

Nuclear Energy General (NG)

NG-O	Nuclear Energy General Objectives	2011
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Management Systems (1)

NG-T-1.1	Managing Organizational Change in Nuclear Organizations	2014
NG-T-1.2	Establishing a Code of Ethics for Nuclear Operating Organizations	2007
NG-T-1.3	Development and Implementation of a Process Based Management System	2015
NG-T-1.5	Leadership, Human Performance and Internal Communication in Nuclear Emergencies	2018
NG-T-1.6	Management of Nuclear Power Plant Projects	2020

Human Resources (2)

NG-G-2.1	Managing Human Resources in the Field of Nuclear Energy (Rev. 1)	2023
NG-T-2.2	Commissioning of Nuclear Power Plants: Training and Human Resource Considerations	2008
NG-T-2.3	Training and Human Resource Considerations for Nuclear Facility Decommissioning (Rev. 1)	2022
NG-T-2.7	Managing Human Performance to Improve Nuclear Facility Operation	2014
NG-T-2.8	Systematic Approach to Training for Nuclear Facility Personnel: Processes, Methodology and Practices	2021

Nuclear Infrastructure/Planning (3)

NG-G-3.1	Milestones in the Development of a National Infrastructure for Nuclear Power (Rev. 1)	2015
NG-T-3.1	Initiating Nuclear Power Programmes: Responsibilities and Capabilities of Owners and Operators (Rev. 1)	2020
NG-T-3.2	Evaluation of the Status of National Nuclear Infrastructure Development (Rev. 2)	2022
NG-T-3.3	Preparation of a Feasibility Study for New Nuclear Power Projects	2014
NG-T-3.4	Industrial Involvement to Support a National Nuclear Power Programme	2016
NG-T-3.5	Legal and Institutional Issues of Transportable Nuclear Power Plants: A Preliminary Study	2013
NG-T-3.6	Responsibilities and Functions of a Nuclear Energy Programme Implementing Organization (Rev. 1)	2019
NG-T-3.7	Managing Siting Activities for Nuclear Power Plants (Rev. 1)	2022
NG-T-3.8	Electric Grid Reliability and Interface with Nuclear Power Plants	2012
NG-T-3.9	Invitation and Evaluation of Bids for Nuclear Power Plants	2011
NG-T-3.10	Human Resource Management for New Nuclear Power Programmes (Rev.1)	2022
NG-T-3.11	Managing Environmental Impact Assessment for Construction and Operation in New Nuclear Power Programmes	2014
NG-T-3.12	INPRO Methodology for Sustainability Assessment of Nuclear Energy Systems: Infrastructure	2014
NG-T-3.13	INPRO Methodology for Sustainability Assessment of Nuclear Energy Systems: Environmental Impact from Depletion of Resources	2015
NG-T-3.14	Building a National Position for a New Nuclear Power Programme	2016
NG-T-3.15	INPRO Methodology for Sustainability Assessment of Nuclear Energy Systems: Environmental Impact of Stressors	2016
NG-T-3.16	Strategic Planning for Research Reactors	2017
NG-T-3.17	Strategic Environmental Assessment for Nuclear Power Programmes: Guidelines	2018
NG-T-3.18	Feasibility Study Preparation for New Research Reactor Programmes	2018
NG-T-3.19	Planning Enhanced Nuclear Energy Sustainability	2021
NG-T-3.20	Application of Multi-criteria Decision Analysis Methods to Comparative Evaluation of Nuclear Energy System Options: Final Report of the INPRO Collaborative Project KIND	2019
NG-T-3.21	Resource Requirements for Nuclear Power Infrastructure Development	2022
NG-T-3.22	Developing Roadmaps to Enhance Nuclear Energy Sustainability: Final Report of the INPRO Collaborative Project ROADMAPS	2021
NG-T-3.25	Enhancing National Safeguards Infrastructure to Support the Introduction of Nuclear Power	2023

Economics and Energy System Analysis (4)

NG-T-4.1	Issues to Improve the Prospects of Financing Nuclear Power Plants	2009
NG-T-4.2	Financing of New Nuclear Power Plants	2008
NG-T-4.3	Cost Aspects of the Research Reactor Fuel Cycle	2010
NG-T-4.4	INPRO Methodology for Sustainability Assessment of Nuclear Energy Systems: Economics	2014
NG-T-4.5	Indicators for Nuclear Power Development	2015
NG-T-4.6	Managing the Financial Risk Associated with the Financing of New Nuclear Power Plant Projects	2017
NG-T-5.2	Modelling Nuclear Energy Systems with MESSAGE: A User's Guide	2016
NF-T-3.5	Costing of Spent Fuel Storage	2009
NP-T-3.7	Approaches for Assessing the Economic Competitiveness of Small and Medium Sized Reactors	2013

Stakeholder Involvement (5)

NG-G-5.1	Stakeholder Engagement in Nuclear Programmes	2021
NG-T-1.4	Stakeholder Involvement Throughout the Life Cycle of Nuclear Facilities	2011

Knowledge Management (6)

NG-G-6.1	Guide to Knowledge Management Strategies and Approaches in Nuclear Organizations	2022
NG-T-6.1	Status and Trends in Nuclear Education	2011
NG-T-6.2	Development of Knowledge Portals for Nuclear Power Plants (Rev. 1)	2016
NG-T-6.3	Fast Reactor Knowledge Preservation System: Taxonomy and Basic Requirements	2008
NG-T-6.4	Nuclear Engineering Education: A Competence Based Approach to Curricula Development	2014
NG-T-6.6	Web Harvesting for Nuclear Knowledge Preservation	2008
NG-T-6.7	Comparative Analysis of Methods and Tools for Nuclear Knowledge Preservation	2011
NG-T-6.8	Nuclear Accident Knowledge Taxonomy	2016
NG-T-6.10	Knowledge Management and Its Implementation in Nuclear Organizations	2016
NG-T-6.11	Knowledge Loss Risk Management in Nuclear Organizations	2017
NG-T-6.12	International Nuclear Management Academy Master's Programmes in Nuclear Technology Management	2020
NG-T-6.14	Mapping Organizational Competencies in Nuclear Organizations	2020
NG-T-6.15	Exploring Semantic Technologies and their Application to Nuclear Knowledge Management	2021

Nuclear Reactors (NR)

NP-O	Nuclear Power Objectives: Achieving the Nuclear Energy Basic Principles	2009
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Technology Development (1)

NP-T-1.1	On-line Monitoring for Improving Performance of Nuclear Power Plants Part 1: Instrument Channel Monitoring	2008
NP-T-1.2	On-line Monitoring for Improving Performance of Nuclear Power Plants Part 2: Process and Component Condition Monitoring and Diagnostics	2008
NP-T-1.3	The Role of Instrumentation and Control Systems in Power Uprating Projects for Nuclear Power Plants	2008
NP-T-1.4	Implementing Digital Instrumentation and Control Systems in the Modernization of Nuclear Power Plants	2009
NP-T-1.5	Protecting Against Common Cause Failures in Digital I&C Systems of Nuclear Power Plants	2009
NP-T-1.6	Liquid Metal Coolants for Fast Reactors Cooled by Sodium, Lead and Lead-Bismuth Eutectic	2012
NP-T-1.8	Nuclear Energy Development in the 21st Century: Global Scenarios and Regional Trends	2010
NP-T-1.9	Design Features and Operating Experience of Experimental Fast Reactors	2013
NP-T-1.10	Nuclear Reactor Technology Assessment for Near Term Deployment (Rev. 1)	2022
NP-T-1.11	Options to Enhance Proliferation Resistance of Innovative Small and Medium Sized Reactors	2014
NP-T-1.12	Introduction to the Use of the INPRO Methodology in a Nuclear Energy System Assessment	2010
NP-T-1.13	Technical Challenges in the Application and Licensing of Digital Instrumentation and Control Systems in Nuclear Power Plants	2015
NP-T-1.14	Framework for Assessing Dynamic Nuclear Energy Systems for Sustainability : Final Report of the INPRO Collaborative Project GAINS	2013
NP-T-1.15	Experimental Facilities in Support of Liquid Metal Cooled Fast Neutron Systems	2018
NP-T-1.16	Passive Shutdown Systems for Fast Neutron Reactors	2020
NP-T-1.17	Guidance on Nuclear Energy Cogeneration	2019
NP-T-1.18	Technology Roadmap for Small Modular Reactor Deployment	2021
NP-T-1.19	Terms for describing advanced nuclear power plants	2023
NP-T-1.20	Summary Review on the Application of Computational Fluid Dynamics in NPP Design	2022
NP-T-1.24	Nuclear-Renewable Hybrid Energy Systems	2023

Design, Construction and Commissioning of Nuclear Power Plants (2)

NP-T-2.1	Common User Considerations (CUC) by Developing Countries for Future Nuclear Energy Systems: Report of Stage 1	2009
NP-T-2.2	Design Features to Achieve Defence in Depth in Small and Medium Sized Reactors (SMRs)	2009
NP-T-2.5	Construction Technologies for Nuclear Power Plants	2011
NP-T-2.6	Efficient Water Management in Water Cooled Reactors	2012
NP-T-2.7	Project Management in Nuclear Power Plant Construction: Guidelines and Experience	2012
NP-T-2.8	International Safeguards in Nuclear Facility Design and Construction	2013
NP-T-2.9	International Safeguards in the Design of Nuclear Reactors	2014
NP-T-2.10	Commissioning Guidelines for Nuclear Power Plants	2018
NP-T-2.11	Approaches for Overall Instrumentation and Control Architectures of Nuclear Power Plants	2018
NP-T-2.12	Human Factors Engineering Aspects of Instrumentation and Control Design	2021
NP-T-2.14	Introduction to Systems Engineering for the Instrumentation and Control of Nuclear Facilities	2022
NP-T-2.15	Integrated Life Cycle Risk Management for New Nuclear Power Plants	2023
NP-T-2.16	Methodologies for Assessing Pipe Failure Rates in Advanced Water Cooled Reactors	2023
NP-T-2.17	Vendor and User Requirements and Responsibilities in Nuclear Cogeneration Projects	2023

Operation of Nuclear Power Plants (3)

NP-G-3.1	Sustaining Operational Excellence at Nuclear Power Plants – Principles and Challenges	2022
NP-T-3.1	Risk Informed In-service Inspection of Piping Systems of Nuclear Power Plants: Process, Status, Issues and Development	2010
NP-T-3.2	Heavy Component Replacement in Nuclear Power Plants: Experience and Guidelines	2008
NP-T-3.4	Restarting Delayed Nuclear Power Plant Projects	2008
NP-T-3.5	Ageing Management of Concrete Structures in Nuclear Power Plants	2016
NP-T-3.6	Assessing and Managing Cable Ageing in Nuclear Power Plants	2012
NP-T-3.8	Maintenance Optimization Programme for Nuclear Power Plants	2018
NP-T-3.9	Power Uprate in Nuclear Power Plants: Guidelines and Experience	2011
NP-T-3.10	Integration of Analog and Digital Instrumentation and Control Systems in Hybrid Control Rooms	2010
NP-T-3.11	Integrity of Reactor Pressure Vessels in Nuclear Power Plants: Assessment of Irradiation Embrittlement Effects in Reactor Pressure Vessel Steels	2009
NP-T-3.12	Core Knowledge on Instrumentation and Control Systems in Nuclear Power Plants	2011
NP-T-3.13	Stress Corrosion Cracking in Light Water Reactors: Good Practices and Lessons Learned	2011
NP-T-3.14	Advanced Surveillance, Diagnostic and Prognostic Techniques in Monitoring Structures, Systems and Components in Nuclear Power Plants	2013
NP-T-3.16	Accident Monitoring Systems for Nuclear Power Plants	2015
NP-T-3.17	Application of Field Programmable Gate Arrays in Instrumentation and Control Systems of Nuclear Power Plants	2016
NP-T-3.18	Plant Life Management Models for Long Term Operation of Nuclear Power Plants	2015
NP-T-3.19	Instrumentation and Control Systems for Advanced Small Modular Reactors	2017
NP-T-3.20	Buried and Underground Piping and Tank Ageing Management for Nuclear Power Plants	2018
NP-T-3.21	Procurement Engineering and Supply Chain Guidelines in Support of Operation and Maintenance of Nuclear Facilities	2016
NP-T-3.23	Non-baseload Operation in Nuclear Power Plants: Load Following and Frequency Control Modes of Flexible Operation	2018
NP-T-3.24	Handbook on Ageing Management for Nuclear Power Plants	2017
NP-T-3.25	Economic Assessment of the Long Term Operation of Nuclear Power Plants: Approaches and Experience	2018
NP-T-3.26	Managing Counterfeit and Fraudulent Items in the Nuclear Industry	2019
NP-T-3.27	Dependability Assessment of Software for Safety Instrumentation and Control Systems at Nuclear Power Plants	2018
NP-T-3.28	Technical Support to Nuclear Power Plants and Programmes	2018
NP-T-3.29	Application of Wireless Technologies in Nuclear Power Plant Instrumentation and Control Systems*	2020
NP-T-3.30	Computer Security Aspects of Design for Instrumentation and Control Systems at Nuclear Power Plants	2020
NP-T-3.31	Challenges And Approaches For Selecting, Assessing And Qualifying Commercial Industrial Digital Instrumentation And Control Equipment For Use In Nuclear Power Plant Applications	2020
NP-T-3.32	Fatigue Assessment in Light Water Reactors for Long Term Operation: Good Practices and Lessons Learned	2023
NP-T-3.33	Asset Management for Sustainable Nuclear Power Plant Operation	2021
NP-T-3.34	Management of ageing and obsolescence of nuclear I&C systems and equipment through modernization	2022

Non Electrical Applications (4)

NP-T-4.1	Opportunities for Cogeneration with Nuclear Energy	2017
NP-T-4.2	Hydrogen Production Using Nuclear Energy	2012
NP-T-4.3	Industrial Applications of Nuclear Energy	2017
NP-T-1.17	Guidance on Nuclear Energy Cogeneration	2019

Nuclear Fuel Cycle (NF)

NF-O	Nuclear Fuel Cycle Objectives	2013
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Exploration and Production of Raw Materials for Nuclear Energy (1)

NF-G-1.1	Milestones in The Development of National Infrastructure for the Uranium Production Cycle	2023
NF-T-1.1	Establishment of Uranium Mining and Processing Operations in the Context of Sustainable Development	2009
NF-T-1.2	Best Practice in Environmental Management of Uranium Mining	2010
NF-T-1.3	Radioelement Mapping	2010
NF-T-1.4	In Situ Leach Uranium Mining: An Overview of Operations	2016
NF-T-1.5	Advances in Airborne and Ground Geophysical Methods for Uranium Exploration	2013

Fuel Engineering and Performance (2)

NF-G-2.1	Quality and Reliability Aspects in Nuclear Power Reactor Fuel Engineering	2015
NF-T-2.1	Review of Fuel Failures in Water Cooled Reactors	2010
NF-T-2.2	Accelerator Simulation and Theoretical Modelling of Radiation Effects in Structural Materials	2018
NF-T-2.5	Review of Fuel Failures in Water Cooled Reactors (2006-2015)	2019
NF-T-2.6	Post Irradiation Examination (PIE) for Research Reactor Fuels	2023
NF-T-4.1	Status and Trends of Nuclear Fuels Technology for Sodium Cooled Fast Reactors	2011
NF-T-4.3	Structural Materials for Liquid Metal Cooled Fast Reactor Fuel Assemblies-Operational Behaviour	2012
NF-T-4.6	Status of Minor Actinide Fuel Development	2010
NF-T-5.2	Good Practices for Qualification of High Density Low Enriched Uranium Research Reactor Fuels	2009
NF-T-2.7	Impact of Fuel Density on Performance and Economy of Research Reactors	2021

Spent Fuel Management (3)

NF-T-3.1	International Safeguards in the Design of Facilities for Long Term Spent Fuel Management	2018
NF-T-3.2	International Safeguards in the Design of Reprocessing Plants	2019
NF-T-3.3	Storing Spent Fuel until Transport to Reprocessing or Disposal	2019
NF-T-3.6	Management of Damaged Spent Nuclear Fuel	2009
NF-T-3.8	Impact of High Burnup Uranium Oxide and Mixed Uranium-Plutonium Oxide Water Reactor Fuel on Spent Fuel Management	2011
NF-T-3.9	Research Reactor Spent Fuel Management: Options and Support to Decision Making	2021
NF-T-3.10	Practices for Interim Storage of Research Reactor Spent Nuclear Fuel	2022
NW-T-1.11	Available Reprocessing and Recycling Services for Research Reactor Spent Nuclear Fuel	2017

Fuel Cycle Options (4)

NF-T-4.2	Status of Developments in the Back End of the Fast Reactor Fuel Cycle	2011
NF-T-4.4	Use of Reprocessed Uranium: Challenges and Options	2010
NF-T-4.5	Technical Features to Enhance Proliferation Resistance of Nuclear Energy Systems	2010
NF-T-4.9	Enhancing Benefits of Nuclear Energy Technology Innovation through Cooperation among Countries: Final Report of the INPRO Collaborative Project SYNERGIES	2018
NF-T-4.11	Technical Approaches for the Management of Separated Civilian Plutonium	2023
NF-T-2.4	Role of Thorium to Supplement Fuel Cycles of Future Nuclear Energy Systems	2012

Nuclear Fuel Cycle Facilities (5)

NF-T-4.7	International Safeguards in the Design of Fuel Fabrication Plants	2017
NF-T-4.8	International Safeguards in the Design of Uranium Conversion Plants	2017
NF-T-4.10	International Safeguards in the Design of Enrichment Plants	2018
NP-T-3.3	Industrial Safety Guidelines for Nuclear Facilities	2018
NW-T-1.2	The Management System for the Development of Disposal Facilities for Radioactive Waste	2011

Research Reactors (5)

NR-G-5.1	Digital Instrumentation and Control Systems for New and Existing Research Reactors	2021
NP-T-5.1	Specific Considerations and Milestones for a Research Reactor Project	2012
NP-T-5.2	Good Practices for Water Quality Management in Research Reactors and Spent Fuel Storage Facilities	2011
NP-T-5.3	Applications of Research Reactors	2014
NP-T-5.4	Optimization of Research Reactor Availability and Reliability: Recommended Practices	2008
NP-T-5.6	Technical Requirements in the Bidding Process for a New Research Reactor	2014
NP-T-5.8	Research Reactors for the Development of Materials and Fuels for Innovative Nuclear Energy Systems	2017
NR-T-5.9	Specific Considerations in the Assessment of the Status of the National Nuclear Infrastructure for a New Research Reactor Programme	2021
NF-T-5.4	Non-HEU Production Technologies for Molybdenum-99 and Technetium-99m	2013

Radioactive Waste Management and Decommissioning (NW)

NW-O	Radioactive Waste Management Objectives	2009
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Radioactive Waste Management (1)

NW-G-1.1	Policies and Strategies for Radioactive Waste Management	2012
NW-T-1.3	Management of Disused Sealed Radioactive Sources	2014
NW-T-1.4	Modular Design of Processing and Storage Facilities for Small Volumes of Low and Intermediate Level Radioactive Waste including Disused Sealed Sources	2014
NW-T-1.5	Framework and Challenges for Initiating Multinational Cooperation for the Development of a Radioactive Waste Repository	2016
NW-T-1.7	Waste from Innovative Types of Reactors and Fuel Cycles. A Preliminary Study	2019
NW-T-1.8	Mobile Processing Systems for Radioactive Waste Management	2014
NW-T-1.14	Status and Trends in Spent Fuel and Radioactive Waste Management (Rev. 1)	2022
NW-T-1.15	Management of Disused Radioactive Lightning Conductors and the Associated Radioactive Sources	2022
NW-T-1.16	Communication and Stakeholder Involvement in Radioactive Waste Disposal	2022
NW-T-1.17	Locating and Characterizing Disused Sealed Radioactive Sources in Historical Waste	2009
NW-T-1.18	Determination and Use of Scaling Factors for Waste Characterization in Nuclear Power Plants	2009
NW-T-1.19	Geological Disposal of Radioactive Waste: Technological Implications for Retrieval	2009
NW-T-1.20	Disposal Approaches for Long Lived Low and Intermediate Level Radioactive Waste	2010
NW-T-1.21	Technological Implications of International Safeguards for Geological Disposal of Spent Fuel and Radioactive Waste	2010
NW-T-1.24	Options for Management of Spent Fuel and Radioactive Waste for Countries Developing New Nuclear Power Programmes (Rev. 1)	2018
NW-T-1.25	Costing Methods and Funding Schemes for Radioactive Waste Disposal Programmes	2020
NW-T-1.27	Design Principles and Approaches for Radioactive Waste Repositories	2020
NW-T-1.30	Management of Depleted Uranium Used as Shielding in Disused Radiation Devices	2023
NW-T-1.31	Experience in the Management of Radioactive Waste After Nuclear Accidents: A Basis for Preplanning	2022
NW-T-1.38	Decontamination Methodologies and Approaches	2023

Decommissioning of Nuclear Facilities (2)

NW-G-2.1	Policies and Strategies for the Decommissioning of Nuclear and Radiological Facilities	2011
NW-T-2.1	Selection and Use of Performance Indicators in Decommissioning	2011
NW-T-2.2	Redevelopment and Reuse of Nuclear Facilities and Sites: Case Histories and Lessons Learned	2011
NW-T-2.3	Decommissioning of Small Medical, Industrial and Research Facilities: A Simplified Stepwise Approach	2011
NW-T-2.4	Cost Estimation for Research Reactor Decommissioning	2014
NW-T-2.5	An Overview of Stakeholder Involvement in Decommissioning	2009
NW-T-2.6	Decommissioning of Pools in Nuclear Facilities	2015
NW-T-2.7	Experiences and Lessons Learned Worldwide in the Cleanup and Decommissioning of Nuclear Facilities in the Aftermath of Accidents	2014
NW-T-2.8	Managing the Unexpected in Decommissioning	2016
NW-T-2.9	Decommissioning of Particle Accelerators	2020
NW-T-2.10	Decommissioning after a Nuclear Accident: Approaches, Techniques, Practices and Implementation Considerations	2019
NW-T-2.11	Lessons Learned from the Deferred Dismantling of Nuclear Facilities	2018
NW-T-2.12	Data Analysis and Collection for Costing of Research Reactor Decommissioning: Report of Phase 2 of the DACCORD Collaborative Project	2021
NW-T-2.13	Decommissioning at a Multifacility Site	2022
NW-T-2.16	Global Status of Decommissioning of Nuclear Installations	2023

Environmental Remediation (3)

NW-G-3.1	Policy and Strategies for Environmental Remediation	2015
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