HONEYWELL
FEDERAL MANUFACTURING
& TECHNOLOGIES (FM&T)

KANSAS CITY PLANT

KNOWLEDGE
PRESERVATION
PROGRAM
Technical Service Laboratories

- Provide comprehensive analytical services in four areas:
  - metallurgical,
  - mechanical analysis,
  - analytical chemistry,
  - environmental testing and nondestructive testing.

Learning Technologies and Services

- Produces high-tech training programs and products:
  - Computer-based training
  - Simulations and analysis
  - Technical certification
  - Emergency management support
  - Knowledge preservation.

Transportation Safeguards

- Craddock Modifications Center provides vehicle design, modification, and refurbishment for the safe, secure transport of nuclear material.

Electronic Products

- A leader in electronics manufacturing
- Skilled in low-volume, robust, high reliability production techniques.

Mechanical Products

- From semi-tractor trailers to miniature electromechanical devices

Engineered Materials/Product Testing

- Develop processes to successfully convert designs from the national laboratories into products
Between 1946 and 1964, about 75 million children were born in the United States.

Today, the baby-boom generation totals approximately 83 million, including those born in other countries but now residing in America.

Technically, the year 2005 marked the beginning of the baby-boom exodus from the workforce. Beginning that year, every seven seconds, another baby boomer will turn 60—and reach retirement age—a process that will continue for the next 18 years.

Approximately 8,000 people turn 60 every day in this country in 2006 or 330 every hour.
(5) BARRIERS TO ORGANIZATIONAL KNOWLEDGE RETENTION*

- Lost Knowledge Is A Problem Whose Costs Are Largely Hidden
- Uncertainty About Where An Organization Is Most Vulnerable To Lost Knowledge
- No Clear Ownership Of The Problem Of Lost Knowledge
- No “Slack” Time For Knowledge-sharing Activities
- Capturing Knowledge Alone May Not Be Enough

*David DeLong – Institute for Strategic Change
FM&T KCP KNOWLEDGE PRESERVATION (KP) OBJECTIVE

- Preserve critical knowledge about manufacturing processes at the Kansas City Plant
- Utilize a systematic approach for selecting, and capturing institutional knowledge
- Reducing the Cost to Restart Production
- Maintaining Critical Knowledge/Information
- Training for Nuclear Weapons Complex Associates
THE FM&T KNOWLEDGE PRESERVATION PROCESS

Critical process information at risk of losing

Identify and prioritize process to capture

Map process using Six-Sigma methods

Gather process documents

Capture Documentation

Critical information preserved and available to current FM&T associates

Videos of process and SME notes

Process map driven program that uses:
- Video clips/animations
- Text documents
- Graphics

Videos available to use in Documentation

Capture multimedia information

Deliver information on web platform

Check KP video clips into matrix

The Kansas City Plant is operated and managed by Honeywell Federal Manufacturing & Technologies, LLC, for the NNSA.
STEPS OF THE FM&T KNOWLEDGE PRESERVATION PROCESS
I. IDENTIFICATION/PRIORITIZATION OF PROCESSES TO CAPTURE

1. Loss of key personnel
2. Process shutdown
3. Process relocation
4. Infrequently used process/Restart difficulty
5. Non-routine process Difficult to Develop Processes
Technically knowledgeable key personnel and **process owners** support each knowledge preservation project.

Process owners are responsible for developing complete Six Sigma process maps.

The knowledge preservation team works with the process owners to **identify the critical processes/information/steps** for knowledge capture.

II. MAP THE PROCESS USING SIX SIGMA PROCESSES

- Verify Hardness
- GME Encapsulation

Identify Process to Capture
- Map Process
- Gather Process Documentation
- Capture Multimedia Information
- Web Platform

- Encapsulated Sample Ready for Hardness Testing
  - Sample removed
  - Equipment needed

- Unload Sample
  - Sample held
  - D. Duremeter Shore scale at "IN" setting

- Prepare Duremeter
  - D. Duremeter

- Hardness determined
- Contact location identified
- PICS software accessed

- Mark Sample
  - GV$ epoxy on number
  - Date
  - Typical pass: 5550094403
  - Diagram: 025586-01-01

- Press Duremeter against Sample
  - D. Duremeter
  - Epoxy sample at room temperature

- Hardness verified
- Reading is within specifications
  - Hardness of Encapsulated Sample verified

- Record Reading
  - Serial number

- PICS terminal
  - Password
  - Part number
  - Associate number
  - Serial number
III. GATHER PROCESS DOCUMENTATION

FM&T process owners and the knowledge preservation team gather all necessary documentation for the knowledge capture process such as:

- Work instructions/drawings
- Travelers
- Reports
- Any background information that explains the process
The Knowledge Preservation team determines the suitable media to capture critical steps.

- Video clips (people, places, equipment…)
- Audio clips
- Animations
- Text documents
- Graphics

The KP team delivers the final multimedia product in a web-based format.
V. DELIVERY OF INFORMATION ON WEB PLATFORM

- KCP associates access via The Portal (Intranet)
- Developed in house
- Oracle database
- Two sites: Administrative & User
- Internet Explorer
- Windows Media Player
- Acrobat Reader needed to view documents
CAPTURE STEPS:
DEFINITIONS

- Overviews
- Documentation
- Step By Steps
- SME Notes
OVERVIEW VIDEOS

High Level Overview of Entire Program

Overview of a Process Step
STEP-BY-STEP VIDEO EXAMPLES

♣ Safety or environmental concerns

♣ Operator technique, expertise or refined method over time not documented

♣ Cause costly mistakes if performed incorrectly

♣ Rarely performed step

♣ Not well documented
Place 3 grades of Lapping Film on a firm, flat surface. Work from the coarsest to the finest grit and polish the end of the fiber down to the surface of the polishing bushing.

Example Of Video And Narration Of Related Step
SUBJECT MATTER EXPERT (SME) NOTES VIDEO EXAMPLES

♣ Historic information resulting in a process change
♣ Problems with process resulting in faulty parts
♣ Special lab requirements or specs
♣ Tacit knowledge of engineer
♣ Experienced engineer nearing retirement
♣ Updated process documentation indicating changes over time, but reason not documented
♣ "CAUTION", "NOTE" or "WARNING" added to documentation, but reason not documented
EVOLUTION OF A SME NOTE VIDEO

Critical Step Identified During Process Map Validation Stage
Hydroform of LANL Liner Process Staff Engineer

SME Note Session Follow-Up From Process Map Validation Stage
Staff Engineer

Edited Final SME Note with Cut Away Footage
Staff Engineer
Critical Step Identified During Process Map Validation Stage
Hydroform of LANL Liner Process

SME Note Session Follow-Up From Process Map Validation Stage Staff Engineer

Edited Final SME Note with Cut Away Footage Staff Engineer
QUESTIONS
????????
Explicit = Media-based
Written down

Tacit = People knowledge
in People’s head

Paper-based
Multimedia
Digitally-Indexed
Digitally-Active
Intellectual Property

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Patsents

Groups

Individuals