Challenges for Effective Procurement Control in New Reactor Construction

June 3, 2009

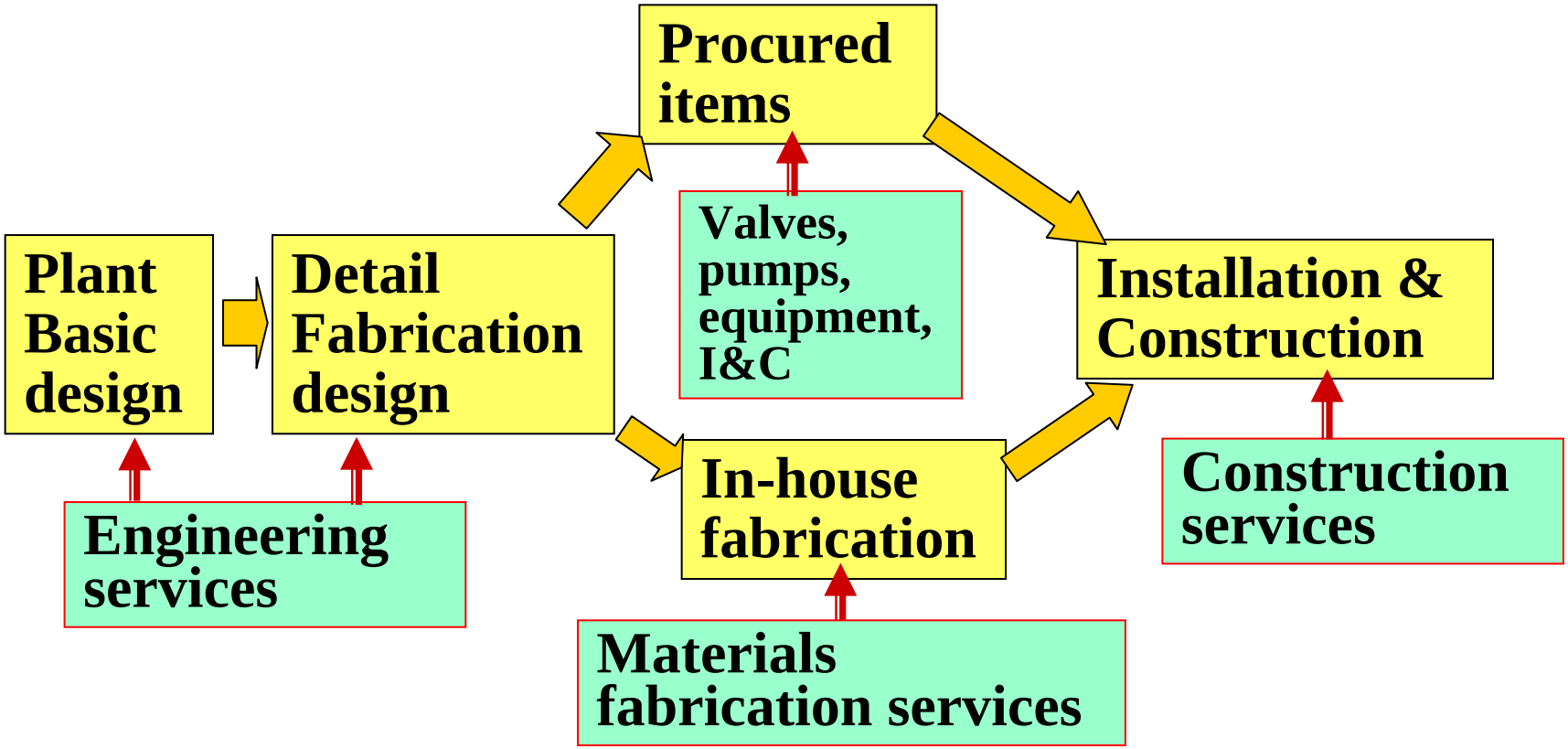
Naoki Miyakoshi, General Manager

Nuclear Quality and Safety Management Department
Nuclear Energy Systems
Mitsubishi Heavy Industries, ltd.

Today's Presentation

- As a design and construction company, Mitsubishi is dependent on the supplier at every stage.
- We built the first new reactor in Japan in the last 10 years.
- Today I will describe our activities to achieve procurement quality and the lessons learned from our efforts.

Quality of Procurement Determines Plant Quality



Overview for the supplier

- As nuclear business declined, many suppliers were also declined.
  - Key managers and staff have departed
  - Structural and functional change
- Impact of ISO 9001
  - Effective concepts: management, process-oriented, Resource control
  - Overestimated the ability of ISO 9001 compliance to maintain supplier's nuclear QA capability.

Situation in 2004

- In building the first reactor in 10 years, construction failure was unacceptable
- We qualified and maintained our suppliers by QA audits, but ----- we were anxious about supplier's true performance

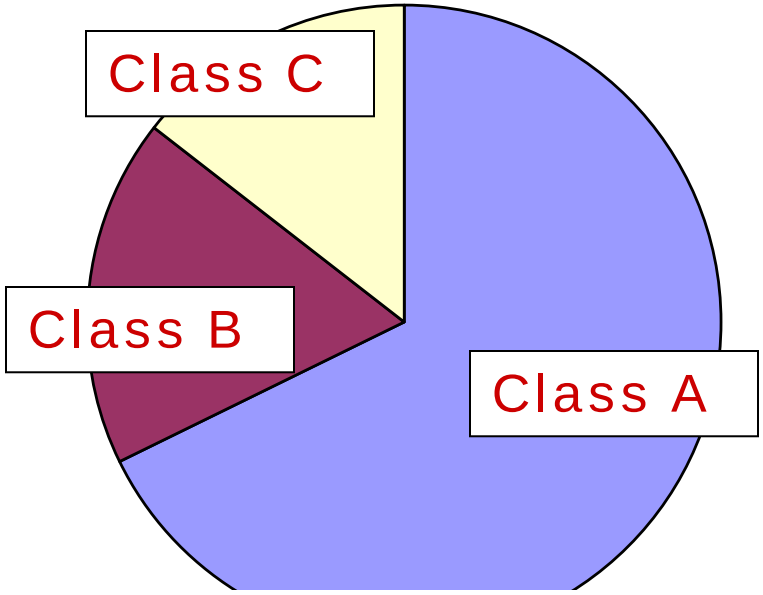
  Issue: Can our procurement control system prevent the use of improper material in a procured component?

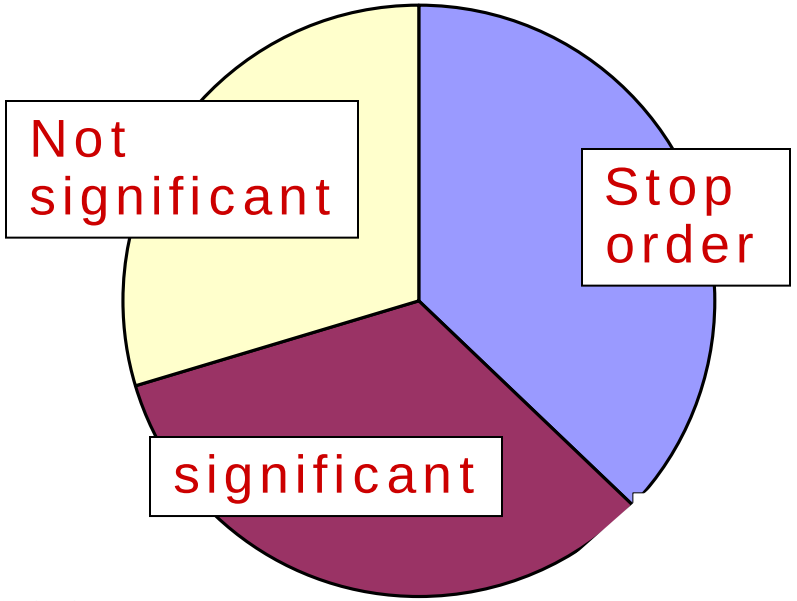
Special Investigation

- Investigation scope
  - 254 companies, 680 products
- Viewpoints
  - traditional QA aspect
  - business condition
  - posture of management
  - facility deterioration
  - personnel capability
  - procured item
  - others

Investigation Results

118 companies had problems qualifying as suppliers





Quality Classification in Japan:
Safety-related ≦ Class A

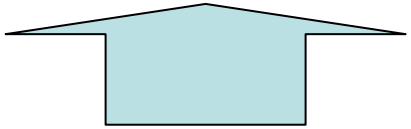
Investigation results

Identified Problems

- Business aspect
  - Top management policy
  - Excessive orders
  - Spare parts production
- Technical aspect
  - Insufficient knowledge transfer
  - No key-people
  - Deterioration of facilities
- Quality aspect
  - Poor quality attitude of management
  - Ineffective corrective action

Lessons Learned

- Management participation (QMS)
- Personnel capability
- Process-oriented
- Design quality assurance

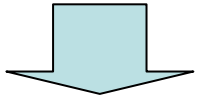


- Safety Culture, Safety Mind
- Communication & Accountability
- Partnership with supplier

Challenges for Future Reactor Construction

Upgrade the supply-chain for US-APWR

- Incorporate US requirements
- Apply construction experience



  - Qualification of US vendors
  - Standardization of Specification reflecting supplier's pre-review
  - Graded QA requirements
  - Vendor Oversight Program

Challenges for Future Reactor Construction

Establish new supplier requirements

- Acceptability of new integrated QA requirements for globalism
- Effective graded approach
- Discussion of QA requirements for lower-tier subcontractor
- Importance of QMS concepts
- Expansion of commercial grade items application