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Presentation to NRC Region III  
October 16, 1996  
by  
Combustion Engineering Inc.

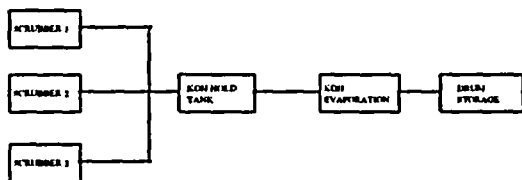
AGENDA

- ◆ Introduction - Kaiser
- ◆ CE actions addressing Root Cause, HAZOP findings and NRC AIT findings
- ◆ Safety Program Update
- ◆ Combustion Engineering Initiatives
- ◆ Q&A

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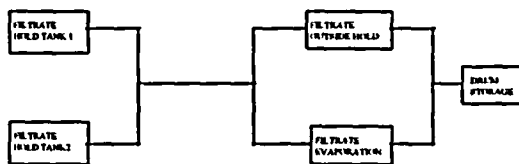
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KOH Flowchart



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Filtrate Flowchart



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AIT Findings

Inadequate design

- ◆ Redesigned piping system completely
- ◆ Performed ISA on each evaporation system
  - Filtrate
  - Waste water
  - KOH

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AIT Findings

Inadequate design

- ◆ Installed separate dikes for each material
- ◆ Removed all piping interconnections
- ◆ Replaced threaded filtrate piping with welded
- ◆ Located valving in a logical location

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### AIT Findings

#### Inadequate design

- ◆ Installed a separate sump for each material
- ◆ Installed sturdy labels
- ◆ Have a detailed P&ID for each system

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### AIT Findings

#### Inadequate design

- ◆ Updated postings
- ◆ Provided controls for unauthorized materials
  - Equipment in place
  - Bonnets will be installed

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### AIT Findings

#### Inadequate design

- ◆ Install remote pump shutoff
- ◆ Other interlocks which will be installed
- ◆ Level indicators awaiting installation
- ◆ Removed obsolete piping in area

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### AIT Findings

#### Inadequate design

- ◆ Required use of communication equipment
- ◆ New lights for KOH dike

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### AIT Findings

#### Training Issues

- ◆ Additional training for all recovery operators
- ◆ Meetings once per week with recovery operators
- ◆ Additional OJT required
- ◆ Use of maintenance logs

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### AIT Findings

#### Management Oversight

- ◆ Process engineer checks maintenance log weekly
- ◆ Logs are provided to facilitate communication
- ◆ Encourage operator suggestions
- ◆ Additional supervisor for area

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## AIT Findings

### Procedures

- ◆ Applicable procedures rewritten completely
- ◆ All recovery procedures revised by end of year
- ◆ Operator input used for procedure development

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## HAZOP Methodology

- ◆ Participants
- ◆ Study nodes
- ◆ Guide words
- ◆ Risk ranking

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## HAZOP Methodology

- ◆ Prerequisite information
  - accident reports
  - MSDS
  - applicable chemical information
  - P&ID
  - materials of construction
  - codes

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## HAZOP Results - Filtrates

add a bypass or cover for the recuperator tank  
QW3 pump and pipe heat trace power supply  
add dry shock to outside platform and a venting filling line  
reduce discharge to 3/4" pipe for 20 gpm transfer area drum  
add modulus to control surge at outside sample port  
cover outside pump, remove pump deck, purchase/helium absorbent at pump inlet  
ensure daily check when filtrates are present in the outside tanks  
install a nitrogen pump or a pressure relief to eliminate backflowed gases  
Investigate the details of pumping operations used to fill tank or determine when relief without operator intervention  
internal heating coils may be used if necessary, but must not preclude before the steam coils.  
post signs prohibiting material additions to outside tanks or containment  
add instrumentation to monitor containment level  
ensure that the inside high/low level alarms are functional and in P&ID  
formulate process of entering low filtrates in filters let make-up  
install check valve to prevent filtrate backflow into the ammonia system  
replace tank level indication with a pressure gauge or guarded sight glass  
change design to add ammonia before pump P311-42, standardized to ensure that the pump is on before adding ammonia

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## HAZOP Results - Filtrates

create barrier for pumping out filtrate  
determine what head space is required in drums receiving concentrated filtrate  
install regulator for the ammonia supply  
purchase drum level indicator  
ensure pump discharge designed to the full tank due to larger volume  
delete filter - ensure and add problems; human errors associated additions to tank; filter notified by platform  
ensure ammonia supply pump is after filtrate valve in Building 240-4  
install check valve on pump side of MV113-10  
label sample container  
post system information in Building 240-2  
provide inside safe slab containment for full tank  
verify pipe alignment

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## HAZOP Results - KOH

add modulus to control surge from the sample port  
add a bypass or cover to recuperator tank to minimize splashing and dust from spray lines upstream and pipe bridge  
post system information in Building 240-2  
ensure that portable pump discharge hose is good for 1.20 gpm  
substitute and upgrade inside shut-off/pressure, install vent to drum  
install temporary containment for full tank - no safe slab requirements  
move AY314-1 inside Building 251  
add final check and ammonia valve to P&ID  
purchase drum level indicator  
verify water supply for the inside full tank to an air break over the tank, or install backflow preventer  
label sample container

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## HAZOP Results - Waste Water

procedures to check pH of each container before addition to system, including identification enhance and emergency training under 11.6. Add to ensure that all operators accurately label containers for materials destined for the system  
 note approved materials on log sheet  
 post instructions on log sheet  
 prevent misdirectional addition - review storage area to provide capacity for other 5.5 gallon transducer tank  
 correct sampling for change from PVC to White inside of Building 220.4  
 add number to control sheets at sample point  
 identify and segregate materials (chloroform/acetone), and control a vent to the down stream  
 add a splash guard between the filter and container connecting components  
 correct PV314-14 pending further review of discharge to down stream  
 procedures to ensure recovery transfer pump when equipment drain is removed.  
 add sample point after PV314-12 to future modifications before sampling for transfer to equipment drain  
 make check for previous had in comparison down a paragraph to begin new necessary log - include on log sheet

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## AIT FINDING

- ◆ Weakness in Chemical and Radiological Sampling
  - Update EPIPs
  - Additional sampling equipment has been ordered
  - Training in capability of current sampling equipment
  - Exercise capability in future drill

## Safety Program Update

- ◆ Configuration control
  - Revise Change Management Process
    - » Form Team
    - » Set Requirements
    - » Proceduralize
    - » Train and implement
  - Centralize Document Control
- ◆ Surveillance Tests
  - PMS

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## Safety Program Update

- ◆ Organization and Responsibilities Procedure (AD-1)
- ◆ Complete written Criticality Safety Program (RAAP-109)
- ◆ Criticality Analysis Procedure (RAAP-108)
- ◆ Revise Commitment/Corrective Action Tracking (RAAP-102)
- ◆ Update Training Program (RAAP-121)
  - Management, Supervisors, Engineers
  - Operators

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## Safety Program Update

- ◆ Document control procedure (RAAP-111)
- ◆ License change procedure (RAAP-112)
- ◆ Safety related documents procedure (RAAP-113)
- ◆ Record Retention Procedure (RAAP-107)
- ◆ Stop Work Authority Procedure (RAAP-106)
- ◆ Description and operation of NCS Alarm System

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## Safety Program Update

- ◆ Self Assessment Program
  - Internal audits/inspections procedure (RAAP-110)
  - Abnormal Event/Occurrence reporting (RAAP-105)
- ◆ CONVERSION
  - Plant Configuration, P&ID, Drawings, Basis document, Analysis, Evaluation, Complete ISA
- ◆ RECYCLE/RECOVERY
- ◆ PELLET PLANT FRONT END
- ◆ STORAGE UNITS

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## Combustion Engineering Initiatives

- ◆ Waste / compliance
  - Liability reduction (Financial & Regulatory)
    - » Outside storage
    - » Labeling/postings
    - » Organization of storage areas
    - » NH<sub>3</sub> system actions completed
    - » 40,000 ft<sup>3</sup> disposed or released from the site this yr
    - » Configuration control (5 draftsmen)
- ◆ Plant Improvements 1996
  - powder prep, oxide, clean rooms, erbia lab, incinerator, plant environment (AC, noise), recycle recovery,

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## Combustion Engineering Initiatives

- ◆ Plant Improvements 1997
  - HF Scrubbers, upgrade HICAD, Gd shop, BWR, shipping container storage, recycle recovery,
- ◆ Training
  - OS/Operational
  - Safety
  - HR (PIT)

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## Combustion Engineering Initiatives

- ◆ Staffing 1996
  - Gil Page to Ceramic Operations
  - Bob Tolan hired to run Assembly Operations
  - Hired Oxide Plant Engineer
  - Hired Senior Manufacturing Engineer
  - Added Training/Emergency Preparedness person to Regulatory Affairs
  - Hired Criticality Safety Engineer
  - Created new training position and hired highly qualified individual

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## Summary

We have an integrated program to make continuous improvements in the safety of the facility

### GOAL

To make our operation match our fuel reliability

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