

ISOE ALARA

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Organizational Effectiveness and Radiation Safety

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Understanding Our Core Business

- *The Plant is a Regulated (or Merchant) Electric Factory.* If it can't make \$\$, most utilities will shut it down and build Other Power Sources (natural gas plants, wind farms, etc.)
- *Nuclear Safety is Always the First Priority.*
 - Another major accident is unacceptable (TMI, Fukushima).
 - When priorities get misaligned you adversely affect the operations of the unit.
 - River Bend SIT – Loss of SDC and Operations with the Shift Manager waiting almost an hour to access a HRA Room, that wasn't a HRA.
- *Industrial Safety.* Radiation safety is a sub-set of overall industrial safety.
 - ANO Rigging Event (Dropped Stator) and Loss of S/D Cooling at River Bend SIT.

YOUR ROLE AND RESPONSIBILITIES

- *Radiation Protection Managers manage resources and radiological risk.*
 - *You don't have an unlimited budget or an unlimited supply of quality staff or technicians.*
 - *Risk is real and perceived*
 - *Occupational Radiation Safety*
 - *Dose Control and Entries into High and Very High Radiation Areas.*
 - *Public Radiation Safety – A Nominal 2 mRem total individual exposure for the Braidwood Tritium Spill.*

Organizational Models

There are Dozens of Organizational Models Available.

- Organizational Models can be focused on the company, the division, the plant, or be department specific.
 - Organizational Models define an organization through its framework, including lines of authority, communications, duties and resource allocations.

A model is driven by the organization's goals and serves as the context in which processes operate the business.
 - As a RP Manager, you need to find the one that works for you and integrate it into your company's model.
 - At Entergy we have the Fleet Nuclear Excellence Model (NEM) (EN-PL-100), a Station Specific Pursuit of Excellence Model, and Department Specific Action Plans.

Leadership Models

Leadership Models are defined as guides that suggest specific leadership behaviors to use in a specific environment or situation.

- Again, as a RP Manager, you need to find the one that works for you and integrate it into your company's model.

Definitions Create a Common Language

Organizational Effectiveness - How effective an organization is in *achieving the outcomes the organization intends to produce*.

- **Organizational Design** - *Organizational space* (the influence of the spatial environment) and *the roles, processes, and formal reporting relationships* in the organization. This includes talent management (*The baseball team analogy*), leadership development, and understanding leadership and managing behaviors (*The Box*).
- **Organization Development** - Influencing members of the organization *to expand their candidness, and take greater responsibility* for their own actions.
- **Organizational Behavior** - *The actions and attitudes of individuals and groups toward one another* and toward the organization as a whole, and its effect on the organization's performance.

An Organizational Model for Radiation Safety



Vision Statements

- A Clear, Written Vision Statement:
 - A vision is all *about what is possible*, what the potential is for the company (or Group) to achieve *and its ultimate end state*.

Radiation Safety

Vision Statement:

- This is how we tell the stakeholders where the organization is going.
 - Its Ultimate End State.
- **To Become the Best Performing Nuclear Power Plant Radiation Safety Team in the World, as Assessed by External Stakeholders.**

Mission Statement:

- The primary outcome. The Mission Statement gives everyone a frame of reference in the absence of any other information. It is a template for decision making.
 - This is what the company and the station really expect from us...
 - I.e. – Error Free Safety Performance
 - The Mission Statement is as important for what it doesn't say as for what it says.. There is no mention of schedule, budget, staffing, etc.
- **Error Free Safety Performance (Nuclear, Industrial and Radiological) for the Lowest Dose Practical.**

6 Reasons Why You Need a Clear, Written Mission Statement

- *It determines the group's direction.* The mission statement serves as a “North Star” that *keeps everyone clear on the direction of the organization.* This leads to the second reason.
- *It provides a template for decision-making.* A clear mission sets important boundaries . The mission is to the group what a compass is to an explorer or a map to a tourist. *It provides a framework for thinking throughout the organization.*
- *It forms the basis for alignment.* When a new employee is hired it is critical that the new hire know what the company does and where the company is going. The mission statement *forms the basis for alignment for the entire team.*
- *It welcomes helpful change.* Many people are resistant to change because it causes us to feel insecure and sometimes out of control. However, if the mission is clear, then *team members are more likely to see the value of the change and how it helps the organization accomplish the mission.*
- *It shapes strategy (i.e. your approach).* Every business or group needs a strategy. But strategies must not be created in a vacuum. *Managers should create the most effective strategies possible to accomplish the mission.*
- *It facilitates evaluation and improvement.* It has been said that “What you measure will be your mission.” If you have a clear, written statement of mission you will know exactly what to measure and how to measure it. *Clarity of mission helps develop the appropriate tools and metrics (performance indicators) for an organization.*

Strategy - i.e. Your Approach

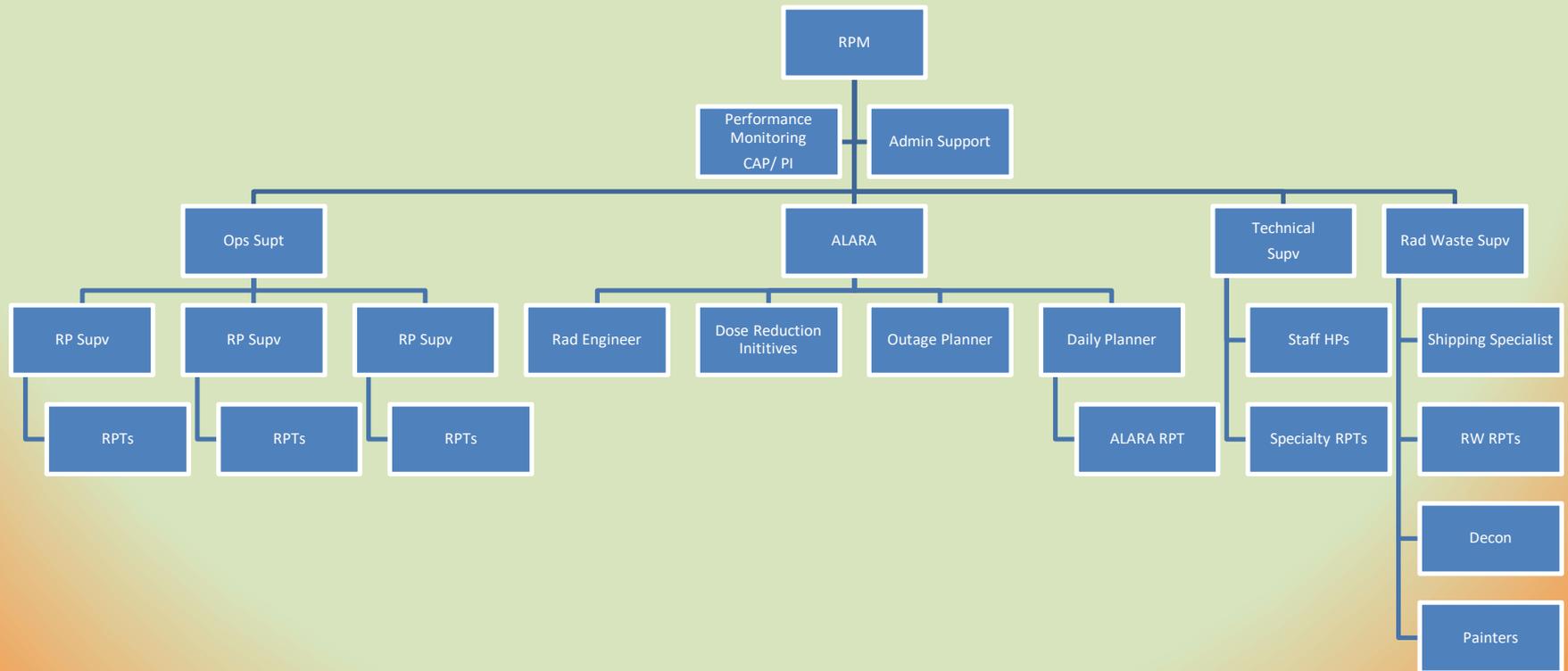
Strategy - i.e. Your Approach – Integrate Organizational Design, Organizational Development and Organizational Behavior Improvement Strategies into the Radiation Safety Program.

- Organizational Design is the organizational space (the influence of the spatial environment) and the roles, processes, and formal reporting relationships of the organization.
- Organization Development is the influencing members of the organization to expand their candidness, and take greater responsibility for their own actions.
- Organizational Behavior - the actions and attitudes of individuals and groups toward one another and toward the organization as a whole, and its effect on the organization's performance.

How it is Achieved

1. Build Trust through Open and Honest Communication, Clarity of Direction, and Unfettered Feedback.
 - Develop a Personal Leadership Model (Listen, Learn, Help, Lead); Aligned to Organizational Values (Safety Teamwork, Always Learning, Integrity and Respect)
2. Effectively Manage and Integrate Safety Risk (Nuclear, Industrial, and Radiological) Concurrent with Effectively Managing Department and Station Resources.
 - Occupational Radiation Safety: Public Domain »OCA »PA »RCA/RMA »RA »HRA »LRHA »VHRA (~50,000 WOs »Standing RWP »Specific RWP »RWP/ALARA Plan »SAC »SAC w/RPM/GPM)
 - Public Radiation Safety: VHRA »LHRA »HRA »RA »RCA/RMA »PA »OCA »Public Domain
3. Focus on Integration of:
 - Human Resource Management, including Personnel Training and Development;
 - The Technical Health Physics Program; and
 - Radiation Safety Program Management.

A Radiation Safety Organizational Structure



Organizational Design

- Integrate a cohesive program of applied and theoretical health physics and regulatory requirements; into the station's design, licensing bases, and work control processes.

Organizational Design

- *Cost-effectively managed and embedded in station work processes and procedures, in order to effectively control activities of radiological significance while remaining imperceptible on activities of minimal radiological risk.*
- Be anticipatory of changing plant conditions, and designed such that human performance improvement strategies are embedded into a program grounded in RP fundamentals.

Organizational Design

Radiation Safety - Embed 90% of the program into plant processes. It should be invisible to the worker.

- *Area Badging*
- *Whole Body Counts / Passive Monitoring*
 - *The Value of Zeros*
- *Plant Baseline Survey Program (Radiological Characterization of the Plant)*
 - *Plant Isotopic Mix and % Abundance*
 - *Scaling Factors for Alpha and Hard to Detect Radionuclides*

Minimal briefs for Radiation Areas or Minimal Risk Work, (Minimal Contamination Areas).

- *Plant postings That Support Worker Access.*

By Design - Human Factor the Program

- Independent Verification when there is an adverse operational or regulatory outcome
 - Radiation Monitor Configuration Control, Shipping Survey Results, etc.
- Hard Barriers are preferable over soft barriers, i.e.
 - Turnstiles at HRAs, and change out areas
 - RAM Control – Use Metal Detectors
 - Scrubs with no pockets
- But don't solve problems that don't exist at your site.
 - Always account for site culture.

Organizational Design / Development

- Post the plant accordingly – Back to the TS for Briefs and Locks.
 - With Informational signage like "Elevated Dose Rate" signs or Low Dose Waiting Area Signs.
 - ALARA - Elevated – Dose Rates
 - ALARA – Low Dose Waiting Area
 - These signs are particularly helpful to the workers.
- Use Tools such as Drones and gamma cameras (CZT), if/when Possible –
 - **LOTS OF APPLICATIONS AVAILABLE**
 - Dose profiling the Plant
 - Duane Arnold Boron Tube and Salem RCP Vain Bolts

Organizational Development / Behavior

- Structure and Organization:
 - Fidelity to the Work Control Process
 - 36 Month Schedule Look Ahead
 - INPO / NRC Outages
 - Aligning On-Call EP and Duty and Backshift Weeks
 - Manage Processes. NO Action Tracking Items after Nov 15th (Wednesday 2017) or on Mondays or Fridays
 - Clearly Defined Expectations: If Ops does 'A' then RP does 'B' if Chemistry does 'X' then RP does 'Y'
 - Professional Plant Postings: Frayed Ropes and 10' of excess Rope, etc.

Organizational Development / Behavior

- NEI Efficiency Bulletins - Don't Lock HRAs, Just Tech Spec LHRAs. I.e. back to the License (TS).
- We Manage Risk and Manage Resources to ensure the radiological safety of plant personnel and the general public.
- The Material Condition of Rad Waste is an Insight into Plant Priorities and the Radiation safety Program.

Organizational Behavior

- Managed by an aligned leadership team
 - A Professional Staff working to explicitly defined work standards and performance criteria.
- Through our behaviors and leadership, we impart public confidence in the occupational and public radiological safety and the emergency planning aspects of plant performance.

Organizational Behavior

Remember the Customer - I.e. the Pipefitters and Boiler Makers

- Salem – No Water in Containment
- Fermi – Water at Access Control
- Perry and Salem – Briefing Required to Enter the RCA
 - A Nominal 45 Minutes to enter a <1 mRem/Hr Area with an Elevated Area in the walkway of 7 Mrem/hr
- The RP Work Management Model is Similar to the Maintenance Department's
 - ALARA Planners are Analogous to Work Planners
 - RPTs are Analogous to MMs or IMs
 - RPSSs / RPTs Review the Radiologically Significant Work Packages (RWPs and ALARA Plans) before Work Execution.
 - We Work to the Approved Plant Schedule – Plant Processes are Our Friends.

Technical Health Physics

Specialty Programs

- Dose Assessment

- Monitoring (radiation monitoring, radiation protection monitoring) means the measurement of radiation levels, concentrations, surface area concentrations or quantities of radioactive material and the use of the results of these measurements to evaluate potential exposures and doses. - *Palisades*

- Instrument Calibrations

- Grand Gulf – Failure to Properly Calibrate Main Steam Line Radiation Monitors and Containment/Drywell High Range Radiation Monitors (ML15127A549)
- Fermi – Standby Gas Treatment Radiation Monitor
- Cooper – Submarine Monitor - Failure to Ensure Measurement Conditions were Consistent With Instrument Calibration. Water intrusion/condensation in the elevated release point Kaman normal range effluent monitor noble gas sample chamber. (ML15316A156)
- ANO – Failure to Properly Calibrate Unit 1 Reactor Building Atmospheric Particulate Radiation Monitor RE-7460 (ML16161B279)
- Monticello and Prairie Island – Process Radiation Monitor Bases Documents.

Technical Health Physics

Specialty Programs

- REMP and Effluent Programs

- Land Use Census
- Fish Samples 49 to 1
- Reduction in TLDs
- Managing Change in Computer Programs
- Loss of Milk Samples at \$10 per Sample
- Palisades - Failure To Establish, Implement, and Maintain the Offsite Dose Calculation Manual (ML15303A366)

- Radioactive Material Shipping

- Prairie Island – Sea Land - Radioactive Material Shipment Package radiation Levels Exceeded (ML090410466, ML091270080 , and ML100130231)
- Columbia – Shipment of a Type B quantity of RAM in a Type A Container
- Vogel – Shipment of a Type B quantity of RAM in a Type A Container (ML15022A678 and ML15258A572)

Tactics and Objectives

Tactics - The Tools Used to Achieve Our Desired Outcomes

- Performance Indicators and Metrics that are Used to Measure Outcomes;
- cycle of Continuous Implemented through Training (Systematic Approach to Training) and Personnel Development;
- The ALARA Program Lessons Learned;
- Corrective Action Program;
- Training;
- Budgets;
- Staffing Plans;
- Succession Planning;
- 360 Degree Accountability;
- Human Performance Tools and Strategies:
- Performance Management (MARC, Rewards, Recognition, Coaching, Feedback);
- Fitness for Duty (FFD); etc.

Objectives – Actionable and Measurable Steps – I.e. A Department Plan, Action Plan, etc.

- Phase One (Directive) and Phase Two (Collaborative)

Accountability is NOT Discipline

- Examples:
 - RPT / LHRA Door Guard and ED ALARM (LaSalle)
 - LHRA Door and SF6 Testing (LaSalle)
 - RPT on the RFF and the Camera (Dresden)
 - Climbing into an HRA in the Overhead (Perry)
 - Alcohol or Drug Issues

Helpful Hints

- Knowing what the survey results will be verses demonstrating what the survey results will be. (The GWPI)
 - The value of documenting Zero.
- “Moving” “Hot Spots” (Boron Tubes, etc.)

Questions and Answers