

DEPT. of NUCLEAR TECHNOLOGY
CHULALONGKORN UNIVERSITY

Presentation - 4

“ QUALITY in PROJECT MANAGEMENT ”

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OBJECTIVES of **PRESENTATION**

**This presentation will discuss
the following topics :**

PROJECT MANAGEMENT

- ◆ Organization**
- ◆ Quality and Safety**
- ◆ Project Planning**
- ◆ Project Execution**
- ◆ Project Control**

PROJECT ORGANIZATION

- OVERSIGHT

Committing Unit

- **Project sponsor**
- **Customer**

Controlling Unit

- **Funding**
- **Resources**
- **Schedule**

Design Authority

- **Configuration**
- **Systems**
- **Software**
- **Changes**

PROJECT ORGANIZATION -

PROJECT TEAM RESPONSIBILITIES

- ◆ **Project Execution Plan (PEP)**
- ◆ **Key objectives and mileposts**
- ◆ **Assign responsibilities to
subordinate teams**
- ◆ **Obtain approvals**
- ◆ **Manage arising issues**
- ◆ **Change control**
- ◆ **Execute and monitor work**
- ◆ **Monitor expenditures**
- ◆ **Produce status reports**

HIGHLIGHTS of QUALITY

PROGRAM

- ◆ **Organization and responsibilities**
- ◆ **Policies and procedures**
- ◆ **Control of interfaces**
- ◆ **Deficiencies and corrective action**
- ◆ **Testing and verification**
- ◆ **Documentation and records**
- ◆ **Configuration control**
- ◆ **Material management**
- ◆ **Training and qualification**
- ◆ **Assessments**

HIGHLIGHTS of SAFETY

PROGRAM

- ◆ **Management commitment and example**
- ◆ **Setting standards and objectives :**
 - safer at work than not at work
- ◆ **Measuring performance**
 - classification and frequency of injuries
- ◆ **Investigation and analysis of accidents and “close calls”**
- ◆ **Identification of hazards**
 - eliminate, contain, minimize consequences
- ◆ **Training, indoctrination, education**

**There is no winning attitude,
there is only**

WINNING PERFORMANCE

PLANNING - PROJECT

OBJECTIVES

- ◆ **Consistent with customer expectations**
- ◆ **Prioritized**
- ◆ **Communicated, supported, maintained**
- ◆ **Typically include :**
 - **customer satisfaction**
 - **safety**
 - **quality**
 - **cost**
 - **schedule**
 - **citizenship**
 - **environment**
- ◆ **Kept up to date as conditions change**
- ◆ **Clear and simply stated**

PROJECT EXECUTION PLAN (PEP)

PEP defines plans for:

- ◆ **Project description (scope) and objectives**
- ◆ **Organization and responsibilities (chart)**
- ◆ **Customer-based performance measures**
- ◆ **Project estimate and cash flow**
- ◆ **Project controls**
 - **performance (accomplishment)**
 - **cost**
 - **schedule**
- ◆ **Resources**
- ◆ **Measurements**
- ◆ **Configuration management**

PLANNING - PROJECT

SCOPE

Phases of development :

- ◆ **Define customer expectations**
- ◆ **Conceptual engineering**
 - **Prelim. technical and performance definition**
- ◆ **Definition phase engineering**
 - **system specifications**
 - **Drawings and layouts**
 - **Major equipment specified**
- ◆ **Execution phase engineering**
 - **Design is frozen**
 - **Drawings released for construction**
 - **Equipment specified and ordered**

Project scope = project baseline

PLANNING - PROJECT ESTIMATE

- ◆ **Estimates deal with : engineering
procurement
construction**
- ◆ **Study estimate - based on :**
 - **conceptual information and historical data**
 - **accurate within +/- 50%**
 - **used for : analysis of alternatives
project justification
determining resources**
- ◆ **Release estimate - based on :**
 - **design - scope and concept defined**
 - **accurate within + 30% , - 15%**
 - **used for : submission to senior management
detailed planning for the project**
- ◆ **Definite estimate - based on :**
 - **detailed scope and well advanced design**
 - **material prices and bids**
 - **accurate within + 15% , - 5%**

PROJECT EXECUTION - **CUSTOMER SATISFACTION**

Customer = Committing Unit

- ◆ **Develop measures of performance**
 - subjective
 - numerical
- ◆ **Have customer assign weights**
- ◆ **Set target satisfaction level**
- ◆ **Collect/tabulate data on performance**
 - through regular interviews
 - keeping numerical score
- ◆ **Ask customer to provide rating**
- ◆ **Take corrective action**

PROJECT EXECUTION -

EXPERIENCE

- ◆ **Include experience from :**
 - **Construction**
 - **Operations and Maintenance**

- ◆ **Ensure necessary inputs early**
in the design phase from :
 - **construction**
 - **operations**
 - **maintenance**

- ◆ **Integrate experience and lessons learned**
into project work

- ◆ **Produce a design which :**
 - **maximizes over-all benefits**
 - **is cost effective**
 - **incorporates experience**
 - **minimizes rework and modifications**

PROJECT EXECUTION -

RISK MANAGEMENT

Risk refers to uncertainties which affect the outcome of the project :

- ◆ **Sources of risk :** technical
contractual
financial
- ◆ **Important elements of risk are :**
 - potential severity and frequency of loss
 - manageability of the risk
 - potential visibility and publicity
 - ability to measure the consequences
- ◆ **Risk management :**
 - identification of risk and its potential
 - measurement and evaluation
 - control - minimizing the effect

PROJECT EXECUTION -

RISK MANAGEMENT

Risk assessment methods :

- ◆ Traditional
- ◆ Simulation
- ◆ Analytical
- ◆ Contingency

Risk containment actions :

- Contingency planning
- Responsibility allocation
- Strong project controls and good reporting
- Application of Pareto's law
- Critical item reporting
- Risk checklists

PROJECT CONTROL -

MEASUREMENT of PERFORMANCE

- ◆ Measure of EFFECTIVENESS
- ◆ Requires accurate reporting of effort and accomplishment by :
 - units of work done
 - time expended
 - cost
- ◆ Compares work accomplished to planning predictions

provides :

OBJECTIVE MEASURE of PERFORMANCE

using :

- * performance indices
- * earned value measurement

PROJECT CONTROL - **CHANGE CONTROL**

**Changes to scope affect project definition
within scope affect project development**

Changes must be :

- ◆ **Based on NEEDS not WANTS**
- ◆ **Controlled by a procedure**
- ◆ **Documented, approved, authorized**
- ◆ **Impact of change must be :**
 - **evaluated re :**
 - * **cost**
 - * **schedule**
- ◆ **PEP and documentation updated**
- ◆ **Changes are costly - should be avoided,**