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ASME Non-Destructive Examination (ANDE) Personnel Certification Program

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Business Plan Review

- Problem statement
- Program summary
  - Credential transfer summary
- Program development outline
- Finances

Problem Statement

- Declining supply of a qualified workforce
- Increasing workforce performance concerns
- Increasing demand due to aging plants and planned new construction
- Inconsistent/non-transportable owner qualification and certification
- The need for an effective central NDE personnel certification program extends beyond nuclear in-service inspection (Section XI) to new nuclear construction and fabrication (Section III), other industries (Section VIII), and internationally

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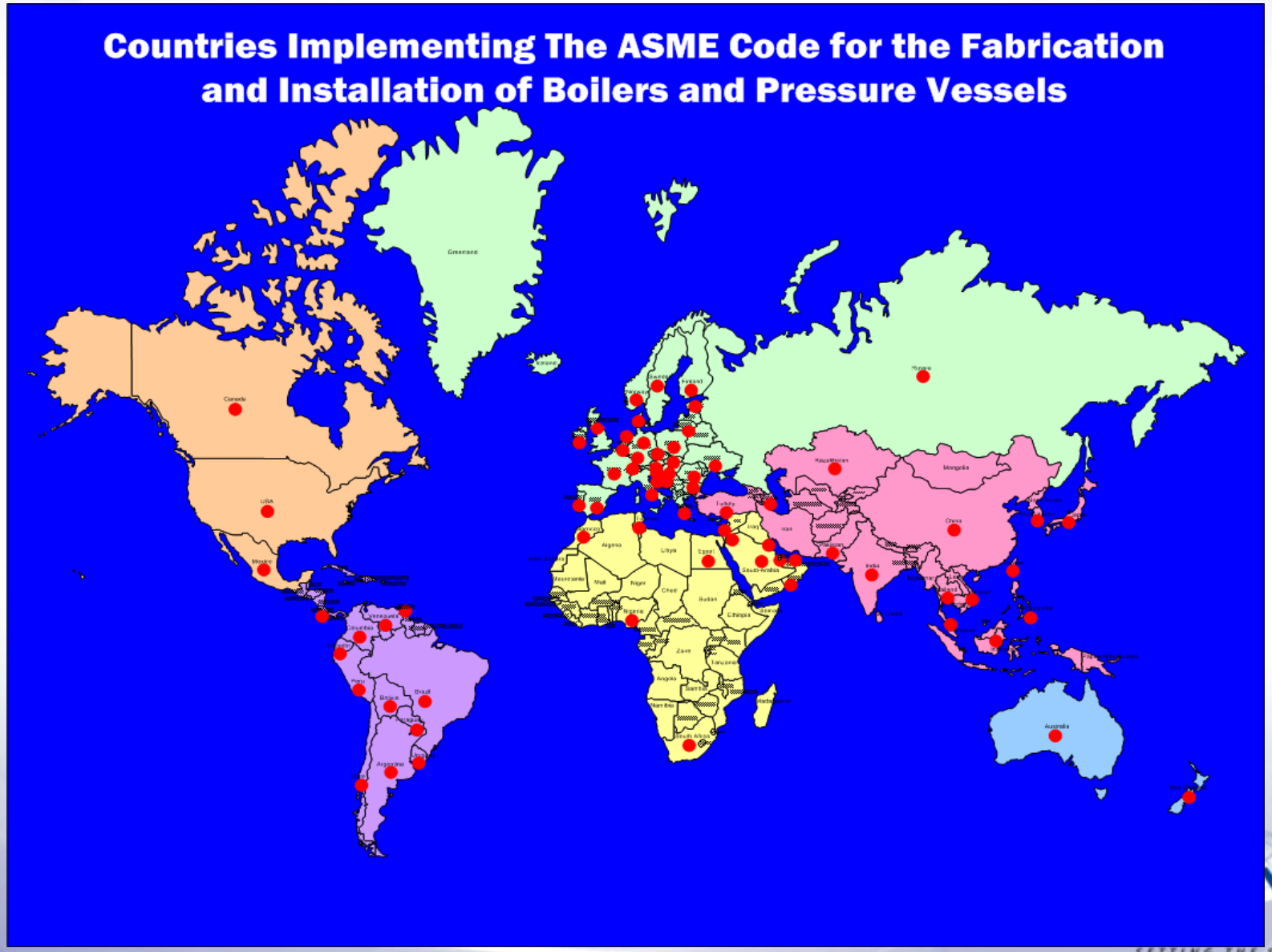
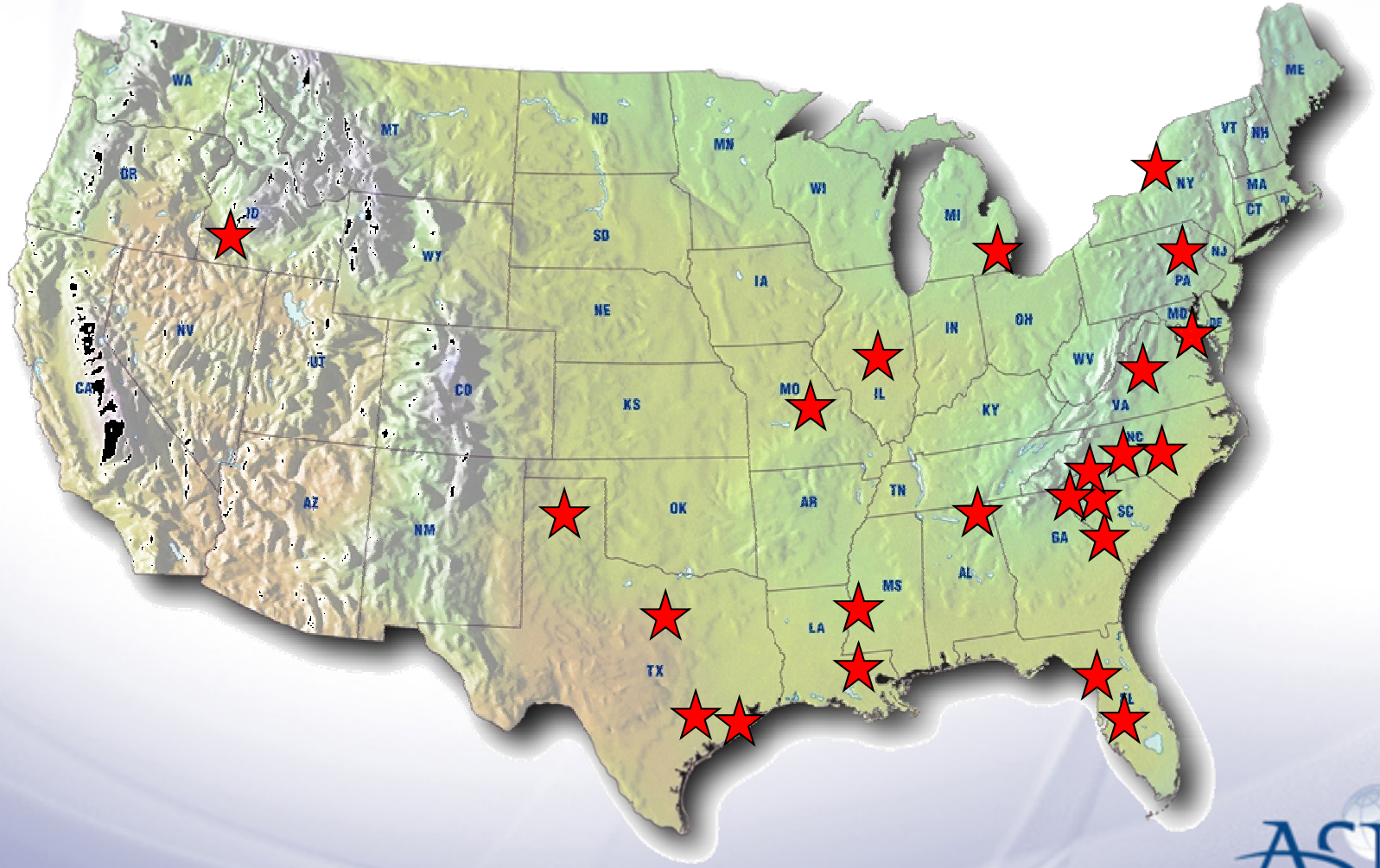
International Market



Potential New Nuclear Plants



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Program Summary

- Program features will be consistent with personnel certification best practices
- Intended applicable to Nuclear inservice inspection, new nuclear construction, other industries (e.g., petrochemical), and internationally
- Will comply with Third Party NDE Certification Organization requirements of draft Section XI code case
- Will apply applicable requirements of NQA-1 to the program
- New criteria document to be developed as alternate to ASNT CP-189 or SNT-TC-1A
- Provisions for Credential Transfer

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Credential Transfer

- There will be a procedure and acceptance criteria for allowing Credential Transfer
  - Establish and preserve the integrity of the ANDE program
  - Will apply to qualified individuals previously certified under other acceptable programs
  - Applications for Credential Transfer will be accepted for 1 year
  - Transferred certification will be good for a 3 year transition period
  - Full recertification per the ANDE program will be required following the transition period

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Program Development Outline

- Develop new criteria standard
  - Form new NDE personnel certification committee
  - Invite stakeholders to participate
  - Once developed, promote adoption of the new criteria document in relevant ASME B&PVC sections
  - This activity will utilize volunteer ASME committees and may begin prior to funding availability
- Develop written exam question banks
  - Draft exam questions and answers
  - Engage psychometrician
  - Validate and cross-validate exam question banks
- Develop practical examination
  - Develop detailed practical examination requirements
  - Create a secure inventory of practical/demonstration test specimens
  - Designate and staff central facilities for administration of practical examination; consider partnerships with existing facilities
  - Develop capabilities for site-specific administration
- Establish host certification body
  - Propose forming new Limited Liability Company (LLC)
  - Develop program management system, procedures and processes
  - Develop online resources

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Finances

- Funding will be required for expedited program development
  - Develop program/administrative procedures
  - Populate question data banks/psychometrics
  - Practical/demonstration specimens
  - Review/validation by subject matter experts
- Financials estimated:
  - Program development costs
  - Annual operations: self-sustaining through certification fees
- Funding:
  - Pursuing grants (NSF and NRC)
  - Utility/Vendor contributions

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Central Certification advantages and cost improvement versus individual employer programs:

Central Certification:	Individual Employer Certification:
One central program audit	Individual program audits by ANI/QA/etc
One exam/transportable cert	Exam and recert for each new employer
Single exam data base	Exams maintained by each employer
Standard level of difficulty	No standard of difficulty
Single depository of records	Redundant maintenance of records
Ability to address certification of new technology industry wide, e.g., Phased Array, etc.	Ineffective, nonstandard, slow, reluctant development of new certifications
No need to review certification procedures	Multiple redundant utility review each outage season
No need to review vendor personnel qualification and certification documentation	Multiple redundant utility review each outage season
No need for ANIs to review these documents each outage	ANI review of these docs each outage
No need for NRC to review these documents each outage	NRC review of these docs each outage
No need to assemble individual qual/cert documentation for NIS-1 post outage (90 day) NRC reports	All certs and procedures assembled each outage for NIS-1 submittal to NRC
Ability for feedback and continuous improvement	No way to evaluate & provide feedback

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Performance Indicators

- Introduction of Intergranular Stress Corrosion Cracking (IGSCC) in 1982 at Nine Mile Point (19% first attempt/50% recert pass rate for EPRI exams)
- Thermo Fatigue Cracking in Steam Generator Feed Water Nozzles in Late 1980's and Early 1990's

  (IGSCC qual. examiners miss called flaws, welds eventually failed)
- Primary Water Stress Corrosion Cracking in Steam Generator Tubing 1980's early 1990's

  (NEI 9706 required ET Qualified Data Analyst (QDA), a real success story-issues/weaknesses addressed resulting in sustained high performance
- Implementation of ASME Section XI, Appendix 8/Performance Demonstration Initiative (PDI) in 1999 (50% first attempt pass rate)
- Stress Corrosion Cracking in Alloy 600/82/182 Materials Starting in Early 2000-NDE Human Performance Issues (V C Summer, Susquehanna, DC Cook, Millstone, Farley, Pilgrim, Duane Arnold, Crystal River)
- Miss called flaws on St Lucie Pressurizer in spring of 2008 almost caused an 8 unit shut down by the NRC (See NEI Overview Weekly Report March 3, 2008)
- Spring 2010 miss called flaws at Calvert Cliffs cost the utility $1M in outage extension and contingency (CNO Maria Korsnick reported at EPRI NDE Conf.)
- 30 years of round robin studies show need for improved training , experience and examination process for evaluating knowledge and skills

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Technical Update 1016969 - Nondestructive Evaluation: A Review of NDE Performance Demonstration- NDE Round Robin Report http://mydocs.epri.com/docs/public/000000000001016969.pdf The report included national, international, and military studies with the common conclusion, “that is, the pass rates obtained by experienced certified personnel is very rarely above 50% on their first attempt at passing a demonstration test that simulates the examination that they conduct in the field”.

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