Detailed Article: Key Differences Between ANSI/IIAR 6-2025 vs ANSI/IIAR 6-2019

Introduction:
The IIAR 6-2025 standard represents a significant evolution in the guidance for inspection, testing, and maintenance (ITM) of closed-circuit ammonia refrigeration systems. This article highlights the most notable changes from the 2019 edition, with examples and implications for facility compliance and safety.

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1. Terminology and Definitions

- **New Terms Introduced**:
  - *Automatic Record Keeping*: Defined as the collection of operating conditions without human input.
  - *Qualified Inspector*: Now explicitly defined, including independence requirements for fifth-year inspections.
- **Clarified Terms**:
  - *Frequency*: Now includes both calendar and runtime basis, with detailed intervals and flexibility for adjustment based on system history.

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2. Fifth-Year Independent Inspection Requirement

- **2025 Addition**:
  - Section 5.4.2 requires that every fifth-year inspection be conducted by a qualified inspector who is independent of the facility's operations and recordkeeping.
  - This inspector must not have a conflict of interest and must report deficiencies directly.
- **Implication**:
  - Facilities must plan for third-party involvement at least once every five years, adding a layer of objectivity and compliance assurance.

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3. Risk-Based ITM Strategies

- **New in 2025**:
  - Section 5.1.5 introduces the option to use risk-based ITM strategies, allowing facilities to tailor inspection and maintenance frequencies based on operational history and risk assessments.
- **Why It Matters**:
  - This aligns IIAR 6 with modern reliability-centered maintenance practices and offers flexibility for well-managed systems.

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4. Expanded Recordkeeping Requirements

- **Enhancements**:

    - Section 5.3 now includes detailed expectations for:
        - Monitoring systems
        - Alarm response documentation
        - Retention periods (Table 5.3.7)
        - Specific data for ammonia and secondary coolant records
- **Example**:
    - Ammonia refrigerant contamination records must now include sample size, impurity color, and contamination percentage.

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5. Updated ITM Frequencies (Table 5.2)

- **Clarifications**:
    - Minimum and maximum intervals are now explicitly defined for each frequency (e.g., annual = 9–15 months).
    - "Where Applicable" (WA) tasks are better explained and linked to system features.

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6. Appendix A – Explanatory Material

- **New Feature**:
    - Appendix A provides detailed explanations for starred sections throughout the standard.
    - Example: A.5.1.1 explains how to document deficiencies and corrective actions during inspections.

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7. Component-Specific Updates

- **Compressors (Chapter 6)**:
    - More detailed ITM task tables, including shaft seal leak rate monitoring and alignment verification.
- **Piping and Pressure Vessels (Chapters 10 & 11)**:
    - Enhanced guidance on corrosion evaluation, wall thickness measurement, and criteria for continued operation.
- **Safety Systems (Chapter 12)**:
    - Expanded testing protocols for ammonia detection, ventilation, and emergency systems.

Conclusion: IIAR 6-2025 strengthens the standard's alignment with modern safety, reliability, and regulatory expectations. Facilities should review their ITM programs to ensure compliance with the new requirements—especially the fifth-year inspection and expanded recordkeeping.

If you would like to have a further discussion or conference call meeting on the differences, please email a request to tony_lundell@iiar.org.