Preparing Technical Specialists for Nuclear Manager / Leadership Responsibilities

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on Nuclear Energy Management
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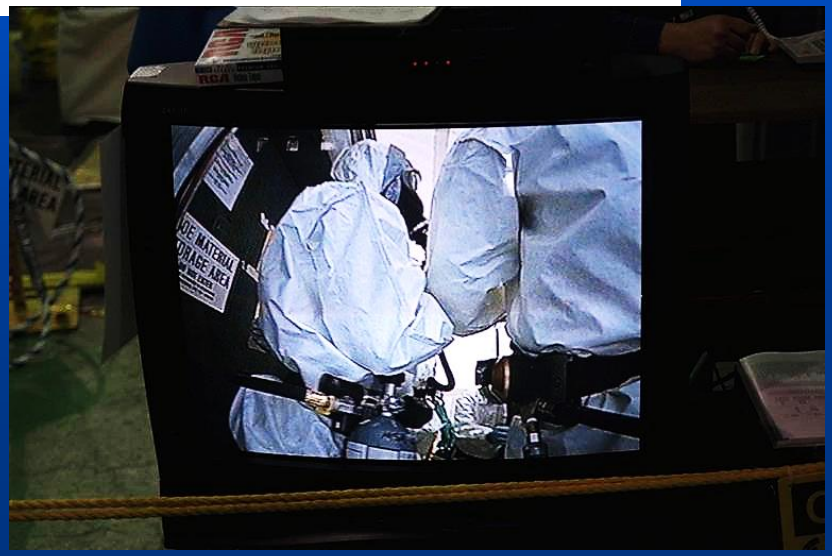
The Abdus Salam
International Centre
for Theoretical Physics

Terminal Objective

- By participating in the case study exercises and applying this ***capstone*** information (e.g., slides, handouts) in your work environment, you will have the ***tools to implement and put this information into practice*** while on your journey to becoming an efficient manager and visionary leader.

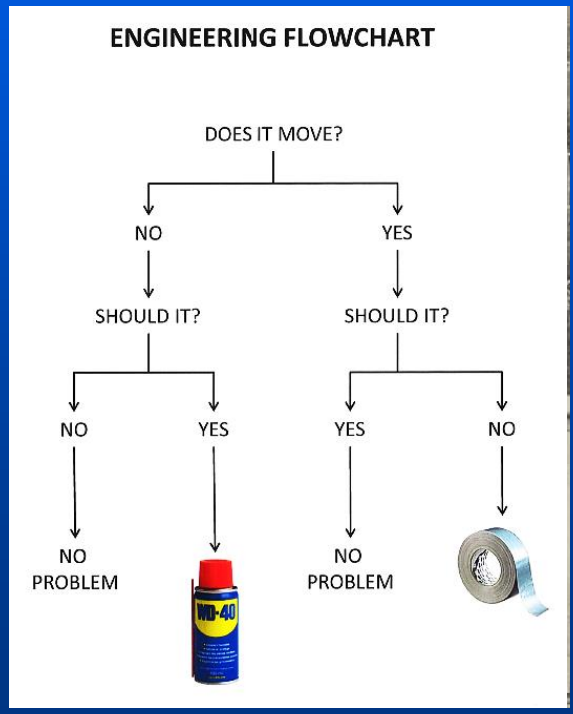


Learning Objectives (LO)

- LO1 - Recognizing the Need for a Class on Management Training
- LO2 – Asking Fundamental Managerial Questions
- LO3 – When You are in Charge! Examining the Manager / Leader Mystique of Success
- LO4 – Tracking Ideas into Performance
- LO5 – Nuclear Managerial and Leadership Career Advice
- LO6 – Additional Handouts & Slides

LO1 - Recognizing the Need for a Class on Management Training

- Training and career development activities typically focus on acquiring additional work experience and enhancing technical problem-solving skills.
  - Keeper of data
  - Provide a technical specialty
  - Subject Matter Expert (SME)
  - Report to a manager
  - Trained in the “Scientific Method”
    - Observe, Hypothesize, Test*



From SME to Nuclear Manager

- As Subject Matter Experts (SMEs) gain additional experience, they may be required to accept and adapt to the role of a Nuclear Manager.
  - Manager of people
  - Influence **direct-report employees inside** your organization and company
  - The indirect capability to influence **other employees outside** of your organization and company

"Anyone can steer the ship when the sea is calm."
Publilius Syrus

Question: How and when did you discover that you were a manager?

Training to Become a Nuclear Manager

- Unless a company has a specific Nuclear Manager-trainee class or succession programme to develop talent from within, styles are learned "on the job."
- *Dynamic and negative* influences can be obtained and nurtured depending on senior level managerial styles.
- Joint ICTP-IAEA School on Nuclear Energy Management.

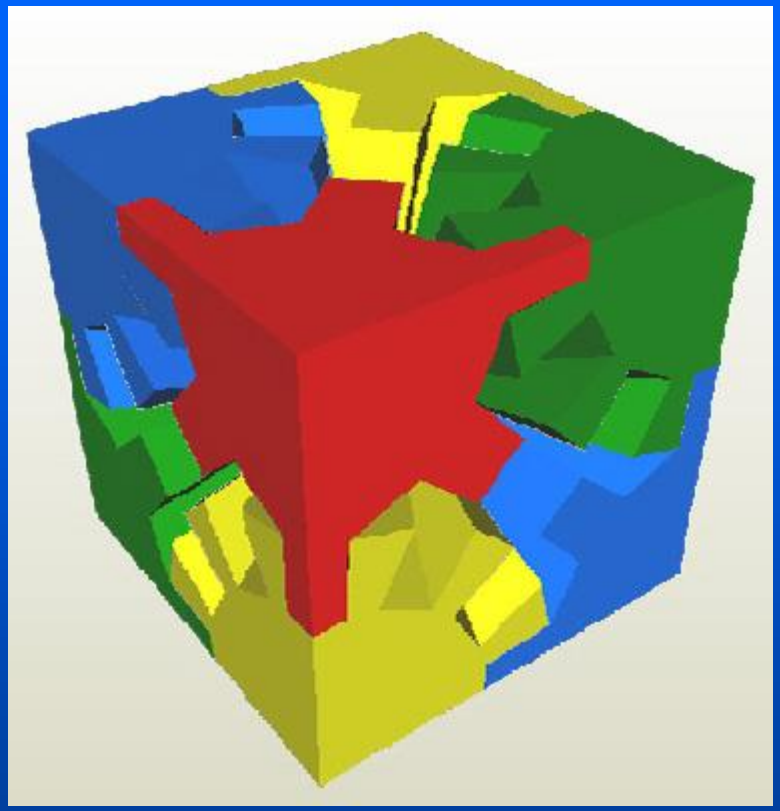
Source: Jorgan Laegaard, *Organizational Theory*, 2006

LO2 – Asking Fundamental Managerial Questions

- Are you working for a start-up company?
  - Creating a department or program
- Are you being asked to maintain the *status quo*?
  - "We have a good thing going so don't change anything."
- Are you just "harvesting" what is left?
  - Time to close up shop - Decommissioning
- Defining your boundaries.
  - What is your industry?
  - Where does your facility "fit in" in your industry?
  - Where do you "fit in" in your company?
  - What is ***your*** scope of work and responsibilities?

Two Nuclear Worlds – Energy Production

Modular Reactor Construction



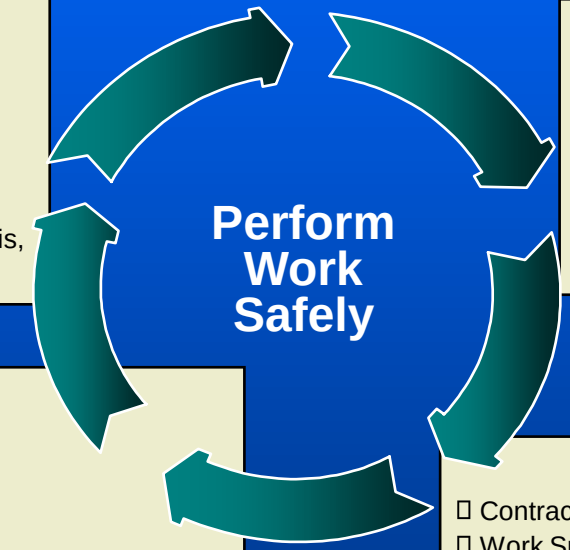
Designs – Certified
Operators – Nuclear
Structures, Systems and Components
External Dose

Fuel Cycle Facilities

Designs – Can Vary
Operators – Chemical
Items Relied on for Safety (IROFS)
Internal Dose

Various technical disciplines and skills are needed for the nuclear industry

Converting Concept to an Integrated Process



1

Define Scope of Work

- **Translate mission into work, set expectations, prioritize tasks and allocate resources**
- FY baseline planning schedule, performance-based indicator (PBI) milestones
- Project meetings, planning teams, work releases, and work control processes
- Filed Work Requests (FWRs), Activity Hazard Reviews (AHRs), and Activity Hazard Analyses (AHAs)
- **Organizational charts, roles and responsibilities**
- Walkdowns, plans and procedures

2

Analyze Hazards

- **Walkdowns**, AHRs and AHAs, plans and procedures, data review, Safety Data Sheets (SDSs), lessons learned, authorization basis, Unreviewed Safety Question Determinations (USQDs)
- **Employee feedback from previous jobs**
- ES&H review and approval

3

Develop/Implement Controls

- Contract requirements
- Work Smart Standards (WSS) matrix
- **Engineering, administrative and PPE controls**
- Training
- Project plans, authorization basis documents and procedures
- STOP work authority

4

Perform Work

- Confirm readiness and scheduling
- **Pre-job briefing**
- Approved work package and procedures
- **Qualified and trained employees**
- Utilize appropriate engineering, administrative and PPE controls with clear and concise instructions
- Roles and responsibilities of work teams
- **Ownership, STOP work if activities deviate from defined scope**
- Oversight and feedback – Management and employee reviews, field presence, and monitoring

5

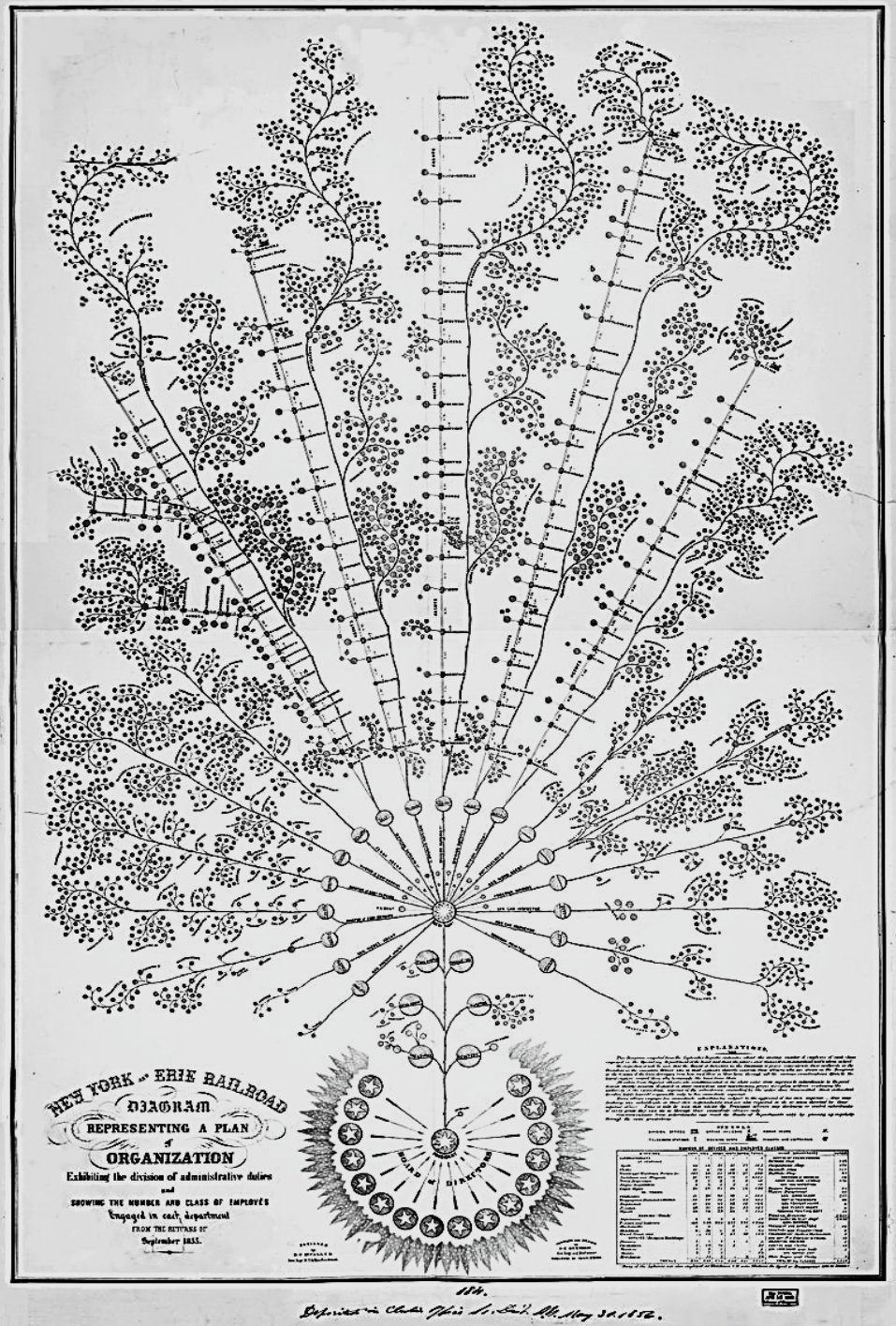
Feedback/Improvement

- **Post-job briefings**, End-of-the-Day ISMS meetings
- Monthly management and safety meetings
- **Corrective Action Tracking System**
- Audits, surveillances, self-assessments, inspections and corrective actions
- Change control processes, root-cause analysis, lessons learned

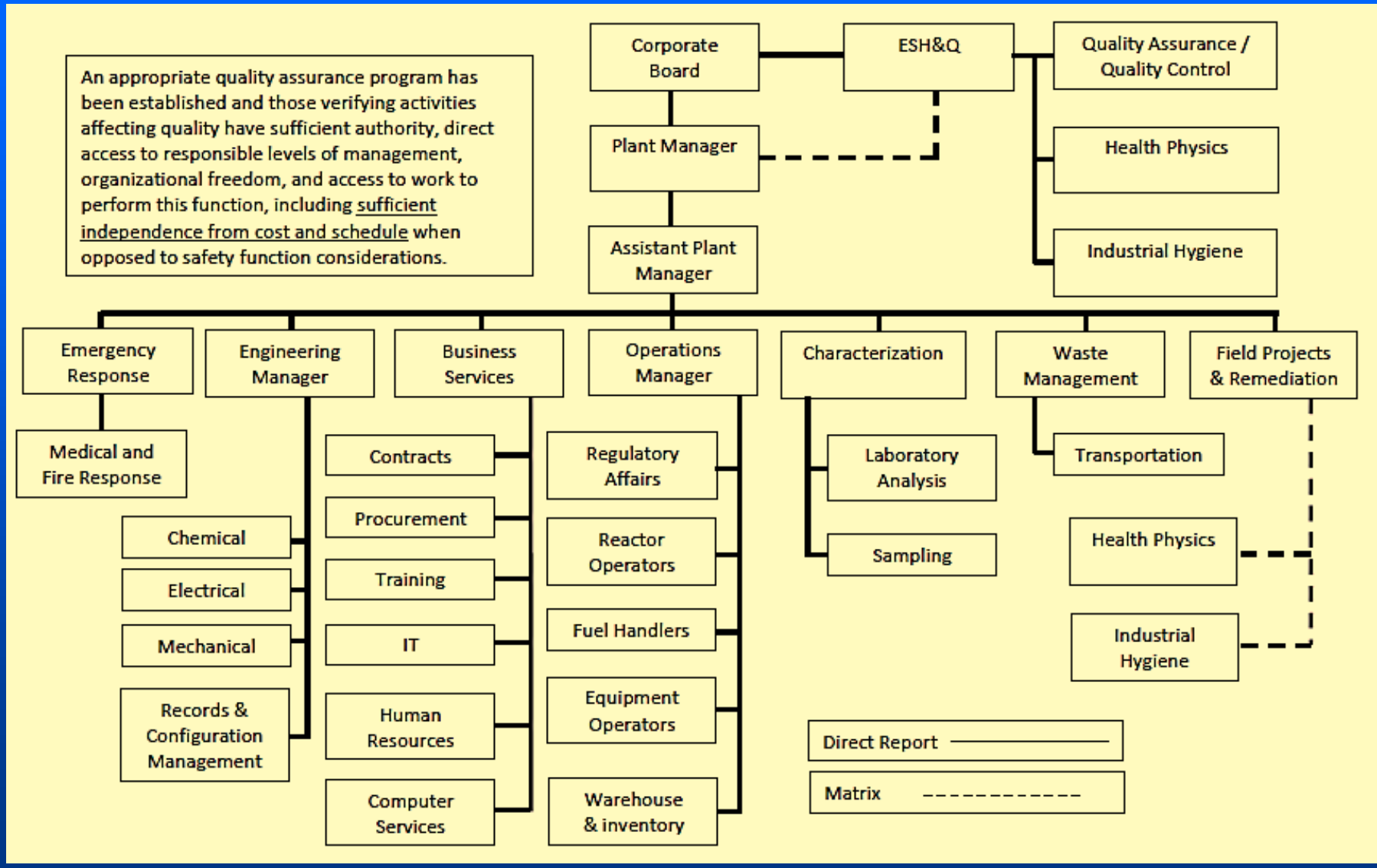
Available Tools - The (First Formal) Organizational Chart - 1855

Defined an expanding railroad organizational structure that was becoming complicated from the use of the telegraph (invented in 1844).

Information about problems down the track was important to have to prevent train wrecks and delays, but personnel did not clearly know who was in charge of managing this data and putting it into action.

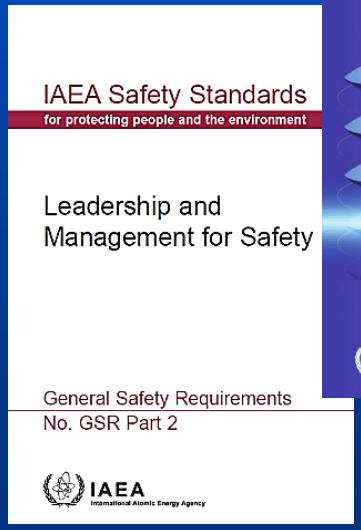


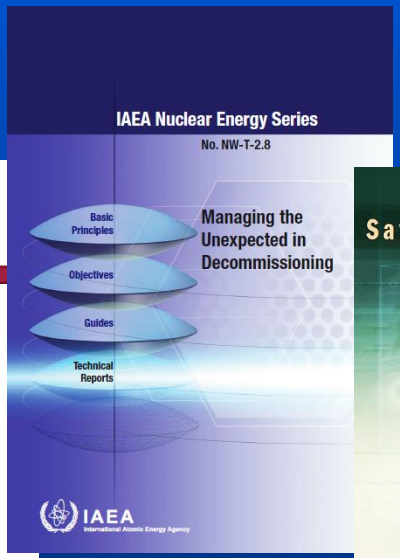
Available Tools - The Organizational Chart

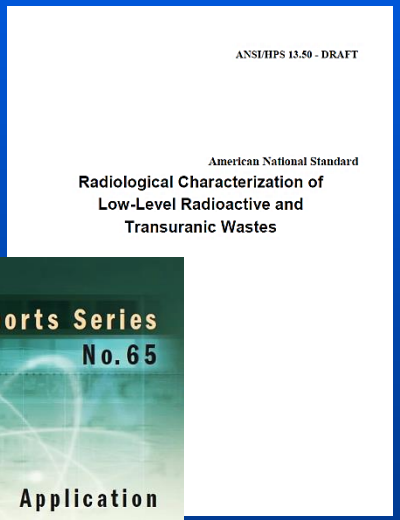


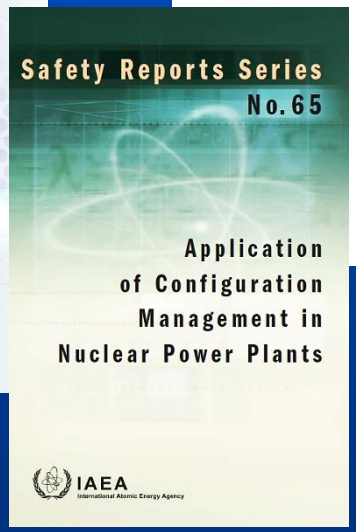
Sources of Information, Conduct of Operations, Operating Envelope

- Source Term - Radionuclides, Chemicals or Both?
- Operating License or Contract?
- Authorization - Safety Analysis Report (SAR).
- Environmental, Safety & Health (ES&H) Plan.
- Quality Assurance (QA) Plan.
- Emergency Plans
- Training Plan
- Standards
- Etc.









Three Types

- Regulatory, contractual and manufacturer requirements **(Golden Rules)**.
- Available standards and guidance documents, also referred to as best-management practices **(Time-Dependent Resources)**.
- Verbal agreements and courtesy deliverables can evolve into expected deliverables **(Expected, but not required)**.

- A standard, guidance document, or any best-management practice **cited** in a license or regulation becomes a **Golden Rule**.

Configuration Management is Quality Assurance on Vitamins

Documents Provide Barriers to an Event

Operator Challenges

Transients

Equipment Failures

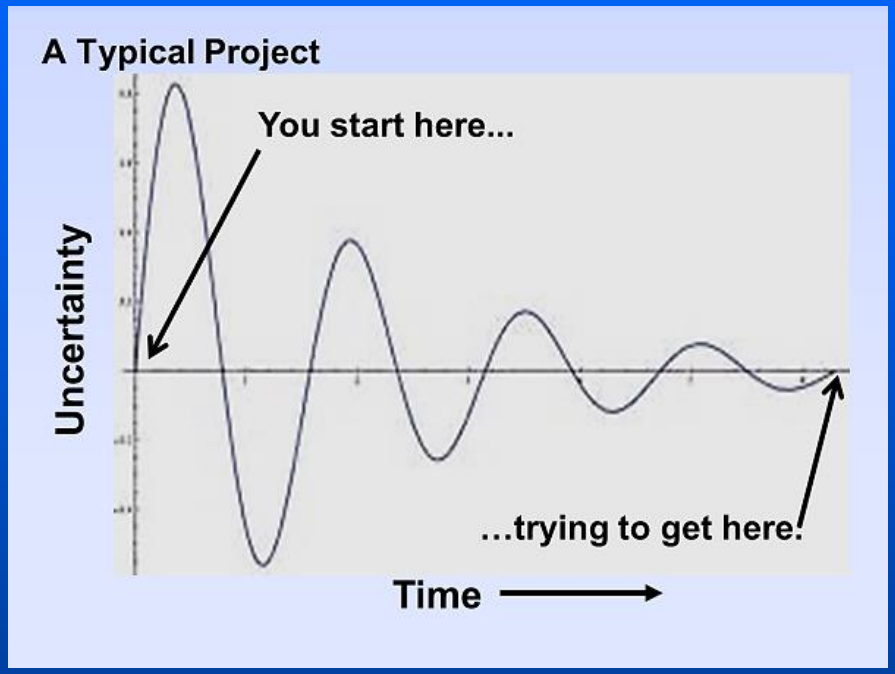
- Configuration Management
- Maintenance
- Training & Qualifications
- Procedures
- Audits & Assessments
- Incident Investigations
- Records Management
- Other QA Elements

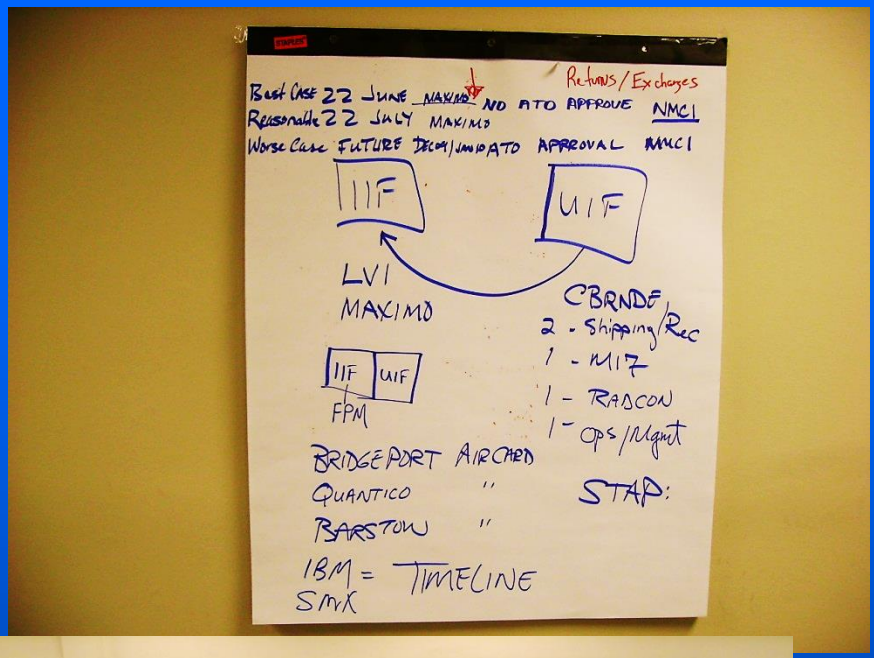
Events

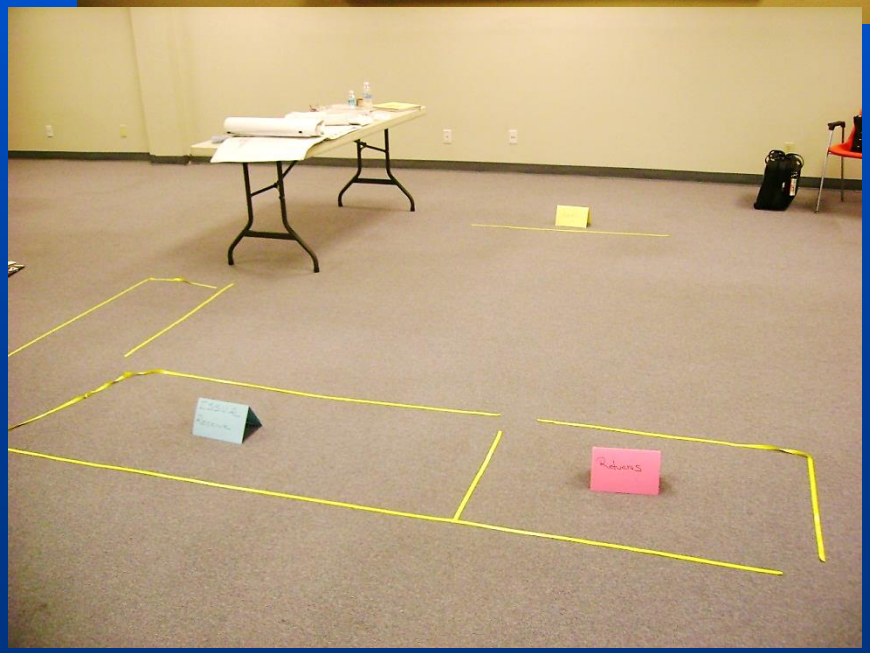
Each barrier is comprised of equipment or processes, using approved procedures / specifications, and being implemented by trained employees.

From Programs to Work Processes - Respirators

Process Flow

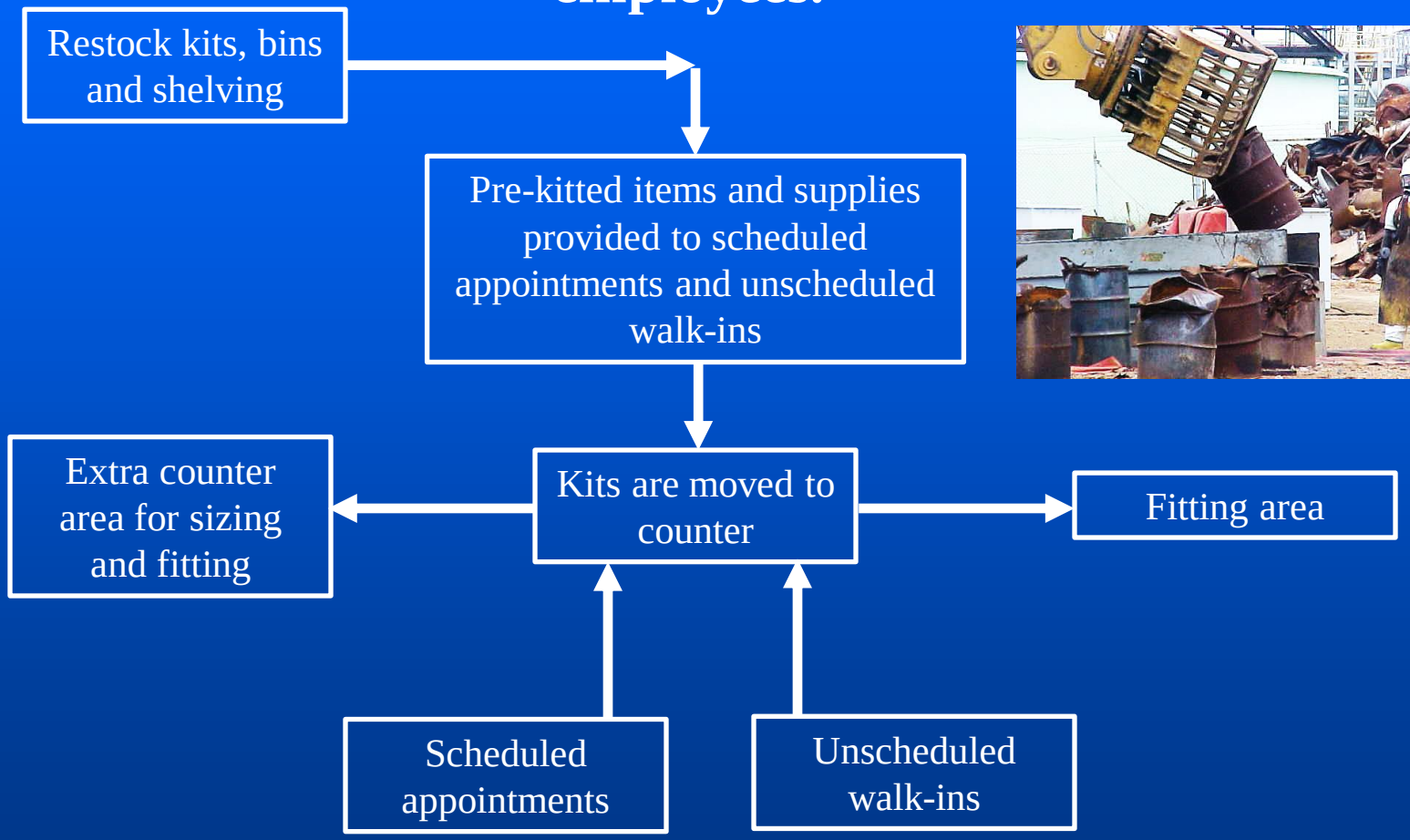




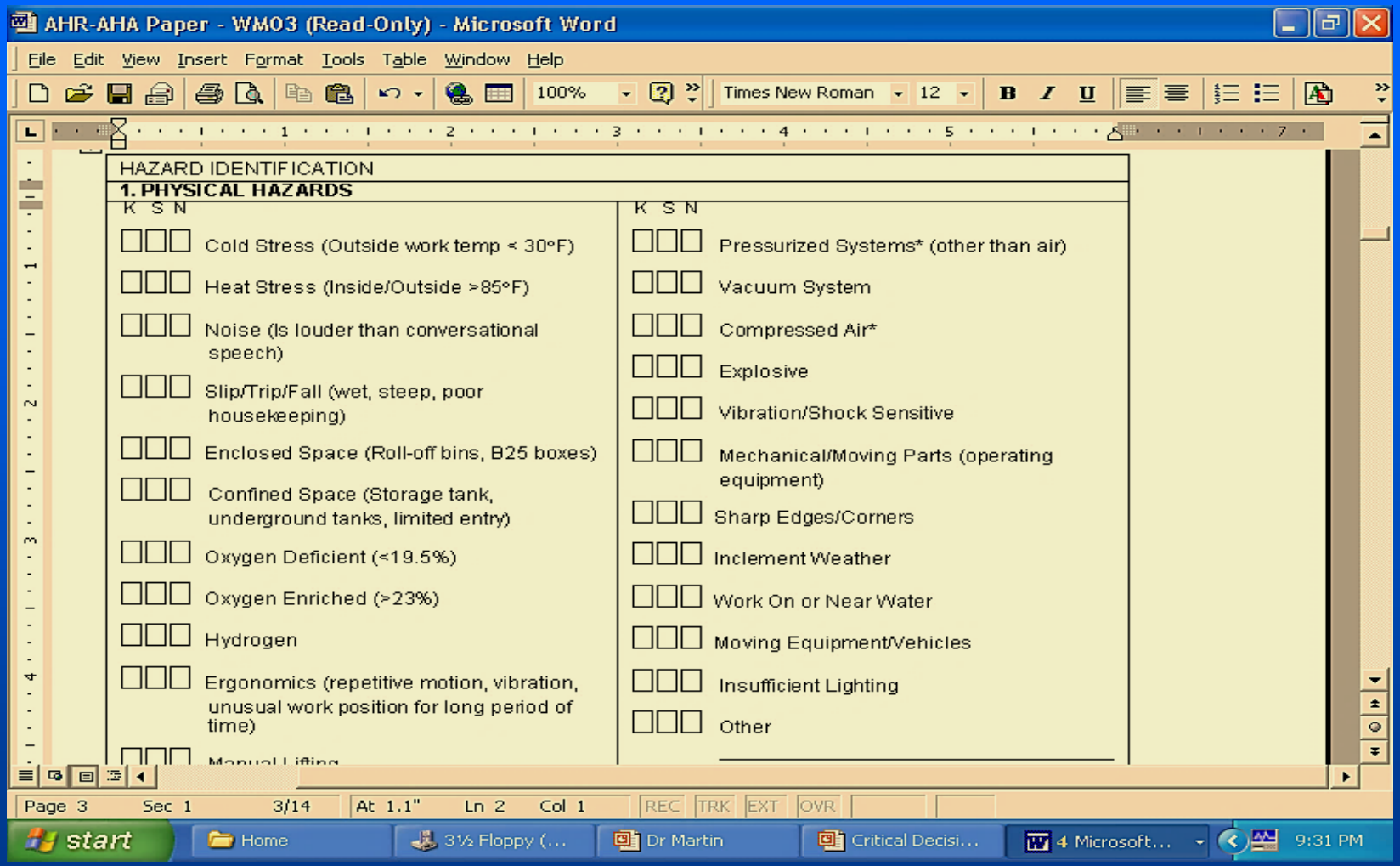


Define the Process

A generic floor plan for issuing respiratory protection was developed identifying inventory receipt, storage, distribution, sizing and fitting stations, returns, and expected flow of employees.

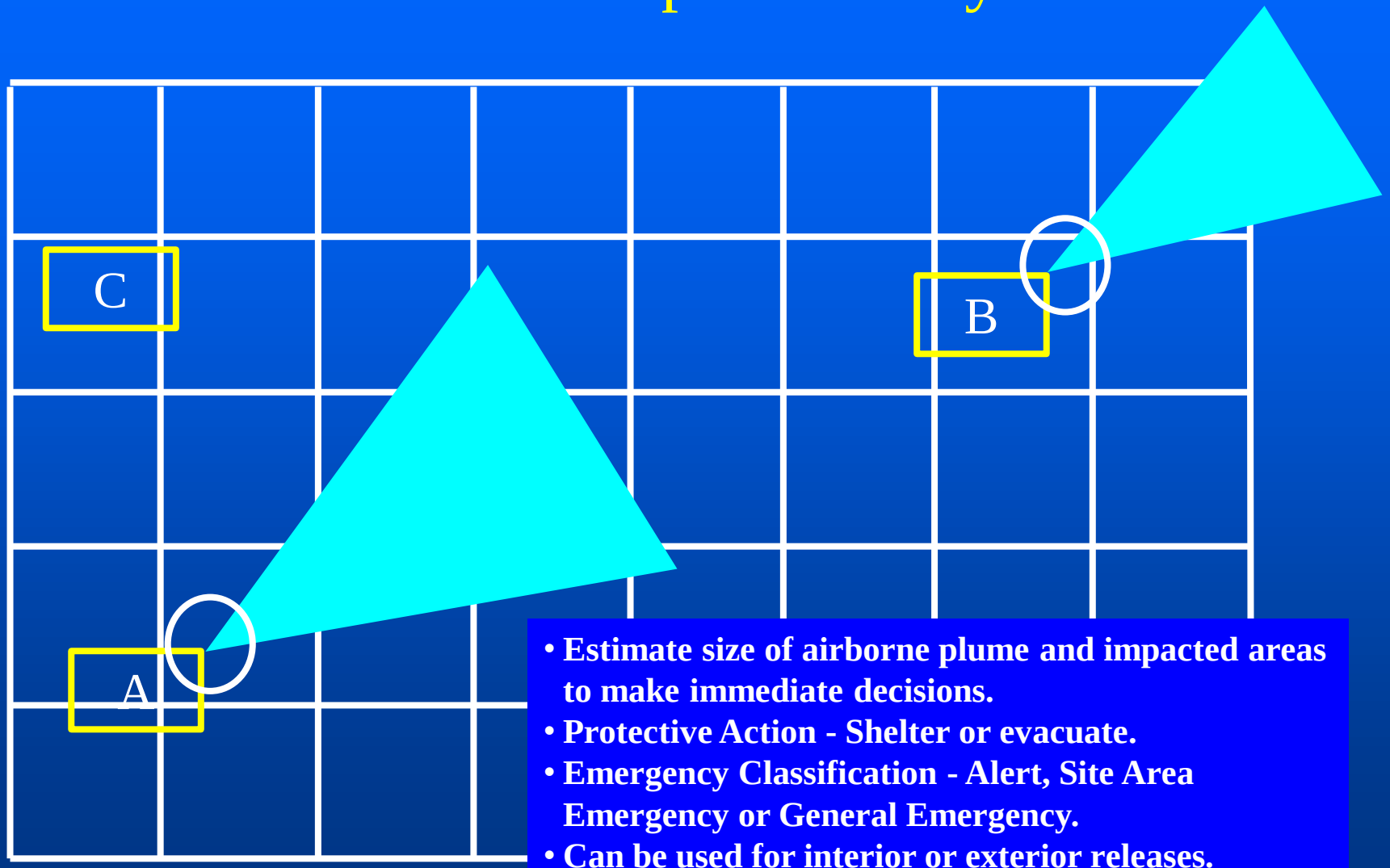


Work Process to Field – Activity Hazard Review (AHR) Worksheet



Potts, Hylko & Douglas, An Advanced Tool for Applied Integrated Safety Management, *WM2003*.

On-Site (A) and Off-Site (B) Receptor Impacts – Use of Site Maps / Overlays



- **Estimate size of airborne plume and impacted areas to make immediate decisions.**
- **Protective Action - Shelter or evacuate.**
- **Emergency Classification - Alert, Site Area Emergency or General Emergency.**
- **Can be used for interior or exterior releases.**

Hylko's E=0© Concept – Start with the Top 10

- 2017 TOP TEN **Most Frequently Cited Standards** (October 1, 2016, to September 30, 2017)

1. Fall Protection, Construction (29 CFR 1926.501) – Gravitational
2. Hazard Communication Standard, General Industry (29 CFR 1910.1200) – Chemical Reaction
3. Scaffolding, General Requirements, Construction (29 CFR 1926.451) - Gravitational
4. Respiratory Protection, General Industry (29 CFR 1910.134) – Chemical Reaction
5. Control of Hazardous Energy (Lockout/Tagout), General Industry (29 CFR 1910.147) - Mechanical / Electromagnetic
6. Ladders, Construction (29 CFR 1926.1053) - Gravitational

Hylko's E=0© Concept – Top 10 Continued

7. Powered Industrial Trucks, General Industry (29 CFR 1910.178) – Mechanical
8. Machinery and Machine Guarding, General Requirements (29 CFR 1910.212) - Mechanical / Electromagnetic
9. Fall Protection – Training Requirements (29 CFR 1926.503) - Gravitational
10. Electrical, Wiring Methods, Components and Equipment, General Industry (29 CFR 1910.305) – Electromagnetic

Gravitational – 4

Mechanical / Electromagnetic - 4

Chemical Reaction – 2

Forms of Energy - E=0©

- Potential Energy – Energy of Position
  - **Stored energy** that can be drawn upon to do work.
  - An object gets potential energy from height, mass and gravity.
  - Motion waiting to happen based on an object's position, such as the energy found in **elevated, suspended, compressed, or coiled materials**.
  - Potential energy can be converted to kinetic energy to do work.
- Kinetic Energy – Energy of Motion
  - An object gets kinetic energy from its mass and velocity.
  - Energy resulting from **moving objects**, such as released loads, uncoiling springs, and moving machinery.
  - When these objects are released, their potential energy is converted to kinetic energy.

When Energy Becomes Hazardous

- When Does Energy becomes hazardous? **E > 0**

- How do you achieve a "Safe State" of **E = 0**?
  - Identify Kinetic and / or Potential energy sources
  - Identify energy-reducing or isolating devices
  - De-energize equipment – Approach **E = 0**
  - Secure energy-isolating devices to achieve **E = 0**
  - Position equipment to achieve **E = 0**
  - Verify **E = 0** or a significant reduction in **E**

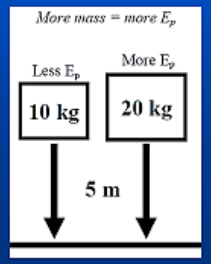
Potential Energy - Hylko's E=0© Concept

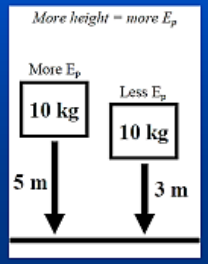
Potential Energy (in Joules) → $E_p = mgh$

- m ← mass (in kilograms)
- h ← height (in meters)
- g ← acceleration due to gravity (9.8 m/s²)

Potential energy equals mass times gravity times height.

And since $F_w = mg$, then $E_p = F_w h$

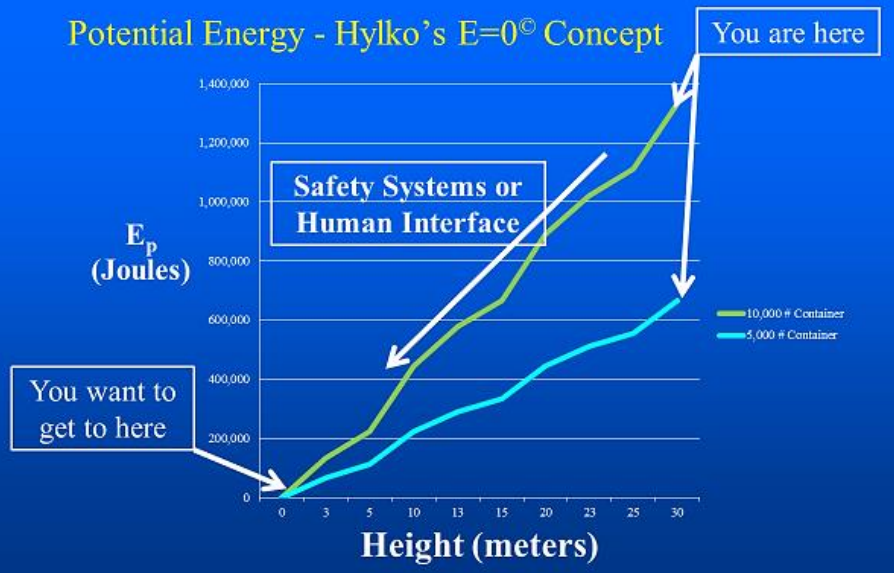




Ex: How much potential energy does a 4 kg object have that is 5 meters off the ground?

m = 4 kg h = 5 m g = 9.8 m/s² E_p = ?	$E_p = mgh$ $E_p = (4\text{ kg})(9.8\text{ m/s}^2)(5\text{ m})$ $E_p = 196$ Joules

Potential Energy - Hylko's E=0© Concept

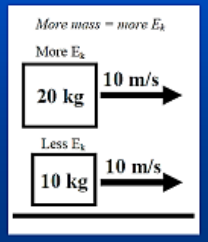


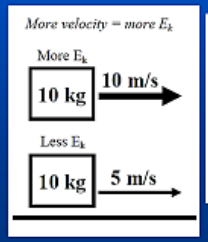
Kinetic Energy - Hylko's E=0© Concept

Kinetic Energy (in Joules) → $E_k = (\frac{1}{2})mv^2$

- m ← mass (in kilograms)
- v ← velocity (m/s)

Kinetic energy equals one-half times mass times velocity squared.

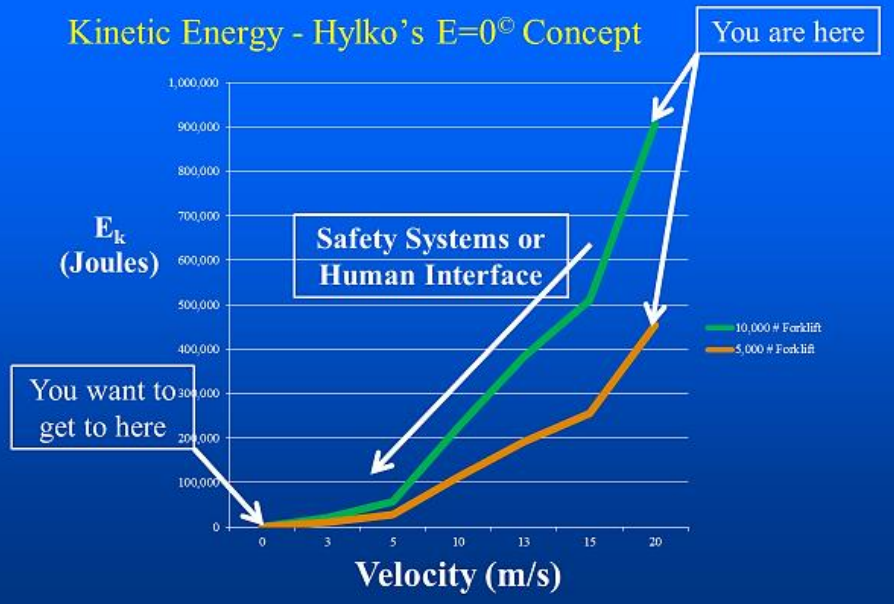




Ex: How much kinetic energy does a 10 kg object traveling 3 m/s?

m = 10 kg v = 3 m/s E_k = ?	$E_k = \frac{1}{2}mv^2$ $E_k = \frac{1}{2}(10\text{ kg})(3\text{ m/s})^2$ $= (5\text{ kg})(9\text{ m}^2/\text{s}^2)$ $= 45$ Joules

Kinetic Energy - Hylko's E=0© Concept



E=0©

- Programme concepts are based on paper.
- A programme **Concept** is now...

HAZARD RISK ASSESSMENT MATRIX

Frequency of Occurrence	Hazard Categories 1 Catastrophic	2 Critical	3 Serious	4 Minor
(A) Frequent	1A	2A	3A	4A
(B) Probable	1B	2B	3B	4B
(C) Occasional	1C	2C	3C	4C
(D) Remote	1D	2D	3D	4D
(E) Improbable	1E	2E	3E	4E

Unacceptable High Medium Low

- A moving forklift relocating an object is now a **Visual** form of energy (E).

Hazardous Energy - E=0©

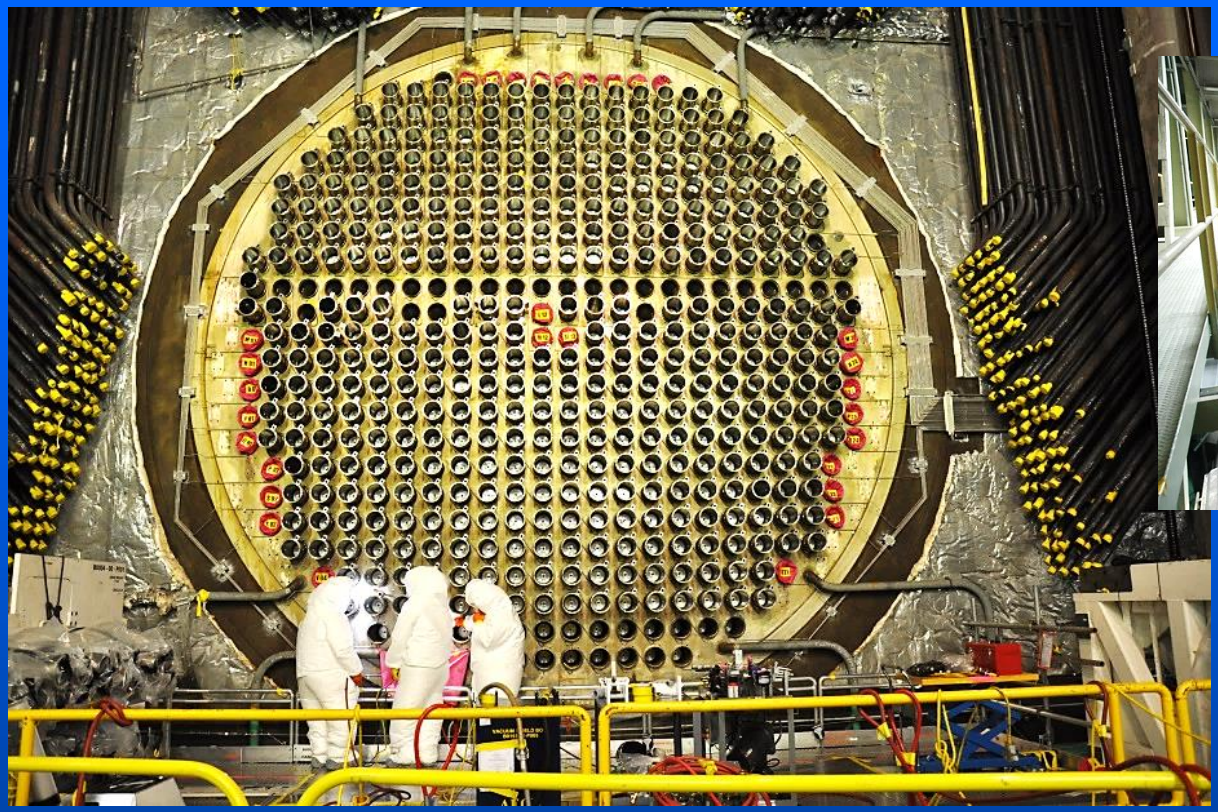
- Safety questions and slogan statements change from:
  - Are you working safe?
  - Safety is everyone's business.
  - I am responsible for my own safety.
  - Accidents big or small, avoid them all.

  Source: Web

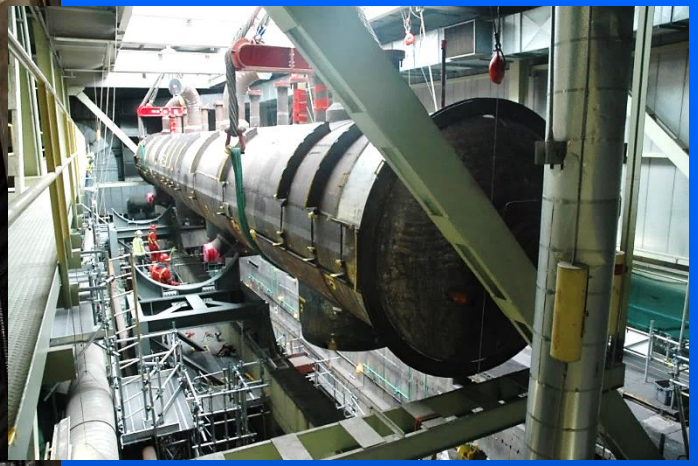
- To:

  - E = 0©
    - Eliminates subjectivity and adding unnecessary complexity to safety controls that can be viewed as just a symbolic gesture.

Case Study 1 – Bruce CANDU Restart



CANDU Reactor Core – Fuel Channel Replacement



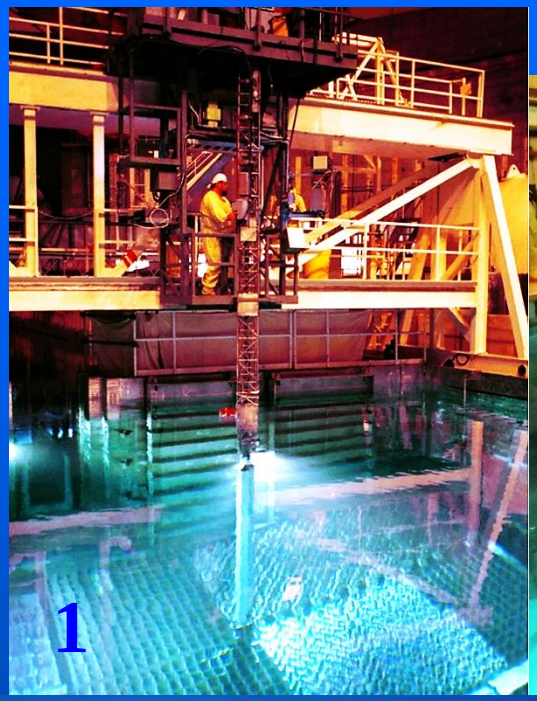
A 250-t steam drum is lifted up and set aside to provide access to the four steam generators below. After the steam generators are replaced, the steam drum is lifted back into position and reconnected to the tops of the new vessels.

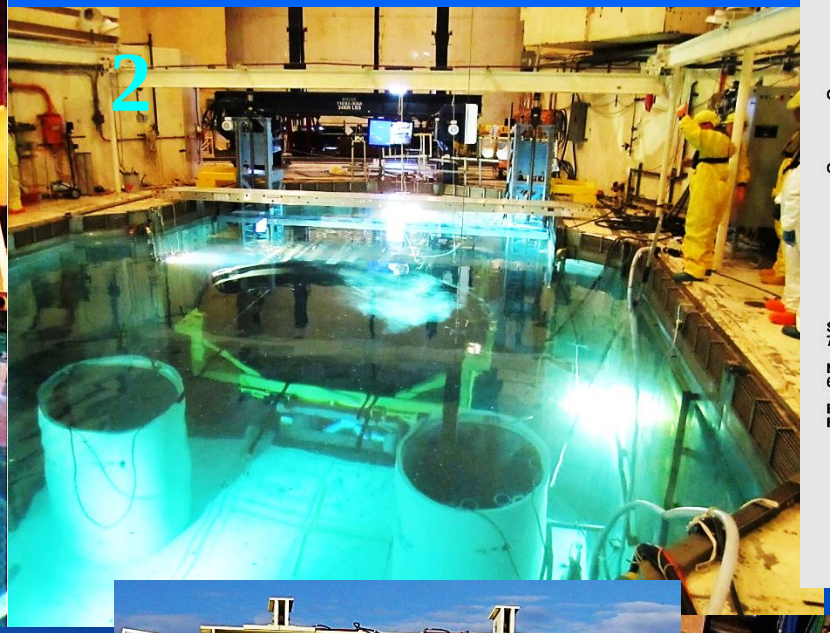
Design: Phase-separator for the steam/water mixture.

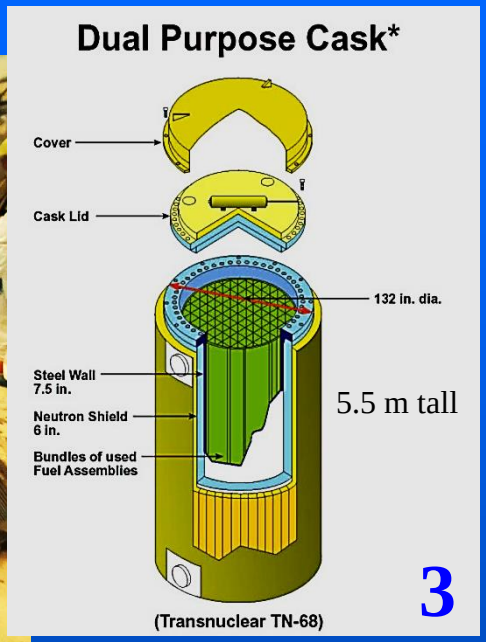
Health Physics requires you to wear a respirator. Industrial Hygiene monitors the respirator protection programme (includes medical qualification, training and fit testing)

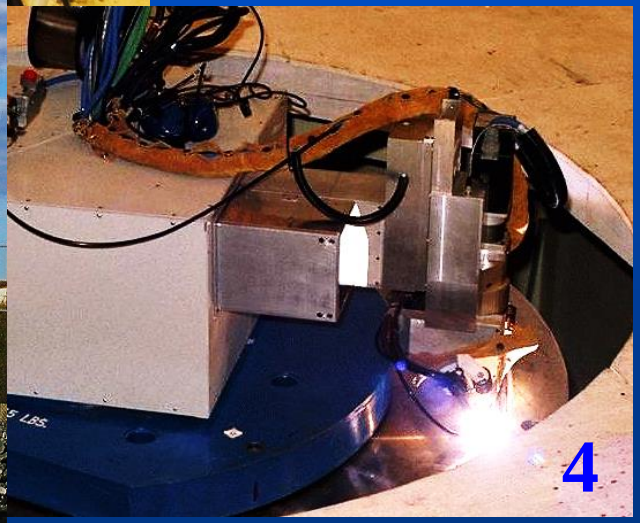
Photos Courtesy: Bruce Power

Case Study 2 – Fuel Loading and Transfer to Dry-Cask Storage Installation





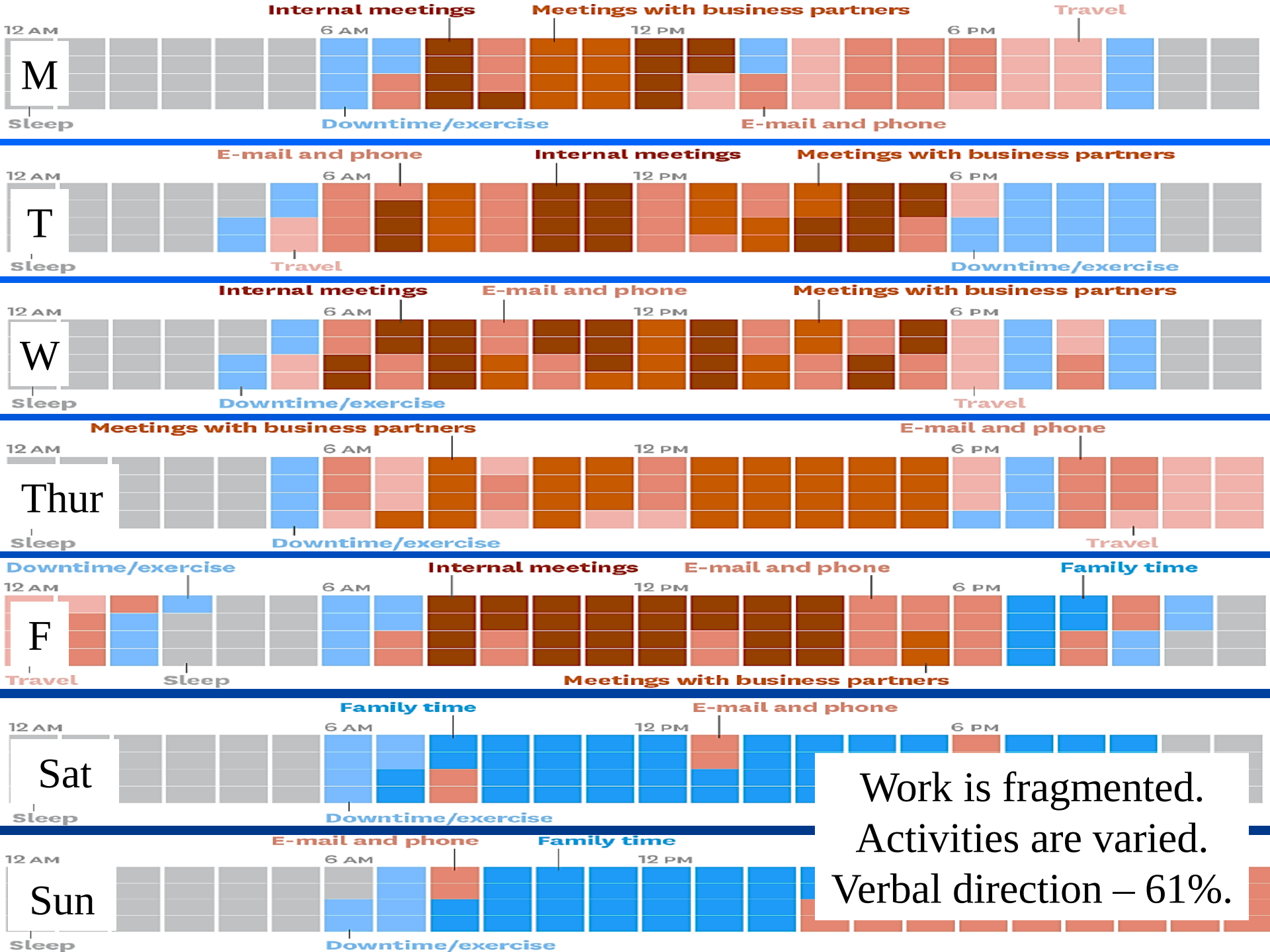




Photos Courtesy: *Zion*Solutions and USNRC

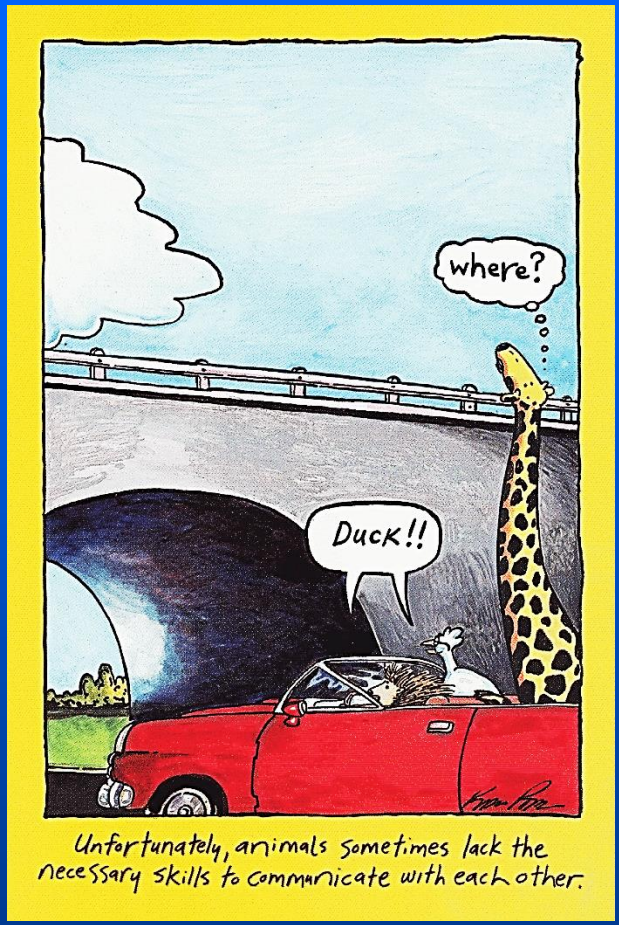
LO3 – When You are in Charge! Examining the Manager / Leader Mystique of Success

- **Manager (Quantitative):** A person responsible for controlling or administering all or part of a company or similar organization. **(Day-to-day operations, not necessarily a leader).**
- **Leader (Qualitative):** The person who leads or commands a group, organization, or country. **(Produce change, could be a manager).**
- **Expert:** Someone called in who lives >60 km away from the work site.
- Management and leadership are **two distinctive and complementary systems** of action.
- Both are necessary for success in an increasingly complex and changing business environment.


M
Internal meetings
Meetings with business partners
Travel
12 AM
6 AM
12 PM
6 PM
Sleep
Downtime/exercise
E-mail and phone
T
E-mail and phone
Internal meetings
Meetings with business partners
Sleep
Travel
Downtime/exercise
W
Internal meetings
E-mail and phone
Meetings with business partners
Sleep
Downtime/exercise
Travel
Thur
Meetings with business partners
E-mail and phone
Sleep
Downtime/exercise
Travel
F
Downtime/exercise
Internal meetings
E-mail and phone
Family time
Travel
Sleep
Meetings with business partners
Sat
Family time
E-mail and phone
Sleep
Downtime/exercise
Sun
E-mail and phone
Family time
Sleep
Downtime/exercise
Work is fragmented.
Activities are varied.
Verbal direction – 61%.

Communication Means Different Things to Different People – "Detection"

- Detection – Alarm System
  - Safety & non-safety systems
  - Operations
  - Emergency Planning
- **Detection – Measurement**
  - Calibration & acceptance criteria
  - Process Instrumentation & Sampling
  - Characterization
- ***Detection – Inspect to verify*** conformance to specific design requirements
  - Warehouse & Receiving
  - Quality Assurance & Quality Control



Paper Exercise

Get it…Got it…Good!

- Forwarding information and directives to your direct reports is accomplished through measurable results, in the form of a written statement, to be achieved within a given period of time.
- A handy, **three-way test** to judge how well objectives are communicated:
  - **Test 1:** Does this objective tell me exactly *what* is the intended result?
  - **Test 2:** Does this objective specify *when* the intended result is to be accomplished?
  - **Test 3:** Can the intended result be *measured* or *validated*?

Get it…Got it…Good!

- Statements of intention that fail one or more of these three tests do not qualify as objectives and will tend to hinder rather than help the planning process.
- What / When / Measured or validated?*

  Examples:

  P/F - To increase plant capacity factor to 95%.

  P/F - To ship 25% of our generated waste volume by the end of the quarter.

  P/F - To reduce the number of backlogged corrective actions, at least by half, every month.

You Must Delegate to Succeed!

- Delegation is the process of **assigning various degrees of decision-making authority** to direct reports.
- Although authority is passed along to direct reports, **ultimate responsibility cannot be passed** along.
  - The coach is **fired** after a losing season or losing key rivalry games.
- Therefore, delegation becomes the **sharing of authority**, not the abdication of responsibility.

You Must Delegate to Succeed!

- **Degrees of delegation (and experience)**
  - **Low: Investigate and report back.** Direct report provides manager with information. **Manager** then uses facts to identify decision alternatives, makes the decision and **takes action**.
  - **Moderate: Investigate and advise on action planned.** Manager approves or disapproves recommended course of action provided by direct report.
  - **High:** Investigate and take action. **Direct report pursues course of action.**

You are managing strategy, not effort.
Before you can delegate, **you must communicate!**

Creating Leaders

Coach → **C** | **Players**

- Captain (C) serves as a barrier between the coach and players (i.e., a shield for the team).
- Forces the players to trust the Captain and each other.
- Captain serves as a *de facto* coach during the game.
- Players are less dependent on the coach during routine game situations.
- Coach can become isolated from one or more players.

Creating Leaders

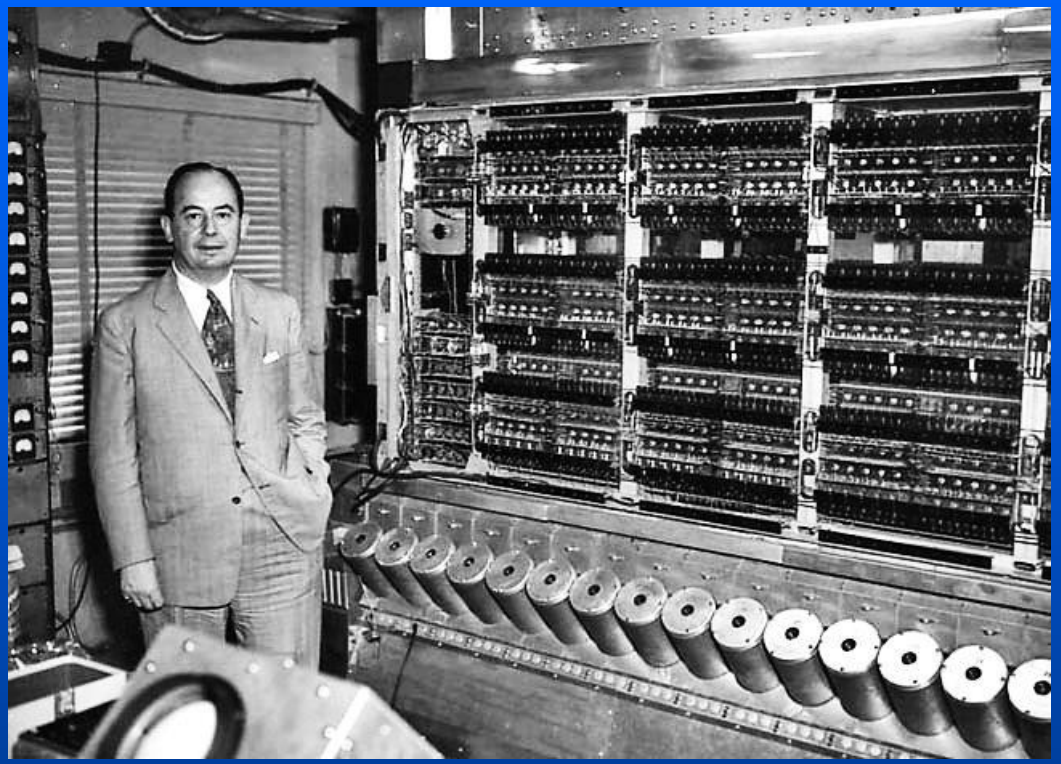
- A player's coach.
- Players trust the coach.
- Captain and players may become too dependent on the coach.
- Assistant coaches monitor that players are treated evenly and fairly.
- Both cases - A strong bench determines a championship.
- Both cases - Your programme has a three-year longevity.

LO4 – Tracking Ideas into Performance

"There's no sense in being precise when you don't even know what you're talking about."

John von Neumann

1903 - 1957



Markers and Metrics - How Do We Know the Programme is Working?

- **Quantitative** - Numbers and Rates.
  - Accumulated over 650,000 safe work hours.
  - Downward trend of accident and injury rates.
- **Qualitative** - Self assessments (The real reason for management!).
  - Are employees wearing gloves when handling abrasive materials / items?

"If one takes care of the means, the end will take care of itself." ***Ghandi***

Success Stories – Daily & Weekly

- A management representative leads the 6:00 am Plan of the Day – every morning / off hours.
  - Standard information
    - Safety topic
    - Weather
    - Match scores of local teams
  - Identify and resolve safety issues in the field
  - Discuss project details, metrics, trends
  - Host other departments (e.g., Human Resources)

Show stopper: "How will you achieve a balance between cost, schedule and safety?"

When to Say Good-Bye – A Horrible Relief!

- Contract ends or is terminated
- Budget cuts / Scope reduction
- Failure to achieve goals
  - Did your job responsibilities change?
- Nepotism
  - Appointment without proper regard to qualifications.
- Unpopular managerial decisions
  - Rule of thumb: You lose 10% of your credibility every year.

"I've been here 13 years. You do the math!"

Colleague Comment

Trends in Employee Turnover

- Are there positions that you have trouble keeping filled?
- Do employees tend to stay for the same length of time before they leave?
- Are employees leaving for similar reasons?
  - Accepting a managerial position at another location?

"You did not quit. You just knew when to recognize futility."

Colleague Comment

LO5 – Nuclear Managerial and Leadership Career Advice

- Good performance is still the basic foundation of success.
- How you communicate will eventually overshadow your technical skills and influence your upward mobility.
- Hire for talent or develop internally.
  - Hire contractor for short-term assignments
- PUBLISH YOUR WORK.

"Do you want 5 things half done or 10 things half done?"

J.M. Hylko

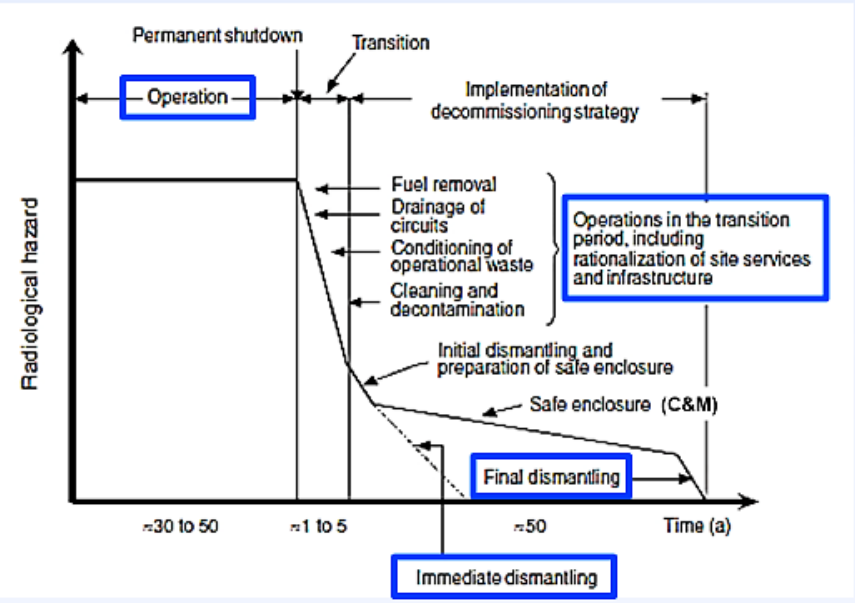
Looking Either Up or Down the Career Ladder…

- Your career within your organization will be determined by the competency of your immediate supervisor.
  - Do they reflect confidence?
  - Do they see you as a threat to their position?
- A strong "bench" wins championships, but key players still need to make the "big plays" in the "big games".
- Expect major changes in the company and your department every three years.

"Your direct reports will not accept you until they have a reason." ***J.M. Hylko***

Summary Highlights

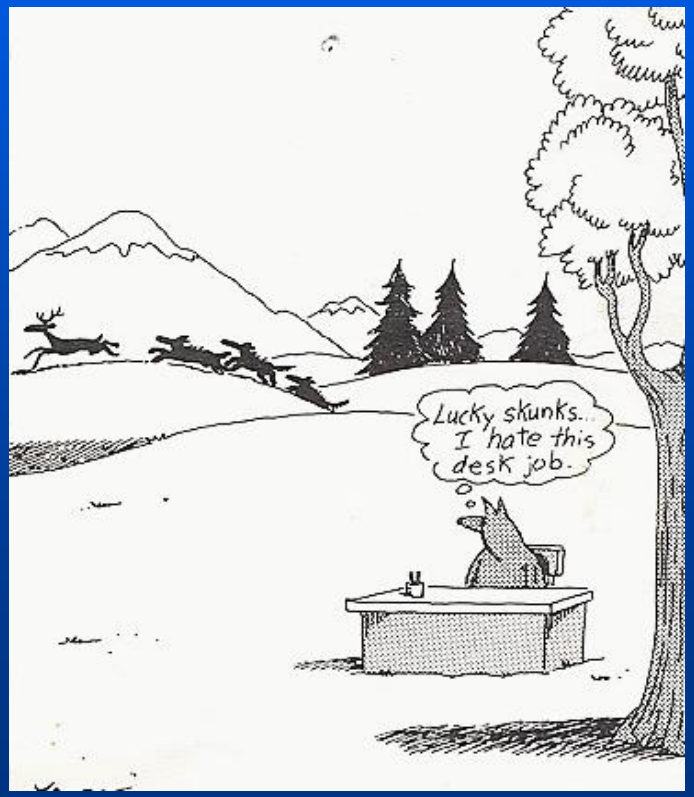
- Explored the concept of transitioning from an SME to a manager, and ultimately a leader.
- Manager – Here and now, consistency, predictability, and orderly results.
- Leader - Observe patterns and relationships to produce change.
  - Construction to operations
  - Operations to decommissioning



Source: SAFETY CONSIDERATIONS IN THE TRANSITION FROM OPERATION TO DECOMMISSIONING OF NUCLEAR FACILITIES, IAEA, 2004.

Summary Highlights

- Provided tools to help you succeed.
  - Organizational chart and programme requirements
  - The “Top 10” cited standards
  - Conducted activity hazard reviews in terms of energy (E=0©)
- Delegation and the three-way communication test
  - What, when, measured or validated
- Quantitative and qualitative metrics
  - Injuries and accidents
  - Results from field inspections
- Daily & weekly success stories
- Departures and turnover
- Career advice
  - Publish your work



Five Programme Take-A-Ways

- **1) Management Commitment and Safety Expenditures** - Consistently identified as a critical component of an effective safety program. The importance of safety roles / responsibilities was further underscored by companies having a written health and safety program, and a safety incentive program.
- **2) Employee Involvement (e.g., safety committees)** – Viewing the employee as the "ultimate shareholder" increasingly came to be recognized as the primary key to an effective safety program.

Five Programme Take-A-Ways

- **3) Worksite Analysis** - Having a full-time safety manager, implementing a safety inspection programme (e.g., hazard analysis, accident investigations, pre-job/pre-task planning) or actively tracking the cost of worksite injuries and illnesses.
- **4) Hazard Prevention and Control** - Credited as the single most important element that can directly reduce workplace injuries (e.g., accessibly to first-aid and medical services).
- **5) Meaningful Training** - An essential component of an effective safety programme that contributes to a higher presence of clearly defined roles and responsibilities.

"If you are doing things correctly, the numbers take care of themselves." ***J.M. Hylko***

The Future of Hazard Analysis & Emergency Response

Table 2: Example Threats and Hazards

Natural	Technological	Human-caused
▪ Avalanche ▪ Animal disease outbreak ▪ Drought ▪ Earthquake ▪ Epidemic ▪ Flood ▪ Hurricane ▪ Landslide ▪ Pandemic ▪ Tornado ▪ Tsunami ▪ Volcanic eruption ▪ Wildfire ▪ Winter storm	▪ Airplane crash ▪ Dam failure ▪ Levee failure ▪ Mine accident ▪ Hazardous materials release ▪ Power failure ▪ Radiological release ▪ Train derailment ▪ Urban conflagration	▪ Biological attack ▪ Chemical attack ▪ Cyber incident ▪ Explosives attack ▪ Radiological attack ▪ Sabotage ▪ School and workplace violence • **Off-site support not able to respond**

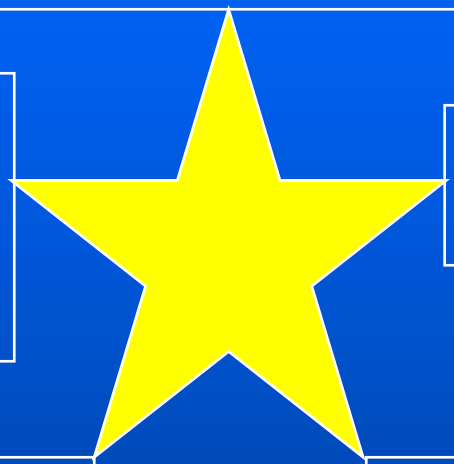
Comprehensive Preparedness Guide (CPG) 201, Second Edition released August 2013
http://www.fema.gov/media-library/assets/documents/26335

It Is Your Department!

- As the manager:
  - You maintain ***oversight*** of the program
- Direct-reports implement the program:
  - You ***Developed*** and ***Issued*** the tools
  - You ***Delegated*** your authority*

Reason: Your direct reports ***use these tools*** and ***delegated authority*** to ***perform*** the scope of work and ***implement*** your game plan.

Hylko's Star of Success



Communicate, communicate, communicate.

Maintain adequate resources to achieve safety, compliance and mission.

Prioritize responsibilities.

Train new employees so existing employees can advance in their careers.

Retain experienced employees to reduce loss of "corporate memory".

LO6 – Additional Slides & Handouts

- 1) Getting Good Information from Others
- 2) Evaluating Managerial Strengths and Weaknesses
  - 8-9: Strength zone, mentor others
  - 5-7: Target for growth, potential to make it a strength
  - 0-4: Improve through professional development or hire / partner with others
- 3) *Outside the Corner Office* - *Promotions and the Bucket of Ashes* – Should promotions be based on past accomplishments or ability to grow into new managerial / leadership responsibilities?
- 4) Activity Hazard Review Form
- Additional slides can be found after the contact information slide.

Terminal Objective

- You now have the tools to implement and put this information into practice while on your journey to becoming a visionary leader and efficient manager.

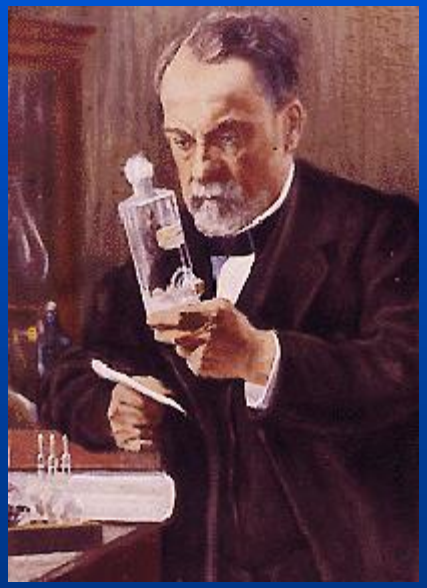
"In the fields of observation, chance favors only the prepared mind."

Louis Pasteur

27 December 1822 – 28 September 1895

French microbiologist, chemist, pioneer of the "Germ theory of disease", and inventor of the process of Pasteurization.

Lecture, University of Lille - 7 December 1854



Contact Information

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Additional slides

References:

POWER article and white paper: J. Hylko, Safety Culture: A Common Construct Requiring Commitment from the Board Room to the Shop Floor, http://www.powermag.com/safety-culture-a-common-construct-requiring-commitment-from-the-board-room-to-the-shop-floor/; June 1, 2017.

Configuration Management Process

Approved

Drawings, Documented Safety Analysis, Hazard controls, Training, Procedures

Engineering/OPS

Coordinates installation

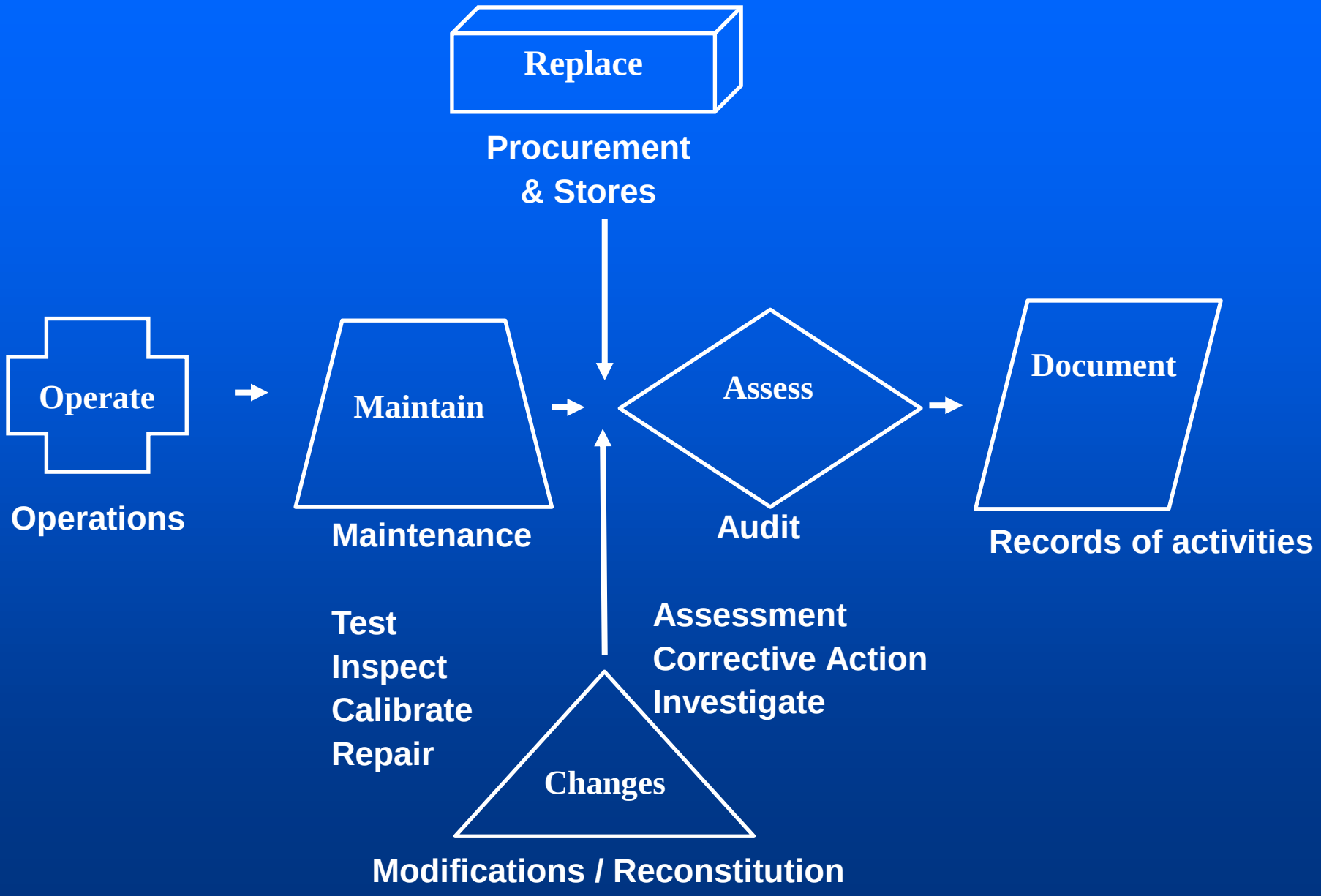
Maintenance, Operations

Tests, verifies performance

Operations

Continued →

Configuration Management Process



Characteristics of a positive safety culture

- Leaders demonstrate a commitment to safety in their decisions and behaviors
  - Commonly seen on the shop floor.
  - Are errors considered as negative to the business, or as learning opportunities?
- Problem identification and resolution
  - Issues are promptly identified, evaluated, and corrected commensurate with their significance.
- Environment for raising concerns
  - A safety conscious work environment exits where personnel feel free to raise safety concerns without fear of retaliation, intimidation, harassment or discrimination.

Source: NRC Safety Culture website (nrc.gov/about-nrc/safety-culture.html)

Characteristics of a positive safety culture

- A defined organization
  - Defined short-term and long-term objectives.
  - Skills to accomplish objectives.
  - Internal and external communication.
- Proper alignment and allocation of resources in proportion to needs
  - Organization charts.
  - Independence of Safety and Quality Assurance.

Characteristics of a positive safety culture

- Defined job positions and assignments
  - Establishing performance standards (e.g., performance-based indicators) instead of a moving target.
  - Understanding the assignment product or output, and how this supports the department and company.
- The responsibility that each employee possesses in executing their jobs
  - Dependency on each other.
  - When employees are empowered, they work to achieve success instead of working to avoid failure.
  - What happens when no one is looking?

Safety culture survey results and performance

- Less of a questioning attitude yielded a higher numbers of allegations.
- Reporting safety concerns through the allegation programme may indicate less confidence in their internal processes for identifying and resolving safety issues.
- Plants having lower overall safety culture survey scores were more likely to have: a) higher counts of unplanned scrams; and 2) inspection findings related to inadequacies in problem identification, resolution, and management commitment to safety.

Are the data good?

- The industrial safety accident rate is a less relevant measure of performance to an organization's safety culture as compared to other metrics.
- There are no established thresholds for determining a "healthy" or "unhealthy" safety culture.
- It is much easier to draw on the strengths of the safety culture to create change.
- Survey results obtained from: S. Morrow, G.K. Koves, V.E. Barnes, "Exploring the Relationship Between Safety Culture and Safety Performance in U.S. Nuclear Power Operations, *Safety Science*, 69, 37–47, 2014.

Test Interview

1. What motivates you to put forth your greatest effort?
2. How do you make important decisions?
3. Do you take calculated risks (Risk Management)?
4. What do you consider to be your most significant accomplishment, and why?
5. Describe your approach to transitioning employees into your department.
6. Have you ever reduced costs for your organization?
7. How do you handle conflicts between safety, cost, and schedule?
8. How do you motivate your employees?

Test Interview

9. Describe your approach to increase or decrease staffing to meet the work schedule.
10. What is it about your leadership style that allows you to meet your commitments?
11. What are your strengths and weaknesses?
    - Chocolate.
12. Why should we trust you?
13. Provide five words that describe you.

Managing vs. Leadership - Examples

- 1. Planning and budgeting vs. setting direction.
- Management's function is **predictability**, and **orderly results**.
- Leadership's function is to **produce change**.
- Observe patterns and relationships.
- 2. Organizing and staffing vs. aligning people.
- Managers look for the right fit between **people and skills (jobs)**; systems ensure that **plans are implemented** precisely and efficiently.
- Leaders look for the right fit between **people and the vision**; communication can yield success or failure.

Managing vs. Leadership - Examples

- 3. Controlling activities and solving problems vs. motivating and inspiring.
- Managers strive to make it easy for people to **complete routine jobs** day after day.
- Since high energy is essential to overcoming barriers to change, **leaders** attempt to instill a sense of **belonging, idealism, and attitude**.

Summary:

- Management is **quantitative**.
- Leadership is **qualitative**.