



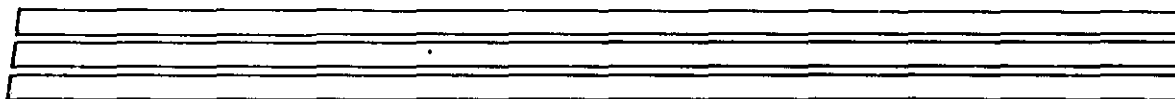
DEPT. OF NUCLEAR TECHNOLOGY
CHULALONGKORN UNIVERSITY

Presentation - 6

“ QUALITY in PROCUREMENT “

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Operations Quality Corp.

Nov. 1996

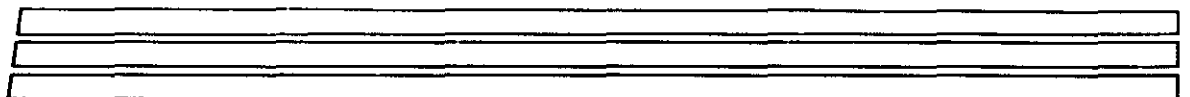




OBJECTIVES of PRESENTATION

In this presentation, the following topics will be discussed :

- ◆ **Planning for quality**
 - organizing for supplier relations
 - supplier relations
 - quality planning
- ◆ **Achieving quality**
 - joint quality planning
 - supplier selection and certification
 - improvement of supplier quality
- ◆ **Controlling quality**
 - evaluation of performance
 - supplier quality rating
- ◆ **Material management considerations**
- ◆ **Quality Program**





CHARACTERISTICS of **MASS and LEAN PRODUCTION**

Mass production :

- **vertically integrated, centrally controlled**
- **components purchased on price, short term contracts**
- **large inventory of parts**
- **adversarial relationship with suppliers**

Lean production :

- **cooperative, long-term relationship with suppliers**
- **sharing of information and personnel**
- **long-term contracts, based on quality, delivery, cost, service**
- **suppliers involved in product planning and development**
- **suppliers organized into functional tiers**
- **no inventory - “just in time” delivery**

SUPPLIER RELATIONS QUALITY POLICY -

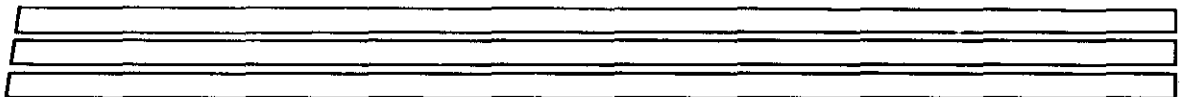
KEY MANAGEMENT DECISIONS

- ◆ **Basic relationship - adversarial or cooperative**
- ◆ **Relative emphasis of quality**
- ◆ **Multiple suppliers vs single source**
- ◆ **Internal vs external suppliers**
- ◆ **Long-term relationship or not**
- ◆ **Provision of technical assistance**
- ◆ **Published quality policy**



JUSE PRINCIPLES of RELATIONSHIP

- ◆ Mutual respect and cooperation
- ◆ Prior contractual understanding
- ◆ Agreed methods of evaluation
- ◆ Agreed plans for settling disputes
- ◆ Exchange of essential information
- ◆ Adequate performance in related functions
- ◆ Supplier responsible to deliver good product and supporting data
- ◆ Customer's interest pre-eminent





POLICIES for COOPERATIVE

RELATIONSHIP

BENEFITS :

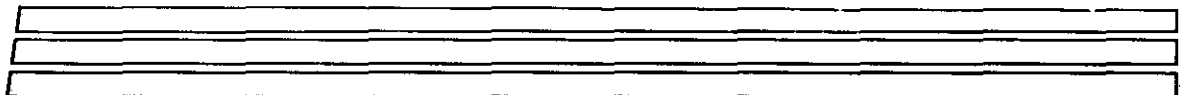
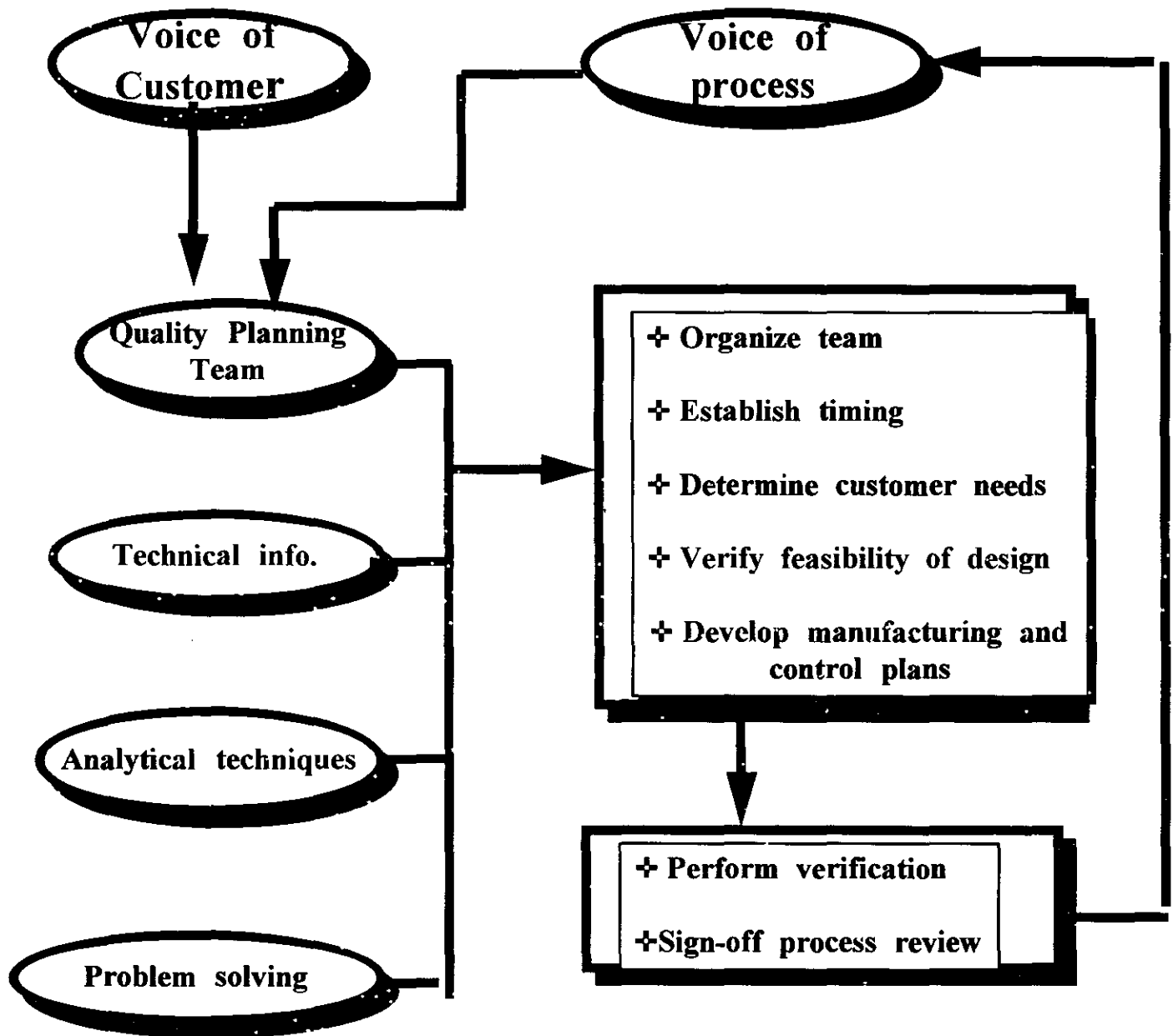
for suppliers :

- ◆ Long-term contracts rather than year to year or batch to batch
- ◆ Fewer suppliers
- ◆ Training in quality methods

for buyers :

- ◆ Full service
 - design
 - process development
 - investment in technology
 - cost reduction
- ◆ Program for quality improvement

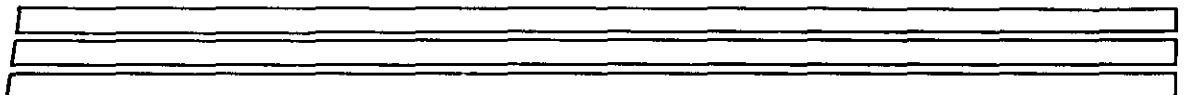
QUALITY PLANNING PROCESS





TYPICAL “SUPPLIER RELATIONS” **ACTIVITIES**

- ◆ Definition of requirements
- ◆ Supplier evaluation
- ◆ Supplier selection
- ◆ Joint planning
 - managerial
 - technological
 - economic
- ◆ Cooperation during contract
- ◆ Proof of conformance
- ◆ Supplier certification
- ◆ Quality improvement
- ◆ Supplier rating





ESSENTIAL ELEMENTS of **PROCESS CONTROL PLANS**

- ◆ **Brief description of each process step**
- ◆ **Identification of equipment and tools used at each step**
- ◆ **Process step parameter requirements**
- ◆ **Classification of process step (critical etc.)**
- ◆ **Process monitoring methods :**
 - **value added**
 - **product specification**
 - **evaluation**
 - **sample size and frequency**
- ◆ **Method of analysis - statistical or other**
- ◆ **Reaction to out-of-control condition**



CONTENTS of TYPICAL

SUPPLIER RELATIONS MANUAL

- ◆ **Statement of company policy and supplier relations**
- ◆ **Importance of product quality**
- ◆ **Organization with respect to product quality and role of Purchasing and Quality Depts.**
- ◆ **Method used to evaluate products and standard forms used**
- ◆ **Plan of supplier surveys**
- ◆ **Planning expected of suppliers**
 - **quality plans , including :**
 - **inspection and test**
 - **corrective action**
 - **change control**
 - **fitness for use**
- ◆ **Glossary of terms used**



CERTIFICATION of SUPPLIERS

Objective :

- authorize supplier to self-certify shipments
- eliminate buyer inspection

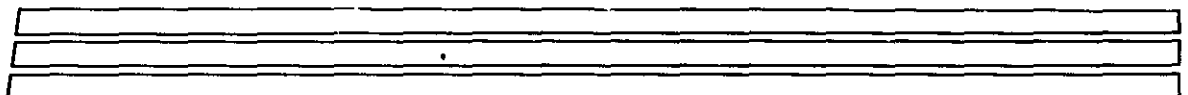
Process :

the supplier :

- submits failure prevention analysis and quality plan
- submits sample shipment of product

the buyer :

- evaluates information submitted
- visits supplier's plant
- evaluates sample shipment
- assesses "product conformance decisions"
- authorizes production
- certifies the supplier for the product





SUPPLIER QUALITY SURVEY PROCESS

◆ Pre-survey questionnaire

At the supplier's plant , assessment of :

◆ Management capabilities and organization

◆ Technological capabilities

- facilities and equipment
- process capability to meet requirements
- adequacy of measuring equipment
- understanding - relationship of process variability and results

◆ Quality discipline capabilities

- quality and completeness of documentation
- familiarity with Q tools
- process control, product inspections and tests



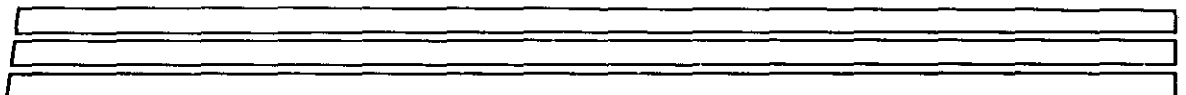
PITFALLS of
SUPPLIER QUALITY SURVEYS :

Emphasis on :

- ◆ **conformance to procedural specifications**
rather than
product fitness for use

- ◆ **specific products or processes**
rather than
supplier's general approach to product quality

- ◆ **organization, procedures, documentation**
rather than
capability of the process, adequacy of
process controls and training and
skills of the workforce

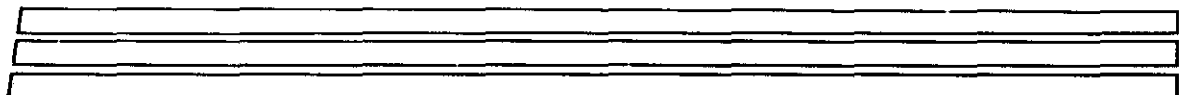




IMPROVEMENT of SUPPLIER QUALITY

Steps to be taken by the buyer :

- ◆ **Motivate supplier for continuous improvement**
- ◆ **Assist supplier to address the “vital few problems” using Pareto analysis or other techniques**
- ◆ **Offer technical expertise, if necessary**
- ◆ **Offer managerial expertise in problem solving**
- ◆ **Institute joint quality improvement teams**
- ◆ **Assist with appropriate training**





SUPPLIER QUALITY RATING - **MEASURES USED**

- ◆ **Product percent non-conforming :**
 - can be adjusted for different types of defects

- ◆ **Disposition of lots :**
 - weighted analysis of action on non-conforming lots

- ◆ **Economic analysis :**
 - compares suppliers on the total cost.
The cost includes quality-related costs

- ◆ **Composite plan :**
 - total supplier performance judged
 - quality, delivery, price, service



QUALITY SYSTEM SURVEY REPORT-
FORD MOTOR CO.

Suppliers are rated on the following :

- ◆ **Planning for quality**
- ◆ **Use of statistical methods**
- ◆ **Team approach to improvements**
- ◆ **Control of incoming products or services**
- ◆ **Quality of procedures**
- ◆ **Team oriented problem solving**
- ◆ **In-process and outgoing controls**
- ◆ **General**
 - **inventory control**
 - **repair and scrap control**
 - **customer relations**



IN-PLANT MATERIAL MANAGEMENT

◆ Receiving :

- inspection
- documentation

◆ Storage (warehousing)

- identification and traceability of items
- protection from elements
- special storage requirements
- control of shelf life

◆ Issue of material

- assuring correctness
- traceability

◆ Quarantine of non-conforming materials

◆ Repair and refurbishment



KEY CONSIDERATIONS for
PROCUREMENT QA PROGRAM

Special considerations of this program are :

- ◆ **Organization and responsibilities**
- ◆ **Interfaces : buyer - supplier**
- ◆ **Specialized procurement procedures,
National Quality Standards**
- ◆ **Grading of quality requirements**
- ◆ **Verification of supplier quality
program and performance**
- ◆ **Surveillance and audits of suppliers**
- ◆ **Deviations, concessions and corrective
actions**
- ◆ **Records of procurement activities**



PROCUREMENT QUALITY PROGRAM - **TYPICAL PROCEDURES**

- ◆ Preparation of procurement documents
- ◆ Selection of and relationship with suppliers
- ◆ Bid evaluation and award of contract
- ◆ Evaluation of supplier performance
- ◆ Buyer's verification activities
- ◆ Control of defects and corrective actions
- ◆ Acceptance of items and services
- ◆ Quality Assurance records
- ◆ Audit of procurement program



NATIONAL QUALITY STANDARDS

Canada : Canadian Standards Association

- CAN3-Z299.0 Guide for selection and implementation of Z299 QA Standards
- Q396.1 Software QA program

France : Association française de normalisation (AFNOR)

- NFX 50-111 Guide for selection of QA measures

Germany : Deutsches Institut für Normung (DIN)

- DIN 55 355 Basic elements for QA systems

United Kingdom : British Standards Institution (BSI)

- BS 5750 Quality System, Specification for design, manufacture and installation

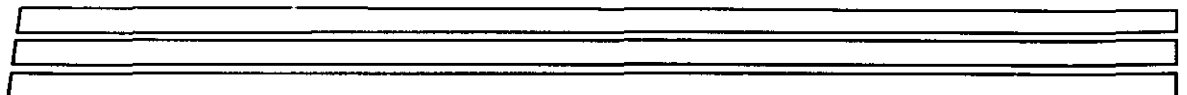
United States of America :

American National Standards Institute (ANSI)

- ANSI/ASQC Z1.15 Guidelines for Quality Systems
- ANSI/ASQC Q94 QM and Q System elements

US Dept. of Defense

- MIL-Q-9858A Quality program requirements





MODEL of CONTINUOUS IMPROVEMENT PROCESS

