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✦ TECHNICAL TRAINING ✦

## Commitment, Planning And Money Overcome Training Obstacles

Recognizing a company's need for a comprehensive training program is one thing. Implementing one among more than 1,000 employees performing widely diverse duties scattered throughout the western half of Canada is another. In 1993 Canada's Imperial Oil Co. initiated a program to do just that and the payoff is beginning to show even as the program progresses.

**N**orman Wells is near the Arctic Circle. Grande Prairie stretches from northern Alberta to British Columbia, and Cold Lake lies in north central Alberta. These areas are as diverse operationally as they are geographically, and hundreds of workers, most of whom have 5 to 20 years of job experience operate and maintain them.

Within this diverse environment the Resource Division of Imperial Oil developed, in partnership with Manufacturing Technology Strategies (MTS) of St. Louis, Mo., a job-based functional training system.

The training program was part of Operation Integrity, a multifaceted framework that contained 11 elements considered essential for safe and reli-

able operations management. The corporate-wide initiative required the development of a competency-based training system with mechanisms for effective assessment and documentation to meet legal requirements. This represented a clear departure for Imperial, a company whose training approach has been focused on theory and principles to one in

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which an employee's competencies could be assessed, demonstrated and measured.

MTS was chosen as the training partner because their training programs were designed individually to suit the technology and equipment at each job site, a prerequisite for a company with many job sites, types of equipment and processes. The MTS approach also offered a uniform methodology of determining required competencies for measuring personnel performance before and after training.

### How The System Works

The system has four steps: documentation, worker assessment, training and post-training measurement.

The documentation process began with analysis. The technology at each site was examined and reduced to self-contained operational steps. Each step is a process that has discrete inputs and outputs and can be operated separately.

The analysis was conducted by asking 10 investigative questions. After the steps of operation were identified, the same 10 questions were applied to equipment and process substeps. This approach identifies the tasks, knowledge and skills required to operate the technology at each site.

This data was recorded on a training needs analysis (TNA) sheet to create a matrix of process substeps. Listed on the left margin were the equipment and the tasks, knowledge and tools necessary to operate the substeps. Equipment within a particular step of operations was listed across the top.

Each intersection or box in the matrix is a "competency." The TNA sheets are coded for differ-

ent jobs. For example, an operator performs different tasks and needs different competencies than does an instrument mechanic or a millwright. The requirements for each job, on each process, were specified on a TNA sheet and used as both a job and task analysis. At Imperial, the TNA was used as the primary tool for assessing competency, identifying gaps in learning, developing individual training plans and assessing performance to ensure that training was effective.

The data developed during the analysis and mapped onto the TNA was also written into training manuals using a format developed by MTS. Typically, each step of operation was documented in a separate manual. The manuals were written by workers who are trained writers using the same format developed by MTS and the same 10 investigative questions used in the analysis.

Imperial adapted the MTS format to meet company wide standards for the manuals which were adapted for pre-existing generic and theoretical training, the most significant of which were correspondence courses developed by a consortium of oil companies, called Petroleum Industry Training (PIT). PIT courses and other pre-existing materials were incorporated into the MTS system through navigators and learning exercises.

A typical MTS installation uses advanced PCs with software to transform drawings and text into a professional, uniform format. Instead, Imperial used a previously installed \$50 million computer area network as part of its infrastructure for conversion.

The network enabled all employees to share progress

which led to significant efficiencies. For example, a compressor used in Judy Creek might also be used in a different context in Cold Lake where procedural overlaps might exist despite process differences. Network sharing enabled the company to reduce one original \$10.6 million to \$12.6 million project budget to less than \$8 million.

Working alone or with a coach, mentor, supervisor or trainer, workers assessed their competency by inputting the competency box "2," "1," or "0" to indicate whether complete training, some training or no training, respectively, was required for each task as defined in the TNA matrix. The TNA became a curriculum for the individual worker, the two and one entries indicating learning gaps for which the worker became responsible to close. Working with a trainer or coach, the individual completed the necessary training and then demonstrated, through meeting performance standards, that the gaps had been closed.

### Putting The System Into Practice

Decentralization was the significant challenge to Imperial Oil. This training had to reach more than 1,000 people scattered over tens of thousands of miles in seven separate, large operating areas with their component business units. Commonality among the seven areas also had to support the existing decentralized management style. Each area had its own operating ideas, a benefit to the company as it instilled in workers a sense of propriety toward their systems. To achieve commonality within diversity, the company:

- Used one MTS project manager to serve as a consultant to all areas while other MTS personnel worked with individual areas.
- Named a second level manager, senior operations person, foreman or team leader with worker credibility as a training specialist to represent each operating area, implement the Operation Integrity training initiative and to secure the support of area management.
- Established a training network which included the seven area representatives, the Imperial Oil training system manager and the MTS project manager.
- Used regular meetings of the training network to solve common problems, brainstorm, develop common skills and share experiences.

The tactics were successful and the project, begun in July 1993, is scheduled to be completed by July 1996. Originally nine MTS consultants worked with the areas to get the system up and running. This number was rapidly reduced to three. And will be zero when the process is completed.

#### **Never Done Before**

Acceptance of the MTS training system by area personnel offered a significant challenge to the program's implementation. Area training specialists saw that Imperial Oil was asking its employees at all levels to step out of its prevailing corporate culture and training views. Veteran employees with 20 years were being asked to accept that they could benefit from training.

Other area representatives were concerned that a recent

downsizing made people suspicious and would view competency assessments as a threat.

#### **Battle River: A Case Study**

To earn worker trust, trainers had to involve workers in the process. At Battle River the program began with the area representative learning the system and writing a dehydrating manual. The two-week task was done during a shift as plant operator. By involving co-workers in the effort, and incorporating their suggestions and critiques, they began to see its value.

At the same time the exercise enabled the representative to assemble an overview of gaps in worker training, which garnered the support of the area leaders. These leaders organized a group of eight representatives, including five writers to create line diagrams and TNAs to determine which workbooks should be written first.

Training management teams were established in each business unit within the Battle River operating area. These teams, which included supervisors, were responsible for implementing the training plans and performing assessments of the completed TNAs and manuals.

Writers typically worked for six months before returning to their shifts with enhanced knowledge of the training system. They also were by that time, assessors and trainers.

The initial training of workers to be writers, assessors and trainers was done by MTS. But in an effort to become independent of MTS, the area representative and others assumed these responsibilities at Battle River. It took Battle River three months to complete the TNAs. They identified 150 separate

steps of operation and have written 120 manuals. Assessment is underway, begun with self-assessment in a group with the help of a facilitator.

Once supervisors received these self-assessments, they assembled a training plan that prioritized the training gaps of each worker. This plan was passed to the trainer who worked with the trainee and supervisor to accomplish the plan through discussions on timing, expectations and trainee learning method preferences such as self-directed, practice or tutorial training.

The learner then implemented the plan and demonstrated to the trainer the learning was completed: the gaps closed. Most of the training was done on shift with workers taking an average eight days to close the gaps identified by MTS training.

#### **Adaptability For Diversity**

Although the same basic system was implemented at all Imperial Oil operating areas, logistics varied to meet the needs of different organizations.

For example, at Prairie Mountain, which extends east to west for 2,300 miles (700 km), every employee is being trained as an assessor and a trainer. Otherwise the vast geographical spread would cause the program to halt when a trainer or assessor was forced to leave an area.

Judy Creek, 650 miles (200 km) northwest of Edmonton, has kept a full-time MTS representative on-site because the area representative was not present when the program began and the program time frame was necessarily compressed. The area has developed the concept of a shift "content owner," who is

responsible for taking ownership of the manuals. They ascertain that draft copies are reviewed for completeness, correctness, consensus and uniformity by having all members of the various shifts review every workbook.

The people at Cold Lake worked from a pilot project, first implementing the entire process with a single operation step to make certain everyone understood and was comfortable with the system before it was extended throughout the area.

Although the system is still being installed, some benefits already exist. At Battle River, for example, documentation of the system disclosed that everyone, including the engineers, had overlooked a critical control valve.

The MTS manuals have increased effectiveness and reduced stress by systematizing diverse training tools like operation manuals, safety and vendor training. At Judy Creek and Cold Lake, profitability and efficiency has been maximized through operational uniformity via the use of Normal Operating Conditions tables which forced operating standards agreements across shifts.

Area representatives report the training system has gained worker acceptance as people see operational improvements, planning is easier and the TNA gap analysis has simplified shifting employees to cover occasional labor shortfalls. ✿

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