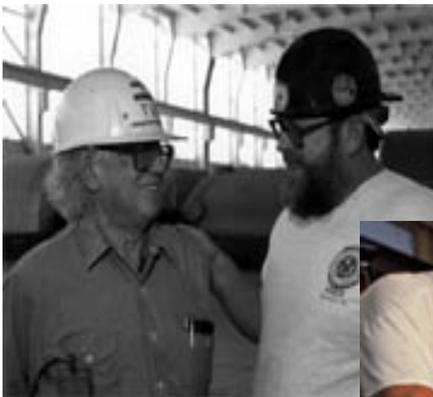# Knowledge Retention: Preventing Knowledge From Walking Out the Door

An Overview of Processes & Tools at the Tennessee Valley Authority

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Knowledge Retention:
Preventing Knowledge From Walking Out the Door
An Overview of Processes and Tools at the Tennessee Valley Authority

Summary

The Tennessee Valley Authority has developed and implemented a process to capture the undocumented knowledge of employees nearing retirement. This process -- and associated tools and support -- enable line managers to:

1. Identify critical "at risk" knowledge and skills, especially those associated with impending attrition.
2. Evaluate the risk associated with losing this critical knowledge and skills and focus on areas of greatest risk.
3. Develop and implement knowledge retention plans (documentation, mentoring, training, reengineering, sharing expertise, etc.) for managing this risk.

The results of this effort have been:
- An effective approach to addressing a critical organization need.
- Processes and tools for line managers to use in managing their workforce.
- Integration of staffing, training, job & organization redesign, process improvements and other responses.

Who is the Tennessee Valley Authority?
- ✓ America's largest power producer
- ✓ 12,300 employees

The Tennessee Valley Authority (TVA) is America's largest public power company. Founded by Congress in 1933, TVA's mission is to achieve "excellence in public service for the good of the people of the Tennessee Valley by supporting sustainable economic development, supplying affordable, reliable power, and managing a thriving river system."

Today, TVA's 12,400 employees serve a seven-state region and operate and maintain 11 fossil (coal-fired) plants, 29 hydroelectric dams, three nuclear plants, four combustion-turbine plants, a pumped storage facility and 17,000 miles of transmission lines. TVA provides some of the nation's lowest-cost and most reliable electric power.

The Challenge
- ✓ An aging workforce nearing retirement
- ✓ 30-40% eligible in the next 5 years
- ✓ Potential loss of critical, specialized knowledge
- ✓ Need for a process to identify staffing, training, job and organization redesign, etc. responses

TVA, like many other companies, is facing the imminent retirement of a large portion of its workforce. This is due to the demographics of the so-called "baby boom generation" and past downsizing efforts that prevented restocking the employee development "pipeline."

Attrition, primarily in the form of retirements, may cost TVA 30-40 percent of its workforce over the next five years. These experienced employees possess much unique, undocumented knowledge. The retention and transfer of this critical knowledge is critical to TVA's future efficiency and effectiveness.

This impending "brain drain" is especially relevant given the nature of TVA's work – 85% of its non-management employees are in positions requiring technical education, training, or both. Some highly-specialized, highly technical employees have emerged over the years – employees whose knowledge is critical to the operation and maintenance of its plants and transmission facilities, and whose knowledge is not adequately documented.

Many of these employees *literally* built the plants and facilities which they now operate and maintain.

Like many other utilities and enterprises, TVA has streamlined and flattened over the years, and "natural" understudies have disappeared in the process. Further, the average age of the TVA work force is older than the national and industry averages. The average age of a TVA employee is nearly 47 (compared to an electric utility industry average of about 43 and a national average worker age of 40).

Replacement planning is further influenced by the relatively long lead time required for training – many power operations jobs require 2 to 4 years of training before an employee is fully qualified.

Business Drivers
✓ Significant pressure to lower labor costs
✓ Increasing competition for a shrinking pool of candidates
✓ Continued low-cost, safe, reliable power requires a capable workforce
✓ Pressure to shorted the "time to competence" of new employees

TVA's success depends upon developing and maintaining a highly skilled workforce. Knowledge retention provides a systematic approach to ensuring that the critical knowledge of TVA's veteran employees is transferred to the workforce of the future.

TVA attrition challenge is driven by several factors:
- TVA's delivered cost of power is highly influenced by its ability to effectively manage labor costs. Managing this cost of power is critical in an increasingly deregulated electric utility industry.
- There is intense competition for qualified workers. The U.S. Department of Labor predicts a growing shortage of qualified candidates to fill jobs during first quarter of the 21st Century.
- TVA's long-term success requires that we develop workforce capabilities to become the supplier and employer of choice. We must recruit, retain, and reward top talent, while maintaining or reducing labor costs.
- Much of TVA's knowledge is undocumented "tribal" knowledge.
- Staffing will continue to be tight. Not all positions will be filled. And the "time to competence" of new employees must be minimized.

The Response
A simple process of :
✓ What?
✓ So What?
✓ Now What?

Beginning in 1999, TVA has developed and refined a simple process to identify at-risk knowledge, assess the risk, and mitigate the impact of critical knowledge loss. After piloting the process in several divisions and plants with excellent results, the process has been implemented enterprise-wide.

Supported by various aids and tools, the process allows line managers to answer three fundamental questions:
1. Specifically, what knowledge is being lost? ("What?")
2. What are the business consequences of losing each item of knowledge? ("So what?")
3. What can we do about each item? ("Now what?")

What?
Specifically, what knowledge is being lost?

The first step in the process identifies the positions and/or people where the potential knowledge loss is greatest and most imminent. It includes ratings of:
- Time until retirement
- Criticality of position.

✓ Who is nearing retirement?	To determine who is likely to retire, TVA does something few employers do when planning for attrition – <u>we ask</u>!

Since 1999, TVA has surveyed its employees to ask them when they plan to retire. Employees increasingly understand that this information is driving planning and the labor "pipeline" and is not being used to make individual personnel decisions. About 80% complete the voluntary questionnaire.

Coupled with an overall estimate of the position's criticality (provided by the employee's manager), this retirement estimate drives a "knowledge risk factor" which identifies where knowledge retention action is most needed. |
| ✓ What unique knowledge or skill do they have? | The next step is to interview the incumbents and their supervisors to learn the job's specific "knowledge content." Since it's important to identify both explicit and implicit (that is, tacit, undocumented) knowledge, the interviews include four kinds of questions:

General questions like 'What knowledge will the TVA miss most when you leave?" The answers identify higher-order kinds of knowledge such as complex problem solving or deep understanding of the idiosyncrasies of a piece of equipment.
Task questions such as how to conduct specific tests or operate certain pieces of equipment.
Fact or information questions focus on what the employee knows and generate lists of contacts, maps, manuals, and other information.
Pattern recognition questions ask about lessons learned and insights about what's likely to go wrong and how to fix it.

Based on these interviews, TVA compiles a list of potential "knowledge loss items" for the job. The next step is to analyze their importance and decide on the appropriate action to take to manage knowledge loss through attrition. |
| **So What?**
What are the business consequences of losing each item of knowledge or skill? Which ones are <u>most</u> critical to our core business? | This phase of the process focuses on narrowing the long list of knowledge items down to the critical few that truly require action. Again, the screening is based on several questions:
- What is the relative <u>importance</u> of this knowledge?
- What is the relative <u>immediacy</u> of knowledge loss?
- What is the <u>cost</u> and <u>feasibility</u> of recovering this knowledge, if lost?
- How difficult is it to <u>transfer</u> this knowledge?

As a result of this analysis, TVA knows which issues to ignore, which it can correct with minor effort, and which require extraordinary or immediate action, either because that knowledge can be lost rapidly or the organizational consequences would be severe if someone with that specific knowledge suddenly left the organization. The final step is to choose the most effective tactics for capturing or preserving such knowledge and then take action. |
| **Now What**?
What can we do about each item? | Once the focus is on the knowledge and skills that are truly critical, specific knowledge retention plans are established to retain the knowledge/skill or to lessen the impact of losing it.

In some cases, these knowledge retention plans might involve assigning a |

new employee to shadow the employee who's going to retire or cross-training someone who's currently in a different job. Sometimes, the response is documenting a procedure or process that's never been written down. Or perhaps the best knowledge retention strategy requires setting up a brown bag lunch twice a week where systems engineers can get together to discuss their work and problem-solve together. Some pieces of knowledge can even be eliminated by engineering them out. If "Lee" is the only one left who knows how to fix some ancient piece of equipment, it may make more sense to replace that equipment than to try to replace Lee's arcane know-how.

TVA's process considers a host of possible responses:
- Documentation (procedures, checklists, etc.)
- Engineer it out (change processes, update equipment, use "smart" tools and technology, eliminate task, etc.)
- Education & training (including classroom, simulator, OTJ, one-to-one coaching/mentoring, etc.)
- Establish alternative resources (outside contractors, retirees as consultants, shared expertise with other plant or divisions, use of communities of practice or professional networks, etc.)

Finally, responding to the attrition challenge requires an ongoing monitoring and evaluation of knowledge retention plans. This attention institutionalizes the process, and keeps the knowledge retention plans current. Attrition information is updated annually in the Business Planning process, and new attrition dates are added to existing KR information to identify any new critical risk areas. Additionally, areas are identified that may require total or partial reassessment. For these areas, the process begins again.

Process Delivery
✓ Line managers responsible
✓ HR enables through processes, tools, and consultation
✓ Web-based tools, forms, and checklists

Philosophically, TVA is committed to the principle that line managers are responsible for managing their resources – including their people resources. Human Resource's contribution is to enable line management to do this by providing processes, tools, and consultation. The knowledge retention process illustrates some of these enabling features:
1. Processes, tools, forms, checklists, etc. which are focused on meeting critical business issues.
2. "Self-service," intranet-based systems which provides managers access to the tools, forms, etc.

Results
✓ Annual self-identification of retirement plans
✓ 2,000+ positions assessed for uniqueness/criticality
✓ Specific risks and needed responses identified
✓ Process and outcome evaluation

TVA's process allows it to determine where the risk of knowledge loss is greatest. For these positions, critical knowledge can be inventoried and action plans developed to preserve and transfer it – or to lessen the impact of its loss. Preliminary results suggest that the process effectively focuses attention and action planning on the most critical knowledge loss issues.

Some of the issues and responses have included:
- "Byron" – the steamfitter foreman. Byron can assess the possible internal corrosion of feedwater pipes by tapping them "with a certain wrench in a certain spot in a certain way" and listening for "certain sounds." How to retain this? Byron has been asked to coach several other employees on his methods and a permanent videotaped demonstration of Byron performing several tests has been retained.

- "Donna" – the corporate staffer who had been the "expert" for years

on several critical reports which are prepared just once a year. Would Donna's "corporate memory" leave with her? No. Donna had her own detailed files, checklists, precedents, etc. She just needed to pass these records on (with explanation) to her successor.

- "Ron" – the systems engineer. Plant managers marveled at Ron's knowledge of several critical systems and were concerned about losing his expertise. Further analysis, however, showed that, for each system, there were two or three other engineers who knew the system nearly as well. Losing Ron would be unfortunate but he wouldn't be taking unique knowledge with him.

Improved documentation, training, and coaching have been needed in many cases. As the examples above indicate, however, often alternative resources have been found to exist. The process is effective even when it identifies what we don't need to worry about!

Ongoing program evaluation is focused on two areas:
- "Process" indicators including the numbers of positions/incumbents assessed and action plans developed and executed, and line manager feedback.
- "Outcome" indicators of steady (or improving) organization and individual performance in spite of attrition and a "reloading" of TVA's workforce.

What makes this approach effective?

- ✓ A concrete response to a critical organizational issue
- ✓ Line management ownership.
- ✓ Voluntary employee participation
- ✓ Integrates staffing, training, job design, etc. responses
- ✓ Recognizes that all at-risk knowledge is NOT equal

Several factors have combined to make this process effective. Most important, it addresses a real organization issue. It's not an "HR program." Rather, it is method and set of tools which enable line management to respond to an emerging issue that they care deeply about.

Employees also care about TVA and many of them have been concerned about the impact of the impending "brain drain." This process provides employees the opportunity to self-identify their attrition/retirement plans. And to do so in a safe way. Further, front-line employees identify the critical knowledge and skills that they may be taking out the door with them. And other employees get involved in actually capturing this information.

Neither line management nor front-line employees care if responding to the knowledge loss challenge is a "HR program" or not. This knowledge retention process integrates relevant HR responses (training, recruitment and staffing, etc.) and responses that are traditionally not HR functions (process and procedure documentation, re-engineering, etc.).

It is critical to respond to impending knowledge loss. But, given limited resources, it is equally important to focus on the most critical positions and types of knowledge. This process allows managers to analyze their risk and determine where these critical areas are.

For Additional Information

For more information, visit www.tva.gov/knowledgeretention or contact:
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