

Year Topic intro'd	Origin of Topic	Sponsoring Org Task ID	Research Project/Topic	Potential Applications	CHAMPION [Name (SDO)]	Standards Use	Regulatory Use	NRC Rep.	Current activity	Recommendations	Other Supporting References	Status
2016	EPRI	2015-10	Mass Concrete Modeling & Temperature Control	Reinforced concrete structure of material defined as mass concrete	ASME/ Javeed Munshi (BPV III-2) Joshua Zhang (BPV III-2)	ACI 301		ACI or AISC SDO Coordinator	Research on NPP Basemat modeling (structural modeling of NI basemat mass concrete) considering the primary loads (static load, seismic load), and secondary loads (thermal / temperature load during operation etc.) has been conducted by SNERDI, it related more to structural design-analysis rather than material design and applications. A related research paper has published in ICONE 26	TBD		Working on Standard/Coalition Development
2016	EPRI	2014-06	Thick Section Component Welding		BPV III SG MFE Paul Donavin Steve Hunter Bob Jessee Brian Frew (ASME)			ASME SDO Coordinator (Kamal)	The project is currently under development at EPRI and will be presented to ASME when it is ready for action.			Working on Standard/Coalition Development
2016	EPRI	2014-08	Advanced Battery Evaluation for 1E Service Qualification	LTO	IEEE	IEEE 535	RG 1.158, RG 1.206, RG 1.212	Lilianan Ramadan RES/DE/ICEEB				Working on Standard/Coalition Development
2016	EPRI	2015-09	Seismic High Frequency Loadings	Seismic analyses for structures and equipment anchoring	IEEE	IEEE 344 ASCE 4, 43	NUREG-0800 RG1.100	Tom Koshy Jim Xu (ASCE member)				Working on Standard/Coalition Development
2016	EPRI	2015-04	Demonstration of Self-Consolidating Concrete (SCC) and SCC Structural Members	Reinforced concrete structures	Javeed Munshi BPV III, Division 2 (ASME)	ASME ACI 349	RG 1.107	George Thomas NRO/DEI	TBD		http://www.google.com/patents/WO2016187482A1?cl=en	Working on Standard/Coalition Development
2016	EPRI	2015-03	Environmentally Assisted Fatigue – Long-Term Collaboration and Testing	LTO, Piping systems	Keith Wight Charles Bruny (BPV III WG EE or WG EFEM) (ASME)	ASME III	NUREG-6720, NUREG/CR-6909, RG 1.207	Rob Tregoning RES/DE	The EPRI roadmap & gap reports highlighted plant representative 'component feature' and loading tests as a priority. PVP2017-65995 outlines the collaboration ongoing. An EPRI 'RFP' was issued July 2017 and a number of organisations have responded or expressed interest. Awaiting EPRI selection.	Testing enables benchmarking of a variety of methods & quantification of margin.		Working on Standard/Coalition Development
2016	EPRI	2013-03	PWSCC Initiation Testing for Alloy 690 Weld Metals	Piping system DM welds, Upper head, Lower Head, Pressurizer	Robin Dyle (ASME)	ASME Sec XI CC N-770-1, N-722-1, N-729-1	10 CFR 50.55a(g)(6)(ii)(D), (E), and (F)	ASME Section XI SDO Coordinator Raj Iyengar RES/DE/CIB	EPRI has work looking at Alloy 600 and 690 cracking issues. Currently an expert panel is developing crack growth rate models.			Working on Standard/Coalition Development
2016	EPRI	2014-02	Elimination of Dissimilar Metal Welds (DMWs)	Piping systems	BPV III SG MFE Paul Donavin Steve Hunter Bob Jessee Brian Frew (ASME)			ASME SDO Coordinator	The project is currently under development at EPRI and will be presented to ASME when it is ready for action.			Under development
2016	EPRI	2013-*1	Powder Metallurgy and Hot Isostatic Processing Methods	AM	BPV II TG on Hot Isostatically-Pressed Components 1: Keith Hottle 2: Annemarie Appleton	ASTM B834-13 ASME Sec II: A988-11 & A989-11, CC N-834	Appendix 5	Amy Hull or ASME SDO Coordinator	ASME Section II Part D, mandatory Appendix 5 has been approved for the 2019 Edition to include HIP powder components as an additional processing option to wrought and cast. The revision includes the requisite controls that need to be in place in the ASME SA/SB specifications/ code case to ensure the quality and integrity of the HIP components. Based on the collection of these controls, BPV II's default position	Adopt the new versions of A988, A989, B834 as SA-988, SA-989, and SB-834. BPV II Task Group to remain in place to address new alloy families as necessary. Acquire data for HIP components in the time-dependent range.		Under development
2016	EPRI	2015-06	Alloy Code Development for Powder Metallurgy	PM-HIP	BPV II TG on Hot Isostatically-Pressed Components 1: Keith Hottle 2: Annemarie Appleton (ASME)	ASTM B834-13 ASME Sec II: A988-11 & A989-11, CC N-834		Amy Hull or ASME SDO Coordinator	Same activity as 2013-*1			Under development

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2016	EPRI	2013-07	Residual Stress (RS) Guidelines		Charles Kim (ASME)	ASME Section III		Raj Iyengar Mike Benson RES/DE/CIB	3 Related records for revisions to BPV III Subsections NB, NC, ND and NG: Record 12-1461 is a Code revision to differentiate between peening for distortion vs peening to introduce compressive residual stresses. Board approved in 8/2017, for inclusion in 2019 Edition. Record 14-764 will clarify existing Code words through a Code revision to improve practices regarding ASME's limited use of UTS/UTS Special			Under development	
2016	EPRI	2015-05	Additive Manufacturing of Net Shape Powder Metallurgy Cans for Valves	AM, PM-HIP	George B. Rawls Jr. (2nd: Keith Hottle and Annemarie Appleton) (ASME)	ASTM B834-13 ASME Sec II: A988-11 & A989-11, CC N-834		Amy Hull or ASME SDO Coordinator	ASME has formed a new BPV UTS/UTS Special Committee on Use of Additive Manufacturing for Pressure Retaining Equipment. Its first meeting was in August. The standards to be considered first are: - AWS D20.1, Standard for Fabrication of Metal Components using Additive Manufacturing - ASTM F3184-16 Standard Specification for Additive Manufacturing Stainless Steel Alloy (UNS S31603)			Under development	
2016	EPRI	2016-06	Advanced Manufacturing Program	AM, PM-HIP	George B. Rawls Jr. (2nd: Keith Hottle and Annemarie Appleton) (ASME)	ASME Section II, III, and IX		Amy Hull or ASME SDO Coordinator	BPV UTS/UTS Special Committee on Use of Additive Manufacturing for Pressure Equipment was appointed and approved to proceed with the following charter at the June 7, 2014 BPTCS Meeting. To develop a technical baseline to support development of a proposed BPTCS standard or guideline addressing the pressure integrity governing the construction of pressure retaining equipment by	Current work performed under Record 17-601 to include hot isostatically pressed powder into Section II, App. 5 is being reviewed - AM Committee will develop a white paper on what changes/expansions are needed to Section II, App. 5 for controls to powder bed fusion AM materials. Material grade 316 will be used as a test case		Under development	
2016	EPRI	2012-06	High Strength Reinforced Rebar	Reinforced concrete structures	Javeed Munshi Namho Lee (ASME w/ACI)	ACI 318, ACI 349	RG 1.35.1, RG 1.69, RG 1.136, RG 1.142, RG 1.143, RG 1.199	Dogan Seber RES/DE/SGSEB	BPV III-2 is currently working on a code revision to allow the use of ASTM 615 Grades 75 and 80 and ASTM A706 Grade 80 reinforcement for containment structure construction. Currently out for approval by the SG. Once approved it will proceed to BPV III Standards Committee and ACI TAC.			TBD	Under development
2016	EPRI	2010-11	Methodology for Risk Informed Strategies		P. Kadambi & B. Budnitz (ANS) Rick Grantom (ASME) JCNRM	SME/ANS PRA Standard Parts 1 - 10, Level 2 PRA Standard, Non LWRs PRA Standard	RG 1.200, RG 1.174, RG 1.177, 10CFR50.65, 10CFR50.69, Reactor Oversight Program/Significance Determination Process (ROP/SDP), Low Power/Shutdown Risk Assessment	Mary Druoin, RES, SDO Coordinator for Risk	PRA Standards for current and proposed nuclear power plants have been published and are used to support major risk informed applications. PRA Standards cover all nuclear power plant operating modes. Additional risk informed Standards/strategies to improve safety and efficiencies actively being pursued. (from NESCC, other potential areas: 1. Safety classifications of systems, structures and components (SSCs) 2. Reliability Assurance Program (RAP) 3. Risk terminology 4. Target Reliabilities	Support consensus and regulatory acceptance of proposed risk informed strategies/applications enabled by future Standards publications		Under development	
2016	Non-EPRI		ASME Code Case N-860 Examination Requirements and Acceptance Standards for Spent Nuclear Fuel Storage and Transportation Containment Systems		Ken Hunter (ASME)			One of the ANS Committees - look for the NRC rep on the appropriate committee	work under development by the task group on Spent Nuclear Fuel Storage and Transportation Containment Systems (BPV XI) EPRI guidance has been considered Inspection flowchart to support the code case has been through several comment cycles and expected to be approved by the end of this year.			Draft code case will be finalized upon approval of inspection flowchart.	Under development
2016	EPRI	2014-03	ASME Code Acceptance of HDPE	HDPE Piping, Class 3 SR	Tim Adams Matt Brandes Thomas Musto Phil Rush (ASME)	ASME Sec III Appx XXVI; CC N-755-2	50.55(a)	Dave Alley NRR/DE/ENPB Mike Benson RES/DE/CIB	PE Pipe testing is done There is a Section XI effort on acceptable flaw size ASME Section III Appendix XXVI was published in 2015 to incorporate CC N-755-2 into a mandatory appendix. Additions to 2017 Edition of Appendix XXVI to include alternative materials, acceptance criteria and update the hydro test requirements.	Awaiting 50.55(a) on 2015 Code		Under development	
2016	EPRI	2014-01	Reactor Coolant Radiological Source Terms for Normal Operation	RCS	ANS	ANS 18.1							Need SDO Champion
2017	EPRI		Investigation of New Residual Stress Mitigation Techniques	Piping systems		ASME Section III, IX, and XI		ASME SDO Coordinator					Need SDO Champion
2017	EPRI		Innovative Manufacturing Process for Nuclear Power Plant Components via Powder Metallurgy and Hot Isostatic Processing Methods: Manufacture of a Steam Separator Inlet Swirler	Components		BPV II, III		Amy Hull or ASME SDO Coordinator					Need SDO Champion

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2017	EPRI		Program on Technology Innovation: Innovative Manufacturing Process for Nuclear Power Plant Components Through Powder Metallurgy-Hot Isostatic Processing	Components		BPV II, III		Amy Hull or ASME SDO Coordinator				Need SDO Champion
2017	EPRI		Advanced Nuclear Technology: Risk-Informed In-Service Inspection/Risk-Informed Break Exclusion Region Results for First Site	Piping and components		BPV XI, RA		ASME SDO Coordinator				Need SDO Champion
2017	EPRI		High-Density Polyethylene Flaw Development, Sample Fabrication, and Performance Demonstration	Piping systems		BPV III,VI		ASME SDO Coordinator				Need SDO Champion
2017	EPRI		Advanced Nuclear Technology: The Long-Term Oxidative Resistance of Butt Fusion Joints in High-Density Polyethylene Piping	Piping systems		BPV III,VI		ASME SDO Coordinator				Need SDO Champion
2017	EPRI		Applicability of High-Density Polyethylene in Nuclear Piping Systems with Internal Radionuclides	Piping systems		BPV III,VI		ASME SDO Coordinator				Need SDO Champion
2016	EPRI	2009-07	Next Generation Attenuation Model for the Central and Eastern US	Seismic analyses			10CFR50 GI-199	Dogan Seber RES/DE/SGSEB				Need SDO Champion
2016	EPRI	2010-13	Seasonal/Annual Cooling Tower Impacts (SACTI) Model Update	Cooling towers								Need SDO Champion
2016	EPRI	2012-01	Water Chemistry Guidelines for Advanced Light Water Reactors			EPRI Guidelines						Need SDO Champion
2016	EPRI	2012-15	New Steam Generator Thermal-Hydraulics Code (Triton)	SGs				Chris Hoxie, RES				Need SDO Champion
2016	EPRI	2015-01	Real Time NDE for Welding	Piping systems				ASME Section XI SDO Coordinator				Need SDO Champion
2016	EPRI	2015-07	Pre-filming Steam Generator Tubing Evaluation	SGs		EPRI Specification		ASME Section XI SDO Coordinator				Need SDO Champion
2016	EPRI	2015-11	Moisture Tolerant Coatings for Decreasing Open Top Construction Time	Reinforced concrete member requiring coatings				Jose Pires				Need SDO Champion
2016	EPRI	2015-12	PIM Archive and Lessons Learned									Need SDO Champion
2016	EPRI	2016-01	Cyber Security During Construction	Cyber security		NEI-08-09	RG 5.71	Kimberly Lawson-Jenkins, NSIR				Need SDO Champion
2016	EPRI	2016-03	Augmented Reality (AR) Scoping Study for New Plant Applications					NRO				Need SDO Champion

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2017	EPRI	2017-04	A Vertical Response Motion Computation in SSI Analysis of Embedded Structures	Seismic analyses for structures and equipment anchoring			NUREG 0800	Dogan Seber, RES/DE/SGSEB			Bechtel is involved in this EPRI project	Need SDO Champion	
2017	EPRI	2017-06	Ground Motion Kappa Parameter Assessment	Seismic analyses for structures and equipment anchoring			NUREG 0800	Dogan Seber, RES/DE/SGSEB				Need SDO Champion	
2017	EPRI	2017-03	Central and Eastern US Seismic Source Characterization for Nuclear Facilities	Seismic analysys			NUREG 0800	Dogan Seber, RES/DE/SGSEB				Need SDO Champion	
<2016	NESCC		Revise existing standards to consider environmentally-assisted fatigue and Mechanism of crack initiation		ASME/ ASTM E10.02	ASTM E185, E2215, E900 ASME Code Case N-830			ASTM revised standards E185, E2215, & E900 in 2015. ASTM committee E10.02 is developing a standard on thermal ageing. ASME is revising Code Case N-830. ASME License Renewal work - Reactor pressure vessel and low-alloy steels – Work is progressing or assigned - Piping - Work is progressing or assigned - NDE Techniques - Could be considered under ANDE-1			Need SDO Champion	
<2016	NESCC		Consider developing standards that address ASR, Irradiation effects and creep		ACI						In a future NRC Workshop, assemble the "concrete consortium" to update the state of knowledge for such degradation modes as ASR and irradiation and related standards.	Need SDO Champion	
<2016	NESCC		Develop a standard for cables defining acceptable methods to estimate the remaining useful life curves		IEEE	IEEE 323	RG 1.89 RG 1.189	T. Koshy	IEC/IEEE 60780-323 was issued in Feb 2016. NRC has started work to revise RG 1.89 for Rev 3				
<2016	NESCC		Develop standards that use improved NDE methods to better implement Aging Management Programs (AMPs)		ASME/ASTM								
<2016	NESCC		Develop standards that mitigate age related degradation: ASME and AWS qualification weld repair methodologies and IEEE cable rejuvenation		ASME/AWS IEEE								
<2016	NESCC		Review the NESCC Concrete Report		ACI				The ACI representative was asked to write a summary of his comment on concrete research conducted by ACI and efforts to incorporate results into standards. If possible, he was asked to write a brief (~2 page) roadmap on what work still needs to be done and by whom. Status: Circulated the Concrete Report and received little or no feedback. No interest was expressed. Suggests the NRC engage the ACI at its board level, it might get better traction.	ACI Committee proposed no action		No Action	
<2016	NESCC		Review the NESCC Concrete Repair Report		ACI						ACI Committee proposed no action		No Action
<2016	NESCC		Review the NESCC Concrete Piping Report		ASME Sec XI								No Action
<2016	NESCC		Review the NESCC Welding Report		ASME/AWS				NRC offered to review the recommendations in the Welding TG report and decide whether further work on this topic by NESCC is warranted. Additional input may be sought from ASME, AWS, EWI, and EPRI.				
<2016	NESCC		Review the NESCC Cable Report		IEEE								
<2016	NESCC		Address the use of polymer piping at operating plants		ASME Sec XI				ASME Sec XI working on this				Complete

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<2016	NESCC		Address Counterfeit, fraudulent and suspect items (CFSI)							A Dept. of Energy staff member stated that standards improvements related to counterfeit and suspect items (CFSI) are still needed. He was asked to describe the need (beyond ASME NQA-1), and if possible, to draft a roadmap of what needs to be done and by whom. In response DOE issued, "U.S. Government Procurement Anti-Counterfeiting Inter-Agency Working Group, Report to the President of the United States," dated March 6, 2012. Report asks, are federal agencies and industries comfortable to address counterfeiting risk into their procurement regulations? If not, now it is time review procurement requirements and amend if necessary. Specifically, requirements for traceability of procured items, what to do if counterfeit item is received and installed in critical system etc. The author recommends, developing a consensus-based anti-counterfeiting standard in cooperation with industry and National/International Standards Bodies. Currently, suppliers, contractors, subcontractors and the US Government use various terminology and procedures across the anti-counterfeiting spectrum that results in a less than optimal procurement environment.		Need SDO Champion
<2016	NESCC		Address Current Fuel Design				DG 1261 and DG 1262		Commission considering 10 CFR 50.46c rule	No Standards Activities Recommended		On Hold
<2016	NESCC		Accident Tolerant Fuel						The maturity level of this subject is insufficient to develop standards			No Action
<2016	NESCC Fukushima Workshop		Enhanced reactor and containment instrumentation		IEEE	IEEE 497			Project Action Request approved by NPEC on July 19, 2016 for a new standard "Standard for Spent Fuel Pool Instrumentation" • NRC was asked to separate evaluation of beyond design basis earthquake (e.g., North Anna) to a new line in the tracking table. (Topic from a 2012 Workshop on Fukushima Related topics)			Complete
<2016	NESCC		NEI Documents to SDO Standards		All				1. NEI offered guidance on gas accumulation in ECCS systems (NEI 09-10) as a candidate document to be converted to a standard • "Guidelines for effective prevention and management of system gas accumulation" is confirmed for the December 2016 O&M agenda			No Action

ANLWR

2016	EPRI	2015-08	EPZ Size Evaluation	SMRs	ANS		NUREG-0396	NRO	Rulemaking and RG under development			Under development
2016	Non-EPRI		Design standards for High Temperature Gas Reactors	HTGRs	Wallace (ANS) Sam Sham (ASME) BPV III SG HTR, BPV III WG HTGR and BPV III WG HTLR	ANS, ASME III	10CFR50 Appx A, 50.55(a) RG 1.87, RG 1.84	Matt Mitchell, NRO or Bill Reckley	Division 5 rules cover Class A and Class B metallic pressure boundary components and supports, Class SM metallic core support structures, and Class SN nonmetallic core components for high temperature gas-cooled reactors, liquid metal reactors (sodium, lead or lead/bismuth) and molten salt reactors (with liquid or solid fuel). <i>Code actions to optimize Division 5 rules.</i>	Incorporate Section III, Division 5 in 10 CFR 50.55A		Under development
2016	Non-EPRI		Design standards for Liquid Metal Reactors (incl SFR)	LMRs	Flanagan (ANS) Sam Sham (ASME) BPV III SG HTR, BPV III WG HTGR and BPV III WG HTLR	ANS, ASME III	10CFR50 Appx A, RG 1.84	Matt Mitchell, NRO or Jan Mazza	Underway through ASME section III dive 5 for high temp materials and ANS safety standards			Under development

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2016	EPRI	2010-11	Methodology for Risk Informed Strategies		Kadambi (ANS) Bob Budnitz (ANS) Rick Grantom (ASME)	SME/ANS PRA Standard Parts 1 - 10, Level 2 PRA Standard, Non LWRs PRA Standard	RG 1.200, RG 1.174, RG 1.177, 10CFR50.65, 10CFR50.69, Reactor Oversight Program/Significance Determination Process	Bill Reckley, NRO	Underway through licensing modernization project and ASME/ANS non-LWR PRA standard PRA Standards for current and proposed nuclear power plants have been published and are used to support major risk informed applications. PRA Standards cover all nuclear power plant operating plants. Additional risk informed standards/strategies	Support consensus and regulatory acceptance of proposed risk informed strategies/applications enabled by future Standards publications		Under development
2016	EPRI	2015-02	Technology for SMR Staff Optimization	SMRs	IEEE	IEEE	10CFR50 App B	David Desaulniers, NRO	We have updated nureg 0711 for staffing Report is more for awareness than for stds development. EPRI's opinion is that this is not ready yet but the forum should present continued awareness. EPRI would like input from NRC on what items would be useful.			On Hold
2016	EPRI	2015-13	SMR Aerosol Project				RG 1.183	Kevin Hseuch, NRR, is the BC who owns this RG	Not enough to pursue development of standard Email from Mark Blumberg 6/25/2018			No Action
2016	EPRI	2016-02	PM-HIP Manufacturing Demonstration of ALWR and SMR Components	PM-HIP				Amy Hull or ASME SDO Coordinator	emailed Amy H on 6/22			Working on Standard/Coalition Development
2017	non-EPRI		Verification and Validation	New Reactor Designs	ASME	V&V 30		ASME SDO Coordinator				
<2016	NESCC		General SMR research	SMRs	ASME Sec XI				o Work is progressing for Section XI, Division 2 o Code Case for Alternative Examinations for Section XI, Division 3, Using System Based Code o Revision of O&M for SMRs in development (Several O&M Code Cases are also being considered in lieu of a Code change) o New O&M standard for new reactor for safety-significant components in new safety systems with	NRC was asked to provide a summary of standards-related work planned by the SMR Regulators' Forum, for the status table. Status: Topic for future NRC Standards Forum;		
<2016	NESCC		General I&C		IEEE/ASTM				• The ASTM representative offered to provide updated information on nuclear fuel design after the relevant committee meets (1/2017).			