccardella et al.) discuss implementation of ASME XI requirements for in-service inspection. Gamble, et al. present specific criteria for evaluating fitness-for-service following an unanticipated event. Finally, Jaske describes techniques for damage assessment using results of metallurgical examinations.

Ravi Rungta
Battelle Columbus Division

Joe D. Gilman
Electric Power Research Institute

Warren H. Bamford
Westinghouse

Seismic Engineering, ASME Special Publication PVP-Vol. 127, ASME, New York, 1987.

The National Congress on Pressure Vessel and Piping Technology is sponsored soley by the Pressure Vessels and Piping Division with invited participation by other ASME Divisions. Responding to the conference theme of "Pressure Boundary Integrity in an Earthquake," the sponsoring committees developed some 17 sessions on seismic engineering. In assembling the papers presented in the sessions into this special volume, it was decided, in general, that each chapter should retain the same thematic topic as the session or symposium in which the papers were originally presented. Thus, the objectives of the session/symposium organizers were preserved in the publication in the original format. Each of the session/symposium organizers were also invited to provide a chapter introduction which outlines the special interest of his session or symposium.

The chapters in this volume deal with a wide spectrum of earthquake topics. Recognizing that there is a great deal of international interest in seismic engineering, T. H. Liu organized an International Symposium to present new concepts from other countries. He also developed the chapter on Advanced Methods which evaluate traditional conservatism and which review new and more realistic methods in design. Such realistic approach in concept is further pursued by Pei-Ying Chen and A. G. Ware. The papers presented in their symposium on Pipe Damping and System Behavior at High Strains disseminate new data relating to the important issue of damping values for use in the seismic design and analysis of nuclear power plants. These papers will help to definitize ASME Code Case N-411. The dynamic response of piping systems in industrial applications is covered by the papers in S. Mirza's chapter on Pipeline Dynamics. The effects of ground motion on liquid storage tanks are reviewed by the papers on D. C. Ma's chapter on Seismic Response of Liquid Storage Tanks and Piping Systems. A well-known method to attenuate the effects of seismic excitation by isolation is thoroughly explored by Howard Chung in his chapter on Seismic, Shock and Vibration Isolation. The papers in his chapter cover

