

TRANSFORM

TECHNOLOGY REGULATION: ASSURING NUCLEAR
SAFETY & SECURITY FOR MOVING into the future.

Transformation at the NRC

Mo Shams

Transformation Team

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“The world as we have created it is a process of our thinking. It cannot be changed without changing our thinking.”

— Albert Einstein

Why Transform at the NRC?



“The nuclear industry has indicated plans to introduce new and novel technologies... Because the use of such new nuclear technologies would challenge our current regulatory framework, we must not only innovate, but also identify and implement transformative change.”

--- Victor McCree, Executive Director for Operations
1/25/18 – Formation of Transformation Team

Why Transform?

A BRIEF CHRONICLE OF THE AUTOMOBILE

CIRCA 3500 B.C.:

The Mesopotamians invent the wheel.

3500
B.C.

1478:

Leonardo da Vinci sketches plans for a self-propelled vehicle, arguably the first automobile design.



1500

1886:

Karl Friedrich Benz and Gottlieb Daimler, who never met, each invent a gas-powered automobile.



1900

1908:

Henry Ford's Model T makes owning a car affordable for many Americans

1956:

President Eisenhower signs legislation creating the interstate highway system.



1950

1979:

The United Auto Workers union reaches its peak size, with 1.5 million members.



1996

1996: MapQuest.com debuts.

1997:

Toyota introduces the Prius, the first mass-produced hybrid car.

2000

2016:

A Google self-driving car is at fault in a minor accident.



PREDICTIONS

2070:

Traditional cars are outlawed, leaving only self-driving vehicles on the road.

2050

BUSINESS INSIDER

“ We are in the midst of seeing more change in the next five years than we’ve seen in the last 50 years.”

MARY BARRA CEO of General Motors



What is Transformation?

- Continuing to ensure safety and security of the operation of civilian nuclear applications
- Significantly different ways to regulate
- Further enhancements in our effectiveness, efficiency, and agility



Innovation



Transformation

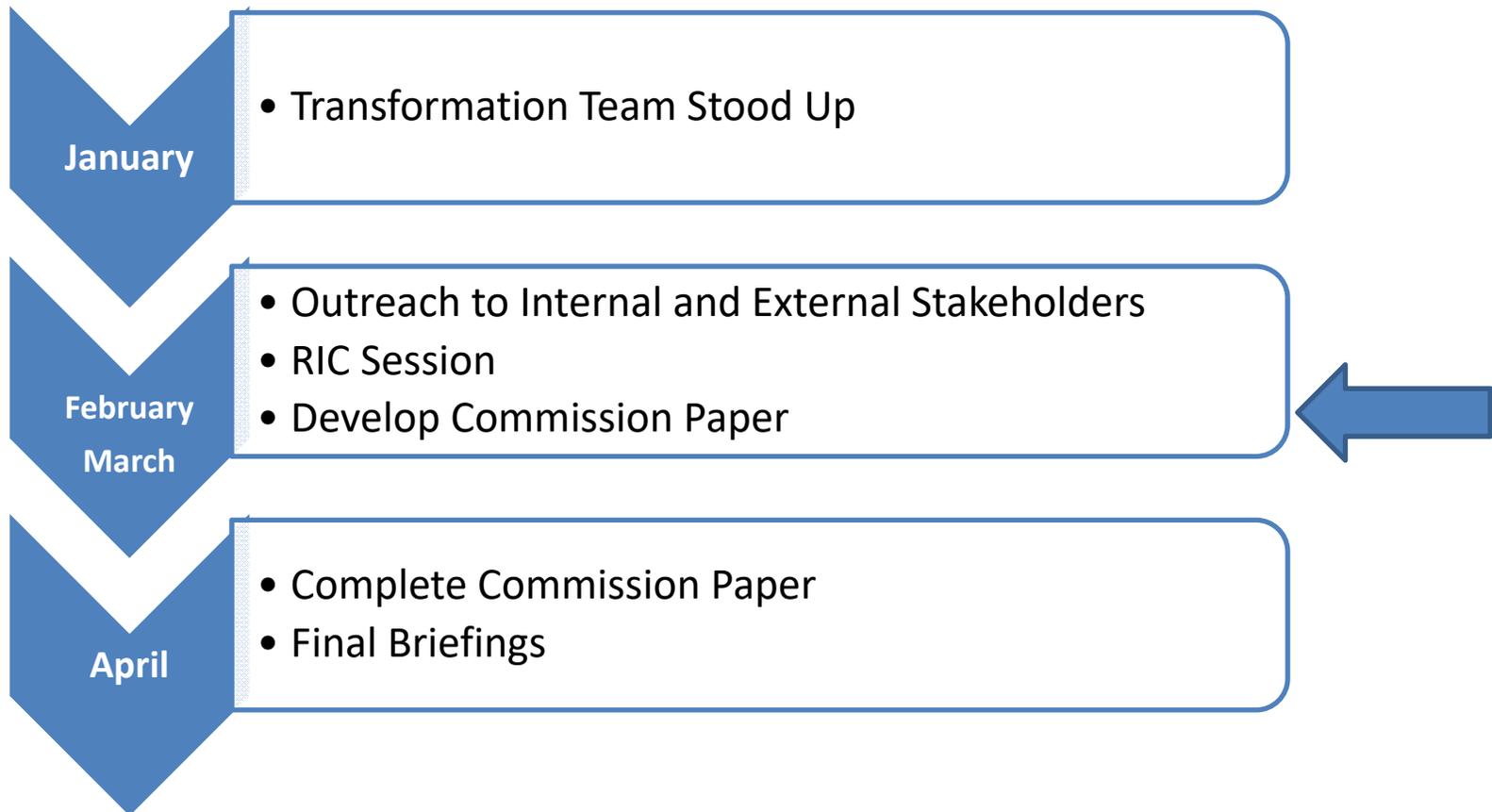




What is the Task?

- Harvest transformation ideas and strategies from inside and outside the agency to successfully implement transformation and sustain a transformative organizational culture.
- Develop and recommend specific area(s) to initiate transformation within the NRC.
- Develop a strategy and communications plan(s) for the specific area(s) recommended to foster transformation in NRC's culture.
- Develop a Commission paper that describes the merits of transformation, with recommended approaches and estimated schedules/resources.

Timeline





Specific Areas for Consideration

- Digital instrumentation and controls
- Advanced fuel technology
- Advanced reactor applications
- New and emerging materials and manufacturing methods
- Big data

Outreach Efforts



Internal	
ADM, RES, NSIR, NRR/DLP, OIP, OCA, NRR/DORL, OEDO, OCAA, OPA, SECY, SBCR, OI, NRR/DMPS, NRR/DE, OGC NRR/DRA, NRR/DIRS, NRR/DSS, OCFO, NRO/DEI, NMSS/DUWP, NMSS/DRM, NMSS/DSFM, OCHCO, RI, RII, RIII, RIV, NMSS/FSCE, OE, ACRS, NMSS/MSST, NRO/DCIP, NRO/DNRL, NRO/DSEA, NRO/DSRA, ASLBP, NMSS	completed
OCIO (all hands)	scheduled
External	
NuScale, William Ostendorff, GSA, DOD, NEI (ongoing), DIUx-Chris Kirchhoff, Dominion, Oklo, DOE, EPRI, Rock Creek Tech, Lockheed Martin, Technology Resources, GE Hitachi, Westinghouse, Curtis-Wright/Scientech, NewClear Day, OAS/CRCPD, UCS, DOE ARPA-E, US Army, Air Force, FERC, Framatome, NASA, FDA, NIA, ACMUI, FAA, Naval Reactors, Apollo Fusion – Mike Cassidy, TerraPower, Terrestrial Energy, international regulators (Finland, Japan, France, UK), NEA, DOT	completed

RIC Session – March 13 - completed



Feedback Sought

- What do you view as the most important area for transformation of NRC's regulatory framework for new and novel technology?
- How would you propose we revise/refocus our regulatory framework to improve in this area?
- What obstacles would need to be overcome?
- What would be the benefits?

Themes



- Systematic Expansion of Risk-Informed Decision Making
 - Incentives for safety improvements
 - Systems/integrated approach to risk
 - Application of operating experience
 - Leveraging existing reviews
- Additional flexibility for licensees to make facility changes
- Timely resolutions to challenges associated with new technology
- Performance based reviews and incremental/early approvals
 - Digital Instrumentation and Controls
 - Transition to Accident Tolerant Fuels
 - Advanced Reactor Licensing
- Culture
 - Advance Innovation Forums as Agency Process
 - Leadership Model for Vision and Communication
 - Staff rotations to organizations doing transformative work
 - Incentives for advancing new ideas
 - Organizational focus
 - Measurement of existing culture and trending of effectiveness

Next Steps



- Finalize idea screening/team decisions
- Senior management alignment
- Commission Paper
- Final Briefings



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Thank You!