

# Systems Inter-Relationship with Effluents



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or...how to avoid that *deer-in-the-headlights* look



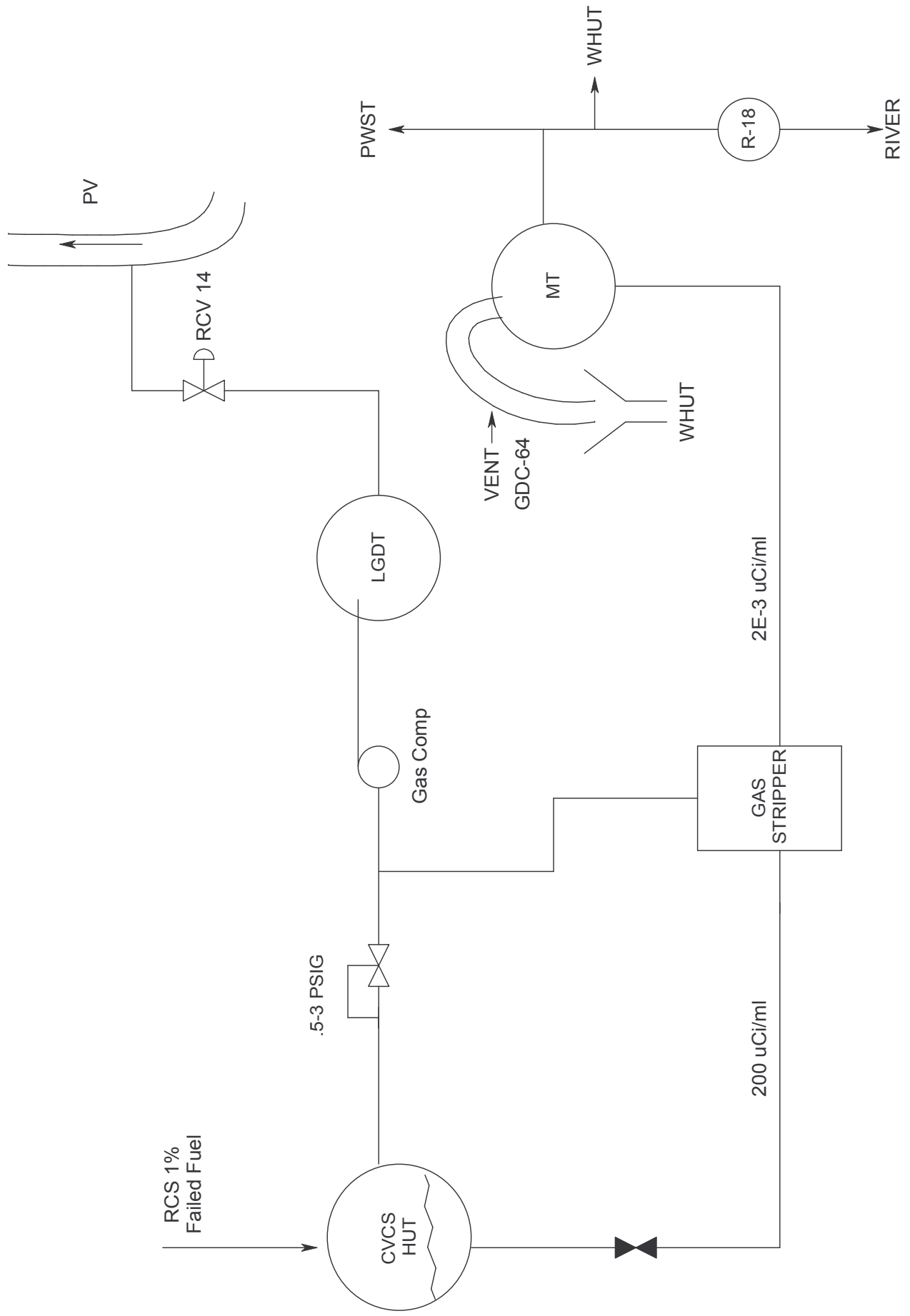
# Purpose

- Identify some of the plant modifications from the last 25 years with regard to effluents.
- Discuss change process, and effluent impact.
- Identify potential common themes

## Modifications at IP3 with Effluent Ramifications

- Boric Acid Recovery and Gas Stripper on Waste Processing Retired (1979)
- Relief Valves in Primary Closed Cooling System surge tanks gutted, tank vents hard-piped to a waste holdup tank, per a Westinghouse suggestion (1984)
- Liquid Waste Transfer line between units capped, while SG line remained intact (1989)
- Fuel Storage Building (FSB) ventilation system automatic charcoal bypass dampers removed in favor of manual dampers and modified operation of the system (1995-current)

# Waste Gas Stripper



## Mod to gas stripper/boric acid recovery system (1979)

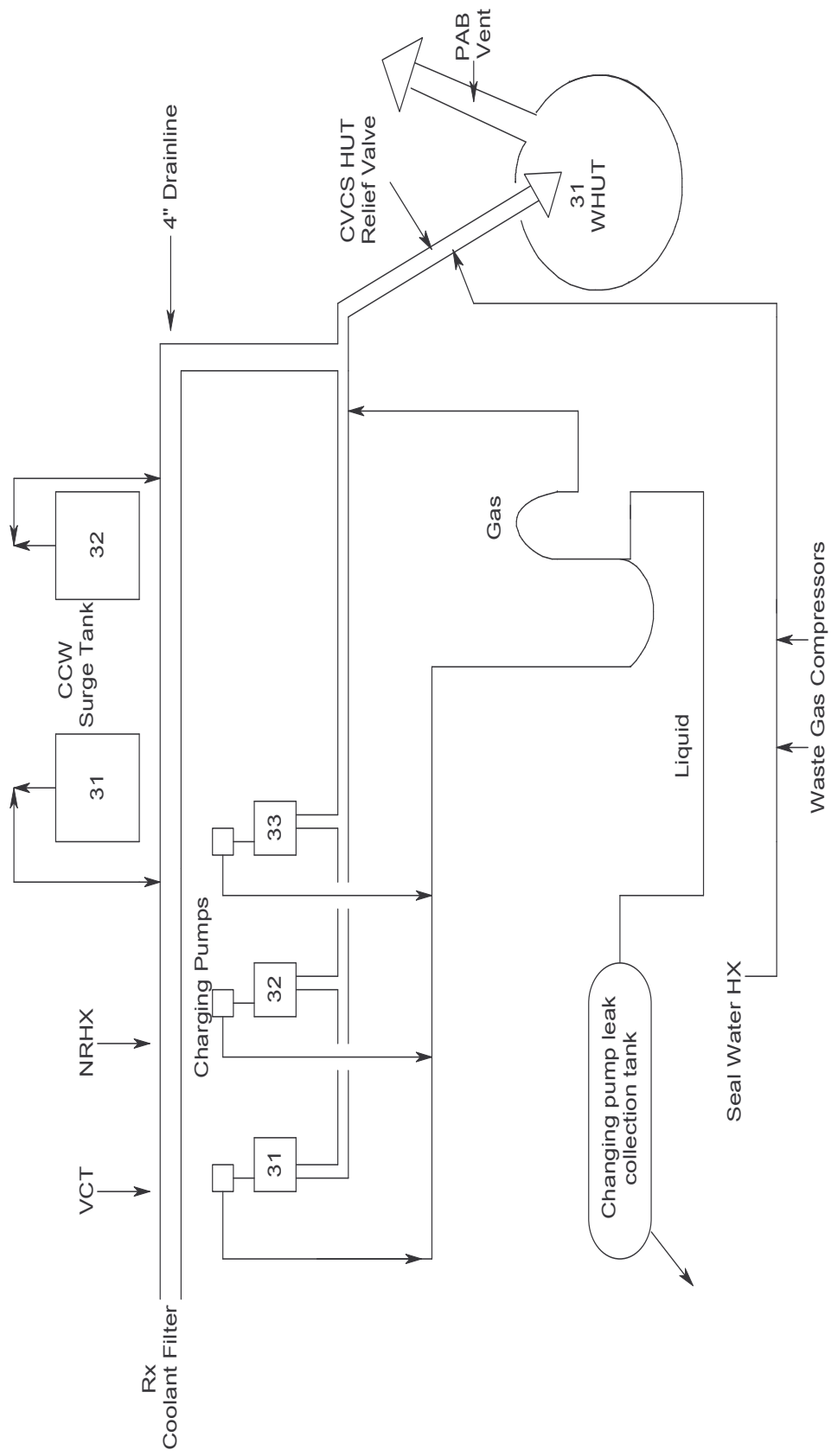
- Processing  $\text{H}_3\text{BO}_3$  suspended, Waste Cond Sys retired
- Liq Waste Processing system installed (outdoor tanks)
- CVCS was NOT to be sent to Monitor Tanks, per Mod
- Seemed to forget that little detail. CVCS began being processed, bypassing the gas stripper in 1980
- Operation continued till 1987, when stripper removed
- LER in Oct 1993. Many \$\$\$ later, determined trigger level for action with gas going to MT, historical impact & method to quantify any applicable gaseous releases

# NRC Restart Issue & Root Cause

- Significant NRC restart issue.
- Failure to involve the FSAR or GDC in the 50.59 package in early 1980's.
- Poor communication between functional groups (Ops/WM/Chem/Rad Support)
- Extent of Condition toward entire 50.59 process and other systems reviewed.
- Evaluation required OK from NRC to restart unit 3, part of a two-year shutdown.

# Component Cooling Surge Tanks

Nuclear Side Drains and Relief Valve Header

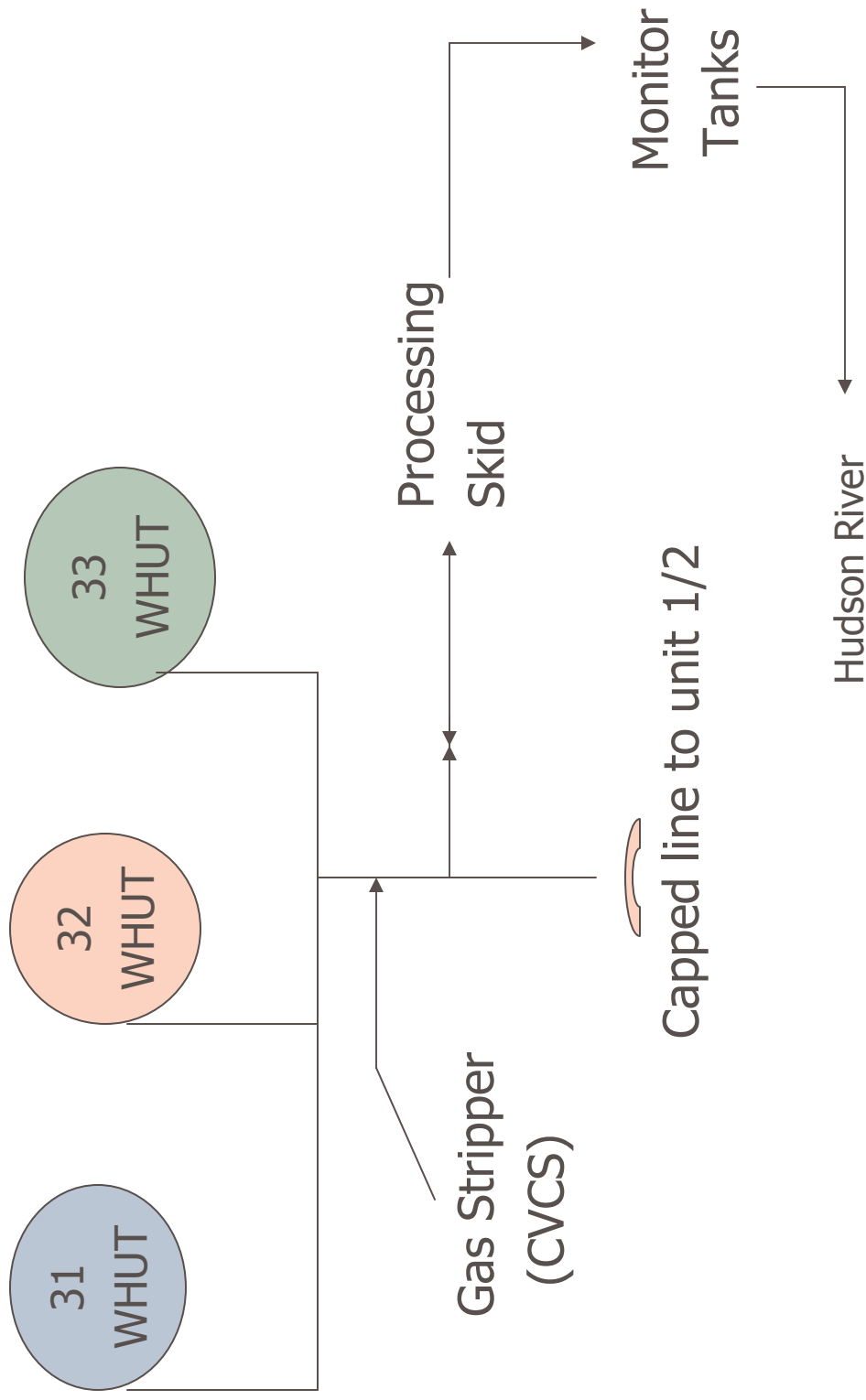




# CCW description

- Same vent line as other primary systems
- When no PAB ventilation, gas builds up
- Charging Pumps leaks, large source term
- With fuel damage, large amounts of gas
- Gaseous diffusion into CCW liquid sample
- Where's the leak ! Ahhhhh!
- OK, so it's not a leak, PROVE IT.

# Unit 3 Liquid Waste & Transfer Line

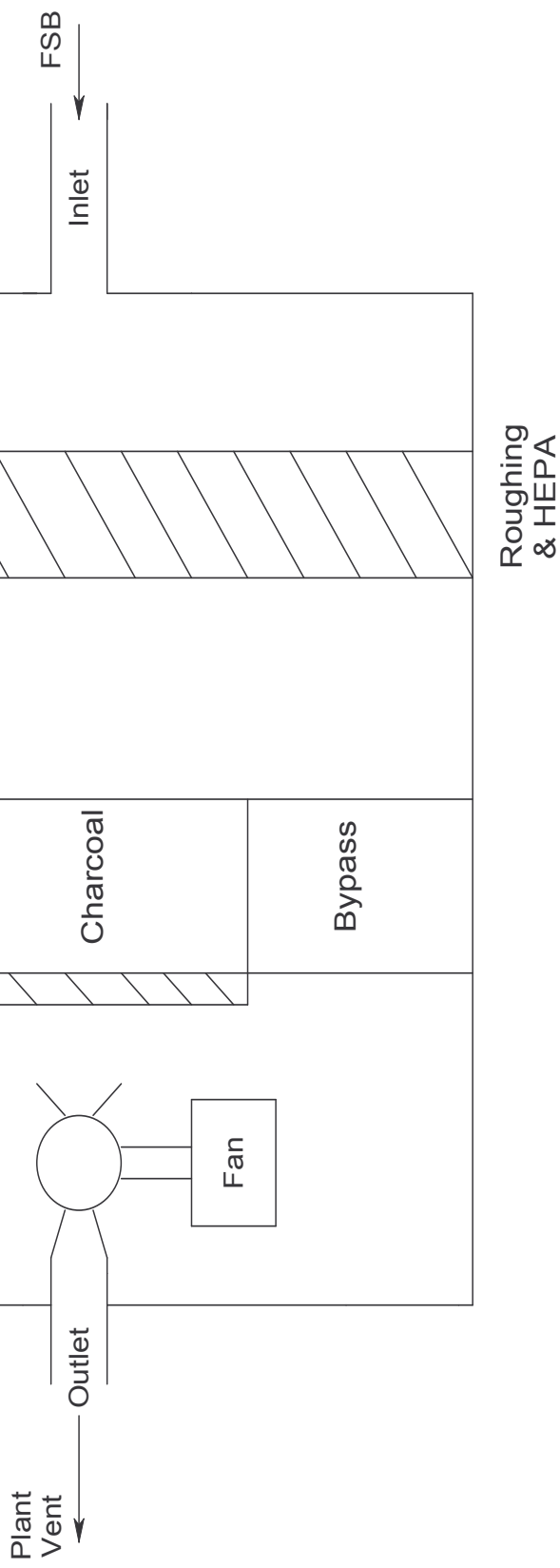


## Capped Liq Waste Transfer Line (IP 1/2/3)

- ✓ Mod performed OK, but there are new thoughts now that we are one “IPEC”.
- ✓ SG Line NOT capped, due to a good assessment of potential Pri to Sec leak and the need to perform processing on this water for 31-day dose projection limits.
- ✓ Capped because of line decay and erosion. Worth re-visiting? Was mod ill-advised?

# FSB Ventilation System

FSB Ventilation Plenum



# FSB Ventilation

- Automatic charcoal usage and bypass system was re-configured ~1984 after determining the system was ill-designed and leaked.
- Wanting to ensure bed isolation, a manual system was installed. Operating instructions indicated that this task would take approx 16-24 person-hours to swap modes (not too friendly to workers).
- System ops where expected to continue as planned, but this activity was very laborious and impacted work schedules. Eventually, a new “work-around” evolved, leaving bypass dampers in place.
- For non-fuel-moving periods, the fan was secured, and air was allowed to educt out the building to the PV.
- As a result: Two Questions were identified by NRC:
  - 1) How is charcoal run time tracked for ITS compliance ?
  - 2) How is building kept negative for GDC64 issues (H-3)?

# Resolving FSB Ventilation problems

- Evaluate previous methods of operating system
- Evaluate past operability of charcoal for ITS, at high humidity
- Determine current relative pressure to environs
- Consider installing a permanent manometer
- Quantify flow rate with fans on/off, with/without using charcoal
- Re-evaluate the methods of verifying the integrity of SFP liner
- Re-evaluate 10CFR20 release rates & pathways for compliance
- Determine charcoal validity at highest possible % humidity
- Inspect for water damage/removal means at the roughing filters
- Determine average duration of fan run time BEFORE fuel moving
- Create new position paper and update SOPs as needed

# Common Theme?

- Some “approved” 50.59’s were not well documented, with insufficient regard toward effluents.
- Prior to 1987, there was a general lack of commitment to the FSAR (no electronic search engines?). Mods from this time period should be re-evaluated.
- The 50.59 process in the old days lacked a good tie to the effluents program/ODCM and repercussions were not understood (prior to Gen Letter 89-01).
- A system manager (ie, effluents manager) should consider periodic review of previous modifications for possible weaknesses in light of more modern understanding and regulation.

# Conclusions / Lessons Learned

- On-site/Offsite QA effluent inspections should include a focus on compliance with the FSAR and industry standard source documents (NUREGs, etc) as well as understood industry best practices.
  - When departing from the norm, need justification
  - Don't rely on oversight, use self-assessment.
- Effluents Manager should have historical records of all mods effecting effluents and review whenever there is a change or question.
- Focus on areas of high personal turn-over and Operator work-arounds.
- Use the site consolidation opportunity to re-evaluate previously “understood” system inter-relations, while establishing effluents criteria for the combined station.



# Conclusions

- Use the site consolidation opportunity to re-evaluate all previously “understood” system inter-relations for both plants.
- For