

OPERATOR

TRAINING SYSTEM

prepared by

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Jack A. Pankoff is President of Industrial Resource Management, of Denver, Colorado.

IRM specializes in the design, development and implementation of manpower and training systems for project execution and start-up.

IRM provides project assistance in:

NEEDS ANALYSIS

Determination of organization requirements.
Defining equipment, system, process and job requirements.
Assessment of manpower requirements, availability and sources.

SYSTEMS DEVELOPMENT

Design of manpower and training systems for managers, supervisors, operators and mechanics.
Train engineers and supervisors in job analysis and training program development.
Train engineers and supervisors in instruction methods and techniques.

SYSTEMS IMPLEMENTATION

Advise in the training preparations.
Evaluate the trainers and improve their ability when necessary.
Evaluate the training system's effectiveness.

IRM has provided project assistance to such companies as Olin Chemical, Occidental Chemical, DuPont, Ingersoll Rand, NCR, Swift & Company, Trailer Train, Hoover Universal, American Cotton Grower, General Motors, Exxon, American Hoechst, and Champlin.

PRE-EMPLOYMENT

PRE-EMPLOYMENT

GOAL(S)

- Better use of manpower sources
- Better selection of employees

METHOD(S)

- An Employee Selection Program based on the successive hurdle technique.

To be hired, an applicant must successfully pass each of the following elements of the Employee Selection Program:

Recruitment

Testing

Interviewing

RESOURCE(S)

Human

Personnel Services Employee

- Recruiter
- Test Administrator
- Interviewer

Material

Job Specifications

Test-Reading Comprehension

Interviewing Skills

RECRUITMENT

GOAL

- Identify and obtain the most qualified applicant.

METHOD(S)

- Identify and use manpower sources.
- Recruit from Job Specifications so that it will be possible to know the desired employee qualifications.

RESOURCE(S)

Human

- Personnel Services Employee (Recruiter)

Material

- Job Specifications

TESTING

GOAL

- Determine the reading comprehension level of applicants.

METHOD

- Reading Comprehension Test - content validated to the Training Programs.

RESOURCE(S)

Human

- Personnel Services Employee (Test Administrator)

Material

- Test - Reading Comprehension

INTERVIEWING

GOAL

- Integrate all information and impressions obtained about an applicant into a systematic, legal and objective hiring decision.

METHOD

- Train interviewers in Interviewing Skill Techniques.

RESOURCE(S)

Human

- Personnel Services Employee (Interviewer)
- Production/Maintenance Supervisors (Interviewers)

Material

- Interviewing Skills

OPERATOR TRAINING

PROGRAM DESCRIPTION

An introduction to plant operation, enabling new and existing employees to become orientated with the organization, aware of Safety, Pollution and Medical practices, and knowledgeable of Basic Process Equipment.

PROGRAM CONTENT

Orientation

- Corporation
- Division
- Location

Awareness

- Safety
- Pollution

Core Courses

- Valves
- Pumps
- Compressors
- Instruments

Elective Courses

- Heat Exchangers
- Distillation
- Courses as needed by location

MEASURABLE OBJECTIVES

The employee will demonstrate knowledge of Safety, Pollution and Medical practices, and knowledge of Basic Process Equipment.

The measurable objectives will be accomplished by having the trainee complete a series of instructor designed objectives.

PROGRAM OPERATION

The Operator Training Program must have flexibility.

Depending on plant location and operation, new hourly operation employees are added in large groups, small groups, or one at a time.

When large groups and small groups (three (3) to five (5)) are standard, Formalized Classroom Instruction is most practical.

When it is impractical to wait until a large enough group is assembled for Formalized Classroom Instruction, Programmed Instruction is most practical.

INSTRUCTION METHODS

FORMALIZED CLASSROOM INSTRUCTION

OBJECTIVE(S)

- Train large groups of employees
- Provide depth-of-knowledge
- Direct instructor contact

METHOD(S)

- Lecture
- Demonstration
- Hands-on

RESOURCE(S)

Human

- Instructor

Material

- Classroom
- Classroom equipment
- Formal classroom instruction plans

SAMPLE TRAINING SCHEDULE

Formalized Classroom Instruction

Day

- 8 Hours lecture/demonstration by instructor, with continous Active Responding by trainees.

Trainees will receive hands-on instruction through the use of mock-up equipment and plant tours.

INSTRUCTION METHODS

PROGRAMMED INSTRUCTION

GOAL(S)

- Train on an individual basis
- Step-by-step training

METHOD(S)

- Self-pacing instruction
- Active responding

RESOURCE(S)

Human

- Resource people

Materials

- Training area
- Classroom equipment
- Programmed instructional materials

SAMPLE TRAINING SCHEDULE

Programmed Instruction

Day

- 2 hours working with programmed text in a training area.

- 4 hours working with a Resource Person.

- 2 hours working with programmed text in a training area.

All programmed text material will be coordinated with actual equipment in the plant. This will be done by a Resource Person.

EVALUATION METHODS

Knowledge Skills

- Written Pre-Test
- Performance Test
- Written Post-Test

PROGRAM REQUIREMENTS

Plant Trainer

- To provide program coordination and classroom instruction when Formalized Classroom Instruction is used.

Resource People

- To answer questions, critique examinations, and conduct plant tours when Programmed Instruction is used.

Classroom

- Large enough to allow for classroom instruction of fifteen (15) trainees.

Training Area

- Large enough to allow for individual instruction of five (5) trainees.

MATERIALS

Instructional

- Training manuals
- Training films
- Etc.

Supplies

- Trainee Notebooks
- Paper
- Pencils, pens
- Etc.

Equipment

Instructional

- Mock-up: Valves
Pumps
Etc.

Audio/Visual

- 16 MM projector
- Slide player/recorder
- Video Tape Player/recorder
- Equipment Stands

MATERIALS continued

Equipment continued:

Classroom

- Desks
- Tables
- Chairs
- Screen
- Blackboard
- Flip Chart

**ON-JOB-TRAINING
SUPERVISORS/OPERATORS/REPAIRMEN**

ON-JOB-TRAINING

GOAL

- Provide new and existing supervisors, operators and maintenance personnel with the knowledge and skills needed to perform the actual job.

METHOD

- Formalized On-Job-Training using the Task Analysis/Task Certification approach.

RESOURCE(S)

Human

- Supervisors
- Operators
- Repairmen

Material

- Task Analysis
- Designed training program for the Actual Job.

PROGRAM DESCRIPTION

A formalized method of instruction in which the trainee learns an Actual Job.

Each job is broken down into Tasks. A Task is a logically related set of actions required for the completion of a job.

The trainee is instructed On-The-Job on how to perform each Task. The trainee demonstrates his knowledge and skill of the Task, by actually performing the Task.

Once the trainee has completed the Task, the trainee is certified as to his ability to perform the Task.

PROGRAM CONTENT

- Orientation to Unit and Job
- Safety/Pollution
- Review of Specific Equipment
- Review of Specific Process
- Job Task Instruction
- Job Task Performance
- Job Task Certification

MEASURABLE OBJECTIVES

The trainee will demonstrate knowledge and skill
of the Task by actually performing the Task.

PROGRAM OPERATION

On-Job-Training will take place in the unit where the job is located.

Training will be done by a supervisor, operator, or repairman who is certified to train others.

Training will consist of the following:

Orientation to Unit and Job

Safety/Pollution

Review of Specific Equipment

Review of Specific Process

Job Task Instruction

Job Task Performance

Job Task Certification

INSTRUCTION METHOD

-Job-Training by Task Certification

GOAL(S)

- Train employee in performing the Actual Job.

METHOD(S)

- Task Analysis/Task Certification

RESOURCE(S)

Human

- Supervisors
- Operators
- Repairmen

Material

- Designed training program for the Actual Job.

EVALUATION METHOD(S)

On-The-Job Performance

Application of skills and knowledge by completing each Task of the Job to a predetermined performance level.

PROGRAM REQUIREMENTS

- Task Analysis for Each Job
- Supervisors, Operators and/or Repairmen to do Actual Training.

SUPERVISORS

SAMPLE

TASK ANALYSIS

NO.	TASK(S)	NO.	SUB TASK(S)
I	Safety	1.	Work permits
		2.	Lock out procedures
		3.	Process hazards
II	Operate	1.	Chemistry
		2.	Equipment
		3.	Process
		4.	Procedures
III	Administration	1.	Reports
		2.	Union Contract
		3.	Policies and procedures
IV	Human Relations	1.	Discipline
		2.	Training

SUPERVISORS

SAMPLE

TASK CERTIFICATION

NO	TASK(S)	DATE	SUPV	SUPV	MGR
I	Safety				
II	Operate				
III	Administration				
IV	Human Relations				

OPERATORS

SAMPLE

TASK ANALYSIS

TASK(S)	SUB TASK(S)
I Shutdown all reagent feed to the reactor.	<ol style="list-style-type: none">1. Switch AIC-6 to manual and close valve.2. Switch FIC-13 to manual and close valve.3. Switch FIC-10 from cascade to auto/remote and set setpoint to maintain PH in reactor.
II Allow reactor to drain to the filter.	<ol style="list-style-type: none">1. Set FIC-15 from auto/ cascade to auto/remote.

OPERATORS

SAMPLE

TASK CERTIFICATION

TASK(S)	DATE	TRAINEE	TRAINER	SUPV.
I. Shutdown all reagent feeds to the reactor.				
II. Allow remote to drain to the filter.				

REPAIRMEN

SAMPLE

TASK ANALYSIS

OPERATION: IR TYPE VOC-CENTRIFUGE PUMP

NO.	TASK(S)	NO.	SUB TASK(S)
I	Inspect		
II	Test		
III	Troubleshoot		
IV	Repair		A brief listing of the steps required to perform each Task.
V	Overhaul		
VI	Install		
VII	Lubricate		
VIII	Adjust		
IX	Align		

REPAIRMEN

SAMPLE

TASK CERTIFICATION

OPERATION: IR TYPE VOC-CENTRIFUGE PUMP

NO.	TASK(S)	DATE	TRAINEE	TRAINER	SUPV.
I	Inspect				
II	Test				
III	Troubleshoot				
IV	Repair				
V	Overhaul				
VI	Install				
VII	Lubricate				
VIII	Adjust				
IX	Align				