

# Developing and Implementing a Training and Certification Program University of Texas at Austin

In April of 2000, as plans were being made to upgrade some of the facilities and equipment at the University of Texas, it was recognized that a comprehensive training program to upgrade the knowledge and skills of new and incumbent workers was needed. The Utilities Section workers at the University of Texas in Austin are responsible for operating and maintaining the universities power generating, power distribution, chiller and highly technical support systems.

Although some training was being provided, no formal training system was in place. And, there was no comprehensive method for evaluating worker competency.

An initiative to develop a formal training and certification program was therefore undertaken. Industrial Resources, Inc. (IRI), a training services company, was selected as the contractor to assist in the development and implementation of the program.

The Utility Section Training and Certification Program was designed and implemented to train and certify Utility Section employees in the Power Plant Section, the Chiller Stations Section, the Electrical Distribution Section and the Mechanical Distribution Section. The program was implemented in April of 2005.

The program is an integrated evaluation and training system that utilizes facility specific training and evaluation materials supplemented with generic, commercially available programs. It provides a comprehensive, validated method that meets all regulatory requirements for evaluating and training plant personnel to ensure they are competent to operate and maintain the facilities in a safe, effective and efficient manner.

The program development and implementation was performed in three phases over a two year period from 2003 to 2005. Phase I was the design phase and Phase II was the development and implementation phase. Phase III, implementation, began after all training and evaluation systems were in place and ready for use, early in 2005.

The program included:

- Training and Certification Plan
- Individual Training and Certification Books for each job/title description
- Training Materials needed to Support Training and Certification
- Tests and Job Performance Measures

The Utility Section Training and Certification Program was structured so that plant utility personnel through classroom, self-study or on-the-job training, were able to gain the knowledge, skills and abilities necessary to meet certification requirements. The Training and Certification Program was developed in three phases as described below.

## **The Industrial Resources, Inc. (IRI) Training and Certification Program**

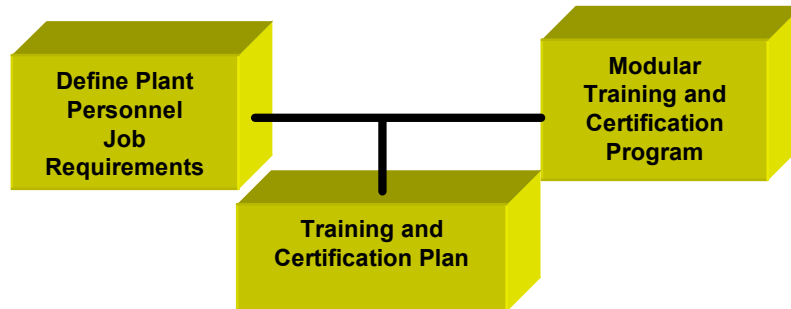
which was implemented at the University of Texas was designed as a complete system for training and certifying plant operators and maintenance personnel. It is an integrated training and evaluation system that utilized facility specific and basic theory training materials. It provides a comprehensive, validated method, for evaluating and training personnel to ensure they are competent to operate and maintain your facilities in a safe, effective and efficient manner. The program includes the following:

- Facility Specific and Basic Theory Training Materials
- Tests and Job Performance Measures (JPMs)
- Individual Training and Certification Plans
- Training and Certification Program Administration Plan

The Training and Certification Program is structured as a self-paced program so that facility personnel through individual study, classroom and on-the-job training can gain the knowledge, skills and abilities necessary to meet certification requirements. The training program is also designed to allow for Operations/Maintenance cross-training and evaluation, allowing operations personnel to perform, or to skillfully assist, in the performance of maintenance tasks.

Regulatory Compliance Training designed to meet the training requirements of various government agencies such as OSHA, DOT and EPA is included in the program.

## Phase I – Program Design



**Phase I** consisted of defining the job requirements, arranging those requirements into a modular format and preparing a preliminary Training and Certification Plan.

Job Requirements for the Power Plant Section, Chiller Stations Section, Electrical Distribution Section and Mechanical Distribution Section were defined. These requirements were developed from existing university job descriptions, industry standard job requirements lists and through interviews with incumbent workers in the various crafts.

The job requirements were sorted and arranged in a Modular Training and Certification Outline with similar skills grouped together. The modules were sequenced in accordance with the Utility Section job progression and included provisions for Evaluation Tests and Job Performance Measures (JPM's) to evaluate performance.

Each module in the outline contained detailed information about the associated training objectives, designated performance objectives and references training materials.

The general progression of the training and evaluation was as follows:

**General Orientation and Safety Training** that included sections on university administrative policies and procedures (New Hire Orientation), basic power plant technology and Regulatory Compliance Training (TOSHA, EPA, DOT).

**Technical Training** that included facility specific training on systems, operation and maintenance of equipment.

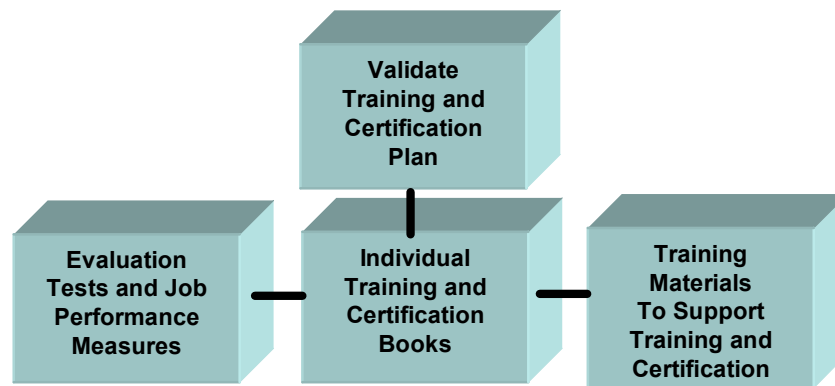
**Advanced Training** focused on operation and use of controls and performance of maintenance troubleshooting and procedures.

Based on the modular outlines, four (4) Training and Certification Plans were developed, one for each section; Power Plant, Chiller Stations, Electrical Distribution and Mechanical Distribution.

The plans detailed the procedure by which the employee could either be certified or advanced within their existing job classification to the next job classification level.

Training and Certification Monitoring Cards (TCMC's) used to document and guide individual employee training and certification efforts were included in the plans.

## Phase II - Program and Training Materials Development



Before Developing the Training and Certification Program Training Materials the modular outlines were validated. The validation process involved preparing job survey questionnaires that were cross referenced to each module's job training and evaluation requirements, surveying a representative sample of experienced utility section employees and then analyzing that data to determine the validity of each item.

Individual Training and Certification Books were then developed for each job position. They contained instructions on how to accomplish the program as well as individualized Training Certification Monitoring Cards (TCMC), used to monitor an individual employee's progress.

Multiple choice evaluation tests were developed for use in evaluating both general and specific knowledge relating to plant operation, plant maintenance, safety and regulatory requirements for each job position.

Job Performance Measures (JPMs) were developed for each job position. The purpose of the JPM's was to provide a standard for the supervisor or evaluator to measure the trainee's capability of performing a specific job requirement in an on-the-job situation. The JPM's specifically measured the individual's ability to combine job knowledge, skill and ability into a practical hands-on performance demonstration of job capability.

Training materials required to support the Training and Certification Program included both generic basic theory programs and plant specific materials.

Generic basic theory training materials were selected from commercially available industry programs. These training programs were purchased in CD-ROM format and copied onto the Utilities Section Server and individual Laptop computers for easy access. The programs are self running interactive programs that include evaluation as part of the process.

Training Materials for 20 Plant Specific Training Modules were developed for each Utility Section job progression by Industrial Resources, Inc. Each of the Plant Specific Training Modules consisted of the following elements:

1. **System Description or Maintenance Description**
2. **System Operating Procedure or Maintenance Procedure**
3. **System or Equipment Job Performance Measure**
4. **System or Maintenance Description Test Items**
5. **System Operating or Maintenance Procedure Test Items**

To ensure that the plant specific training materials accurately reflected plant conditions required the developers to review plant technical documentation, trace plant systems and discuss system functions, operations and maintenance with plant technical personnel. Drawings, photographs of specific equipment and graphics were incorporated into each System or Maintenance Description.

### Phase III - Program Implementation



Phase III consisted of implementing the Training and Certification Program. This included: Preparing the people who would be participating. This was done by giving them an overview presentation on how the program would be implemented and informing them about what they would be required to do.

Preparing individual training plans for each employee. It was decided by management that all affected employees would go through the entire program. This ensured that all employees would have the same level of knowledge and capabilities upon completion of the training. Employees were all required to certify for their current position within 18 months.

Selecting key personnel to sign off the training. These were supervisors and subject matter experts. Those selected were given some extra training on how to conduct the OJT training and JPM evaluations so they were all ready to go and understood the program.

Setting up Generic Basic Knowledge Programs and Plant Specific Training Programs on Laptops and the Server. The basic knowledge programs are self running and the Training Certification Monitoring Cards developed as part of the program were used to track employee progress. These programs were provided to the employees on Laptop computers provided by the university. They could also log into a server and use the training materials while on the job.

The plant specific documents files that were developed by the contractor were put on the server so that everyone had access to them. Also a single copy was printed out and made available in the shops and control room.

Prepared tests and JPMs using the Question Bank Program. Both the multiple choice test questions and the JPMs are kept as files using this program. They were put in a secure file that only the Training Manager could access and were used to test and evaluate the trainees.

The program was implemented for all personnel in the Utilities Section at the same time. Two methods were used to allow employees to accomplish the training; through use of Laptops on which the training materials are available or by access to the Utility Section's server.

## Program Results as of January 2007

Currently 94 employees are participating in the training and certification program. A total of 6556 hours of training have been completed. Ten employees have completed the program and have been awarded Certification. These were presented as part of an awards program.

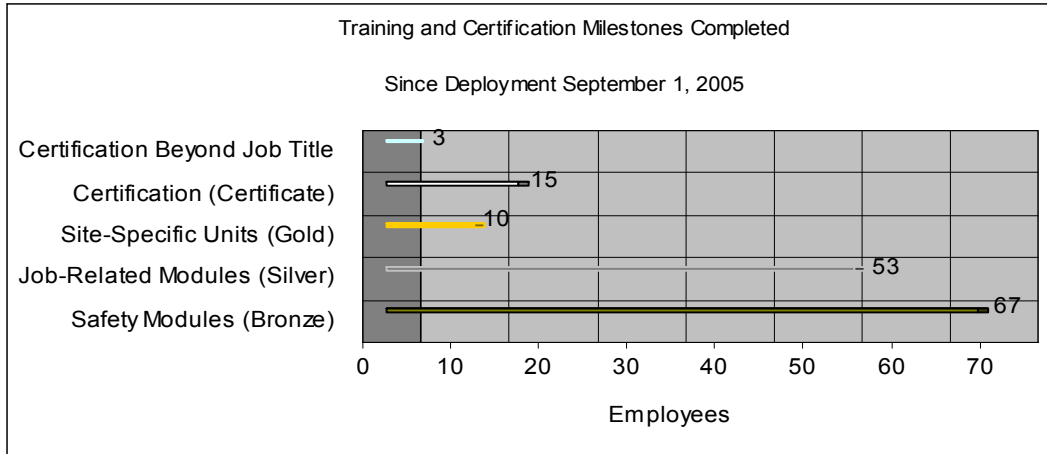


Chart Provided by University of Texas at Austin Utilities Division

In addition to Certificates of Certification, incentives for completion of various levels of the program award pins are provided. Employees completing these levels are as illustrated in the chart below. The Medals are Bronze for completion of Safety Modules, Silver for completion of Job Related Modules, and Gold for completion of Site Specific Modules.



Photo courtesy of University of Texas at Austin Utilities Section

For More Information about this program and other services provided by Industrial Resources, Inc. please contact us at:

Industrial Resources, Inc.  
P. O. Box 6386  
Biloxi, MS 39540  
(228) 392 3973  
e-mail [indresinc@aol.com](mailto:indresinc@aol.com)  
web site [indresinc.com](http://indresinc.com)

Employees were allowed to charge up to 8 hours/week of overtime in completing the training modules after hours to certify for their current jobs. After certifying for the current job title, the employee can pre-certify for another position. They are not paid for this second certification.