

The Nuclear Materials Management and Safeguards System (NMMSS)



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Accuracy

Accountability

Performance



May 11-14, 2015

Las Vegas, NV

NMMSS Role in Preparing a New Facility for Reporting to the International Atomic Energy Agency

Gary Hirsch - NMMSS



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Purpose



- This presentation covers the steps that NMMSS took to support the successful reporting to the IAEA by the U.S. Government for a new IAEA SELECT facility - LES owned and operated by URENCO USA
- NMMSS reports import/export activity for ALL civilian nuclear materials to the IAEA
- IAEA selected facilities have unique composition/facility code reporting requirements.



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Highlights



- NMMSS successfully met the reporting deadlines and operational commitments that had been agreed to by all affected parties, i.e., NRC, LES
- Overall IAEA reporting strategy was phased-in to reflect:
 - Fully operational facility selected by IAEA
 - Negotiation of Transitional Facility Attachment
- The challenges were consistent with the complexities of each phase of the project lifecycle
 - Insights and experiences gained during each phase were leveraged.



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Context



1. **Limited experience**

15 years since a U.S. facility was last selected for safeguards reporting

2. **Operational Characteristics**

Second U.S. enrichment facility selected by the IAEA

3. **Infrastructure and capability**

Significant amounts of data mapping and the inherent precision required to meet IAEA reporting requirements necessitated **NMMSS** programming upgrades and extensive testing

4. **Coordination and Interfaces**

Highly specific reporting specifications were achieved as the result of close coordination, communication, and discussions among all stakeholders

5. **Schedule, milestones and deadlines**

Overall schedule was provided by client. The end-point governed the development of ambitious internal schedule/milestones to ensure that the U.S. Government deadlines and commitments are met



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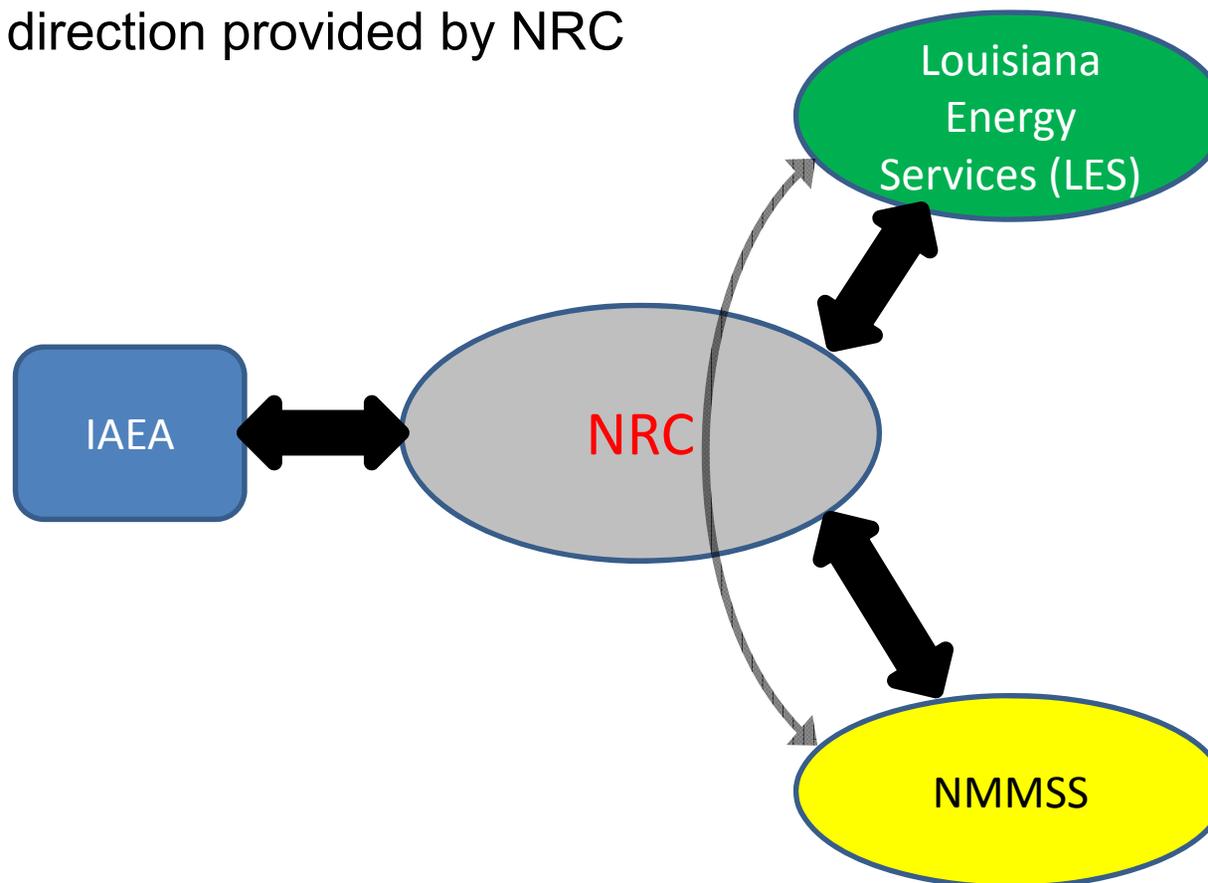
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Communication Flow to Define Reporting Requirements



- Overall direction provided by NRC

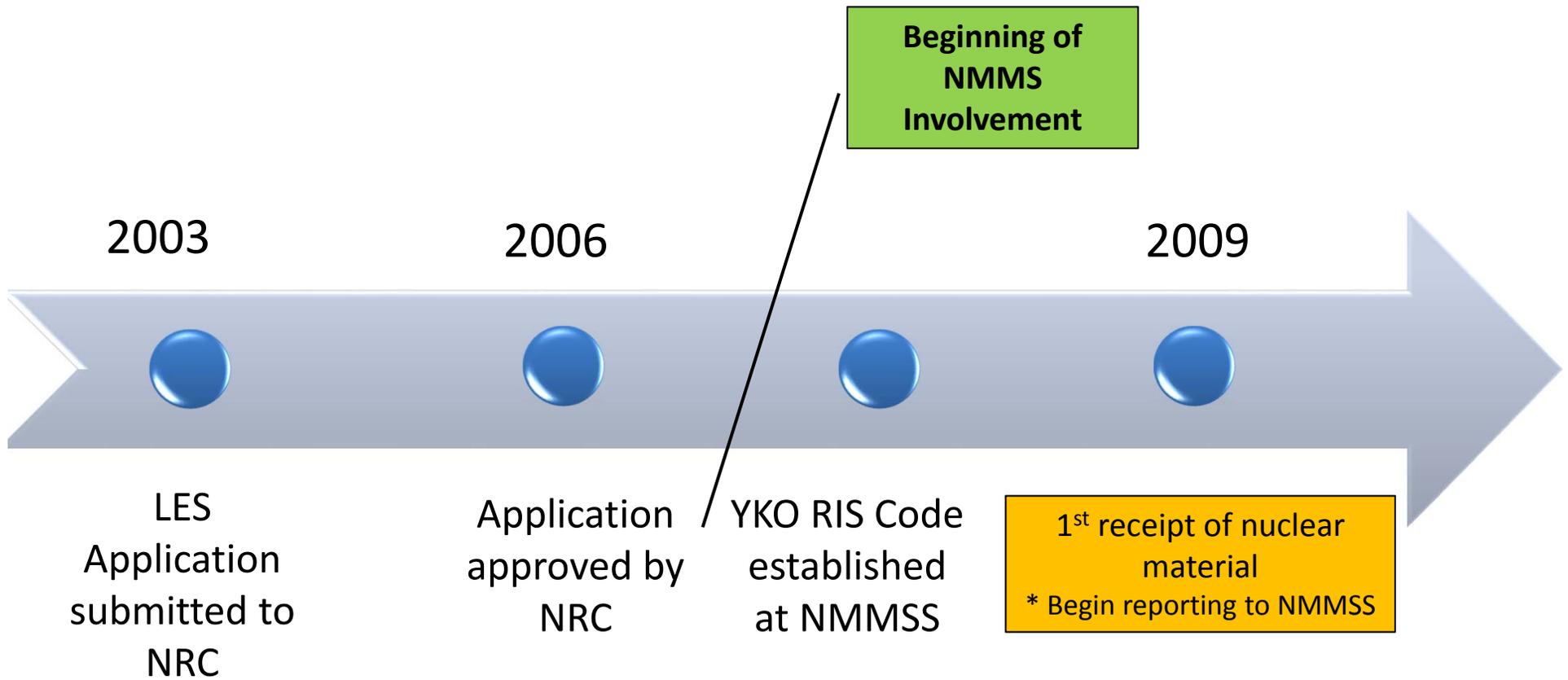


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Background



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Implementation Strategy for IAEA Reporting



- Reporting activity was tailored for facility status
 - Phase One / Implementation of Reporting – Selected
 - Transitional Facility Attachment under negotiation
 - Reporting domestic data elements

 - Phase Two / Standard ICR-288 Reporting – Attached
 - Transitional Facility Attachment in place
 - Reporting data elements consistent with IAEA reporting requirements

** Active operational facility, phases overlapped with reporting activity



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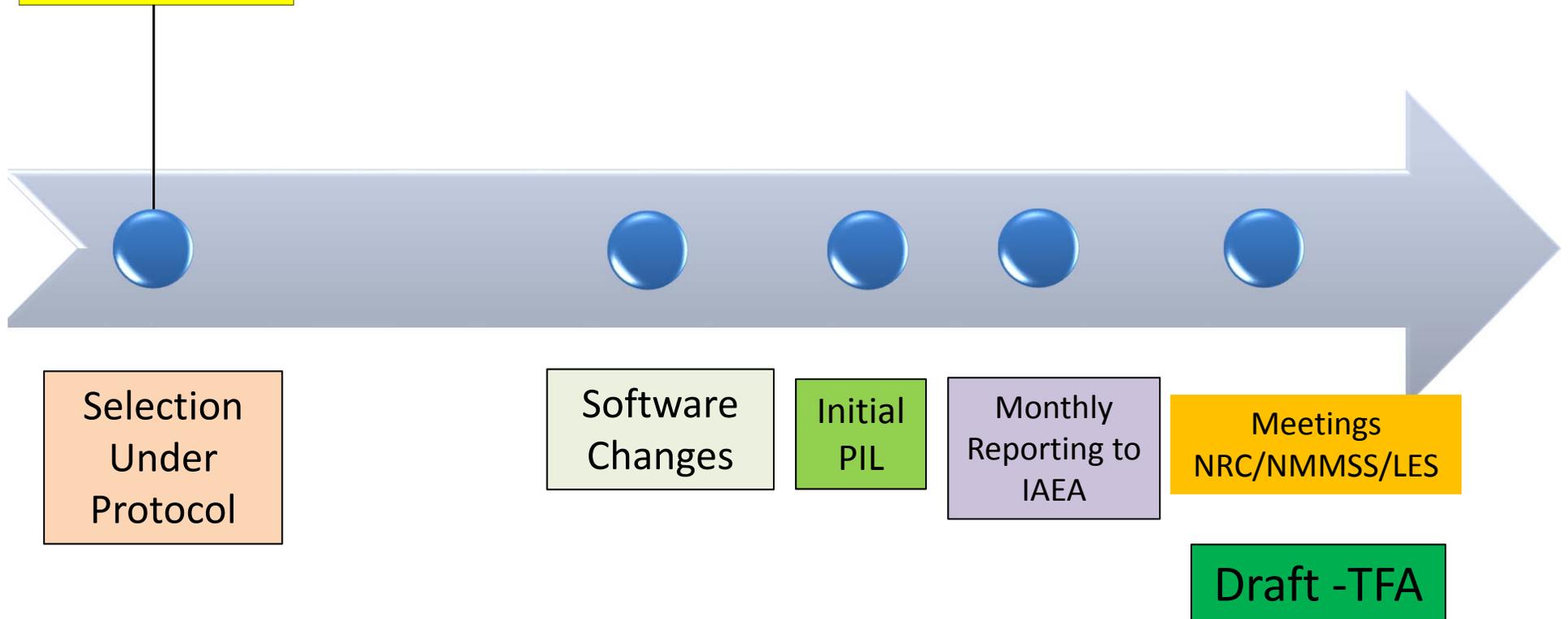
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IAEA Reporting – 2013 Implementation Phase



- Key developments

Phase 1 Begins



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Implementation Phase 2013



- **6/2013:** The IAEA selects LES, under Protocol, for reporting to the IAEA and the NRC notifies LES and NMMSS
- **7/2013:** LES submits initial Physical Inventory Listing to NMMSS per protocol for YKO
 - » Reporting as a Selected facility
- **7/2013:** NMMSS transmits YKO's Physical Inventory Listing to the IAEA

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Implementation Phase 2013

(Cont'd)



- **7/2013:** NMMSS begins preparing Monthly Inventory Change Reports for LES
- **8/2013:** NRC delivers LES Design Information Questionnaire to the IAEA
 - » The DIQ included a 3 MBA Structure
 - » NMMSS established RIS Codes YK1, YK2 and YK3
- **9/2013:** Meeting held in Germantown, MD to discuss the Transitional Facility Attachment (TFA) to define and clarify reporting codes



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Reporting YKO data to the IAEA



Initial Reporting

- Enabled NMMSS to report Uranium in Cascades (Material Type 89) to the IAEA
 - Physical Inventory Listing Reports (PIL-288)
 - Inventory Change Reports (ICR-288)
- Enabled NMMSS to treat YKO as an IAEA Selected facility



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IAEA / U.S. Reporting Implications



- Inconsistencies between domestic U.S and IAEA Reporting
 - Treatment of Uranium in Cascades
 - Configuration of LES facility
 - 1 RIS design vs. 3 Material Balance Areas (MBA)
 - Reporting Framework
 - Use Codes (Numeric vs. Alpha)
 - Composition Codes (Domestic vs. IAEA)
 - Key Measurement Point (KMP)
 - Measurement Basis (MB) Codes



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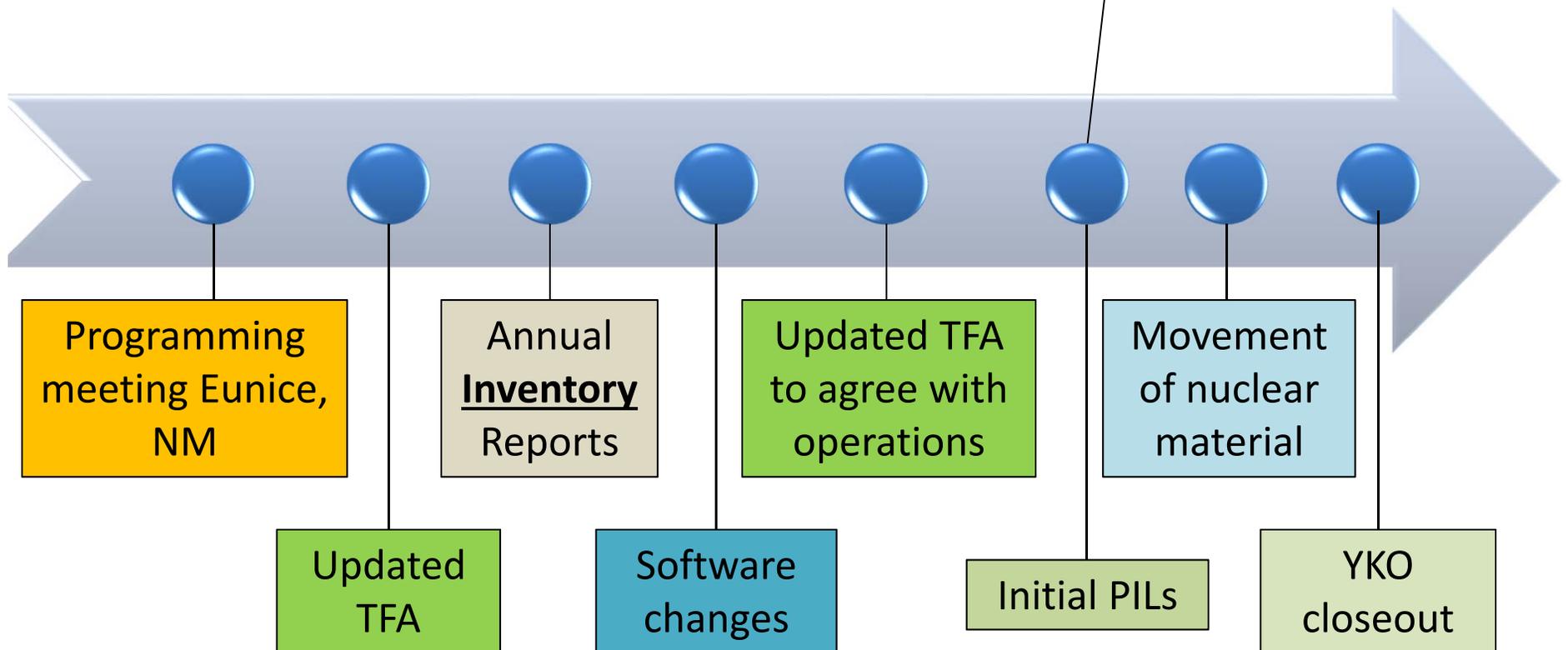
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2014 Activities IAEA Reporting & Phase Two



Phase Two Begins



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Reporting YKO data to the IAEA



- **1/2014:** Software requirements meeting held in Eunice, NM to finalize software changes for NMMSS and LES
- **1/2014:** LES completed annual inventory for YKO
 - » Reconciled and reported to the IAEA by NMMSS
- **9/2014:** Site Test Data sent to NMMSS



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Reporting YKO and YK1, YK2, YK3 data to the IAEA



- **11/2014:** Updated TFA to reflect facility operations
- **12/2014:** Initial zero Inventory reported to the IAEA for YK1, YK2, YK3 by NMMSS
- **12/2014:** LES submitted transactions to transfer inventory from YKO to YK1, YK2 and YK3
- **12/31/14:** LES completed closeout inventory for YKO
 - » closeout activity reported to NMMSS
 - » Reconciled to NMMSS and the IAEA - reported to the IAEA by NMMSS



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Reporting YK1, YK2, YK3 data to the IAEA



Code 10 Reporting

- Enabled NMMSS to report:
 - Alpha-numeric RIS Codes
 - Facility Code for MBA Codes (YKO vs. YK1, YK2, YK3)
 - Facility data in agreement with TFA
- Enabled NMMSS to treat YK1, YK2 and YK3 as IAEA attached facilities

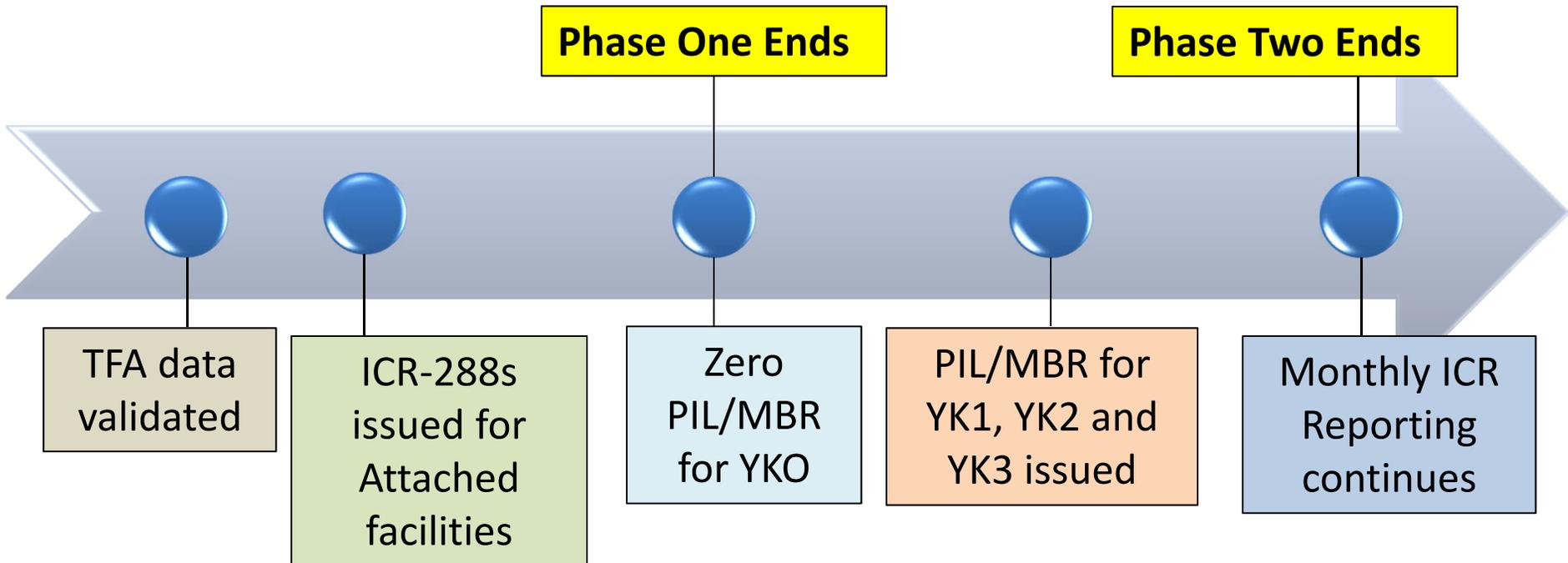
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2015 Activities Phase 2

**Phase One Ends****Phase Two Ends**

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Safeguarded Reporting YTD



- **1/2015:** NRC submitted revised TFA to the IAEA
- **1/2015:** NMMSS sent initial YK1, YK2 and YK3 Inventory Change Reports to the IAEA reflecting movement of material from YKO
- **1/2015:** LES completed physical inventory for YK1, YK2 and YK3
- **2/2015:** NMMSS sent Zero PIL and MBR for YKO to the IAEA

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2015 Reporting cont'd



- **3/2015:** Annual inventory for YK1, YK2, YK3
 - » Reconciled and reported to the IAEA by NMMSS

- January 2015 – Present: YK1, YK2 and YK3 Monthly ICR-288s reported to the IAEA

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Accomplishments



NNSA



- Transitional Facility Attachment was entered into NMMSS
 - NMMSS incorporated the facility's unique reporting requirements into the edit check process
- Software Modifications Completed at NMMSS on schedule
 - Validated NMMSS software modifications
 - Acceptance Testing included test data reported to NMMSS by facility
 - Anomalies identified and corrected over 4 months **of testing**
 - NMMSS Indirectly validated site software modifications



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Accomplishments cont'd



- The Conversion from receiving and reporting YKO data to reporting receiving YK1, YK2 and YK3 data accomplished without incident for NMMSS

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YKO Reporting Activity Summary



■ YKO

- 21 Monthly Inventory Change Reports consisting of 9,804 lines of data reported to the IAEA
- 2 Material Balance Reports consisting of 88 lines of data reported to the IAEA prior to closeout
- 3 Physical Inventory Listing Reports consisting of 2,897 lines of data reported to the IAEA prior to closeout



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Safeguards Conversion Activity



NNSA



- YK1, YK2, YK3

- 4 months of testing between LES and NMMSS to ensure transaction, PIL, and MBR data would process correctly
 - September 2014 – December 2014
- YKO migration
 - 6,163 transactions
 - Shipments, receipts and blending
- YK1, YK2, YK3
 - 1,364 unique **composition/facility code** combinations in facility attachment as outlined in the TFA

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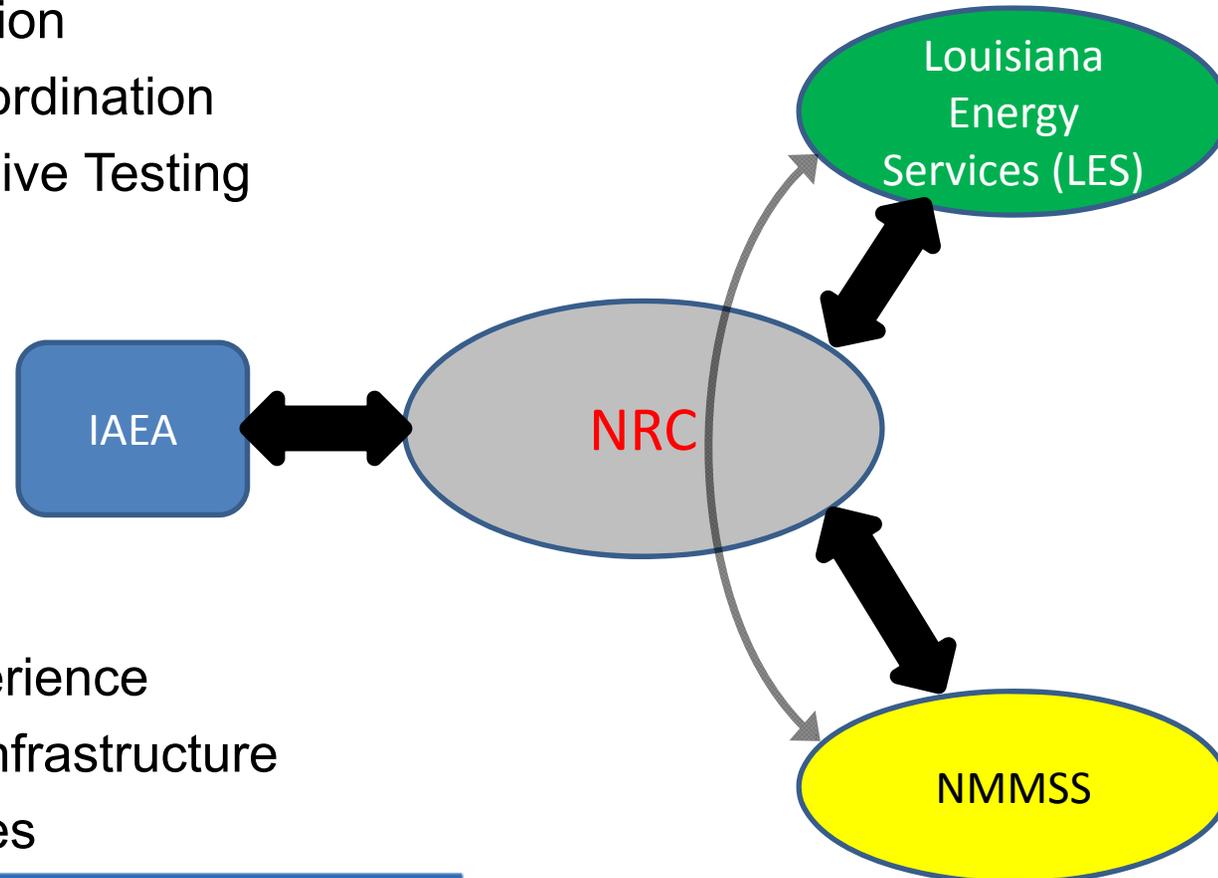
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What have we learned through the process?



- Thorough Planning
- Communication
- Effective Coordination
- Comprehensive Testing



End result

- Gained Experience
- Developed Infrastructure
- Met Deadlines

