1994 CA II Consolidated Audit
Action Item Register

Action Item #: RC-01 **Status:** complete

Priority: High

Action Item Name: Develop chemical compatability chart

Action Item Description: Develop single up-to-date chemical compatibility chart that can be shared by both plants. Consider obtaining compatibility charts from sister plants within Dow and modify accordingly.

Person(s) Responsible: Heins, Monty

Expected Completion Date: August 31, 1996

Actions Recommended: Determine feasibility. Obtain chart from another C/A plant if possible. Clearly explain actions and reasoning.

Actions Taken: Chemical compatability matrices were generated for the department. A matrix was developed for (1) Process chemicals, (2) Consolidated Lab chemicals, (3) Cell Crew Lab chemicals, and (4) Materials of Construction. The chemical compatability workbook resides on our Procedure Library network where it can be accessed by all department employees.

Actual Completion Date: August 14, 1996

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item R gister

Action Item #: RC-02 **Status:** complete

Priority: Must Do

Action Item Name: Review E-205/D-227 reactive chemical issues

Action Item Description: Review E-205/D-227 reactive chemical issues to insure that effective safeguards are in place for avoiding a worst case chlorination of chloroform. Review John Monroe's Aspen simulation for the carbon tet elimination project. Obtain updated complete taffy analysis and document the worst case scenario and lines of defense.

Person(s) Responsible: Haun, Elaine

Expected Completion Date: March 31, 1996

Actions Recommended: Carbon tetrachloride has been re-introduced to the process, therefore, John Monroe's data will not need to be reviewed. Determine need for taffy analysis update and ensure that the worst case scenario is documented in the Consolidated Audit Reactive Chemicals book with lines of defense defined.

Actions Taken:
1. Michael Mebes of R&D reviewed John Monroe's Aspen simulation in 5/95. However, since then, we are now adding carbon tet to the taffy so the Aspen results are no longer needed, as stated above.
2. A taffy sample was sent to the R&D lab for complete analysis on 3/6/96.
3. Lines of defense against the worst case scenario of high (>30,000 ppm NCl3) is documented in the Mod5 English language, and in the procedure for "Responding to High NCl3".
4. These lines of defense are also located in the 1994 consolidated audit reactive chemicals notebook.

Actual Completion Date: March 6, 1996

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item Register

Action Item #: RC-03 **Status:** complete

Priority: High

Action Item Name: Chlorine Expansion Pot Concerns

Action Item Description: A follow up response letter is needed for the concerns raised with the chlorine expansion pot project of 1992.

Person(s) Responsible: Harrison, Jeff

Expected Completion Date: April 1, 1995

Actions Recommended: 1. Resolve issues and address. Document decisions.

Actions Taken: Decision: The expansion pot is out of service and will remain so. Material of construction of the existing PSV bellows has been corrected. PSV's will continue to be used to protect this liquid Cl2 line. Response letter has been dropped.

Actual Completion Date: March 27, 1995

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item Register

Action Item #: RC-04 **Status:** complete

Priority: Must Do

Action Item Name: C-205 Booster Compressor Issues

Action Item Description: C-205 Booster Compressor Issues
a. Were the materials of construction checked with the X-ray alloy instrument?
b. Was the equipment blacklighted for the presence of organic residues?

Person(s) Responsible: Harrison, Jeff

Expected Completion Date: December 31, 1995

Actions Recommended: If and when C-205 is to be installed, black light testing and verification of materials of construction will occur. Timing for installation is questionable and may not occur until 1997 time frame.

Actions Taken: No action required at this time. Review of reactive chemical concerns will be handled in the pre-startup audit if and when this new compressor is installed. Timing for the installation of the new booster compressor is yet to be determined.

Actual Completion Date: December 31, 1994

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidat d Audit
Action Item Register

Action Item #: RC-05 **Status:** complete

Priority: High

Action Item Name: Review Titanium Storage Policy

Action Item Description: Review the storage policy for Titanium parts to ensure that the potential for installing the wrong material of construction in the process is nil. Test all titanium parts when they arrive from toher areas and do not depend on the color of the part for positive ID.

Person(s) Responsible: Gravouilla, Rocky

Expected Completion Date: April 15, 1996

Actions Recommended: Ownership of titanium parts has been transferred to the Inventory Management group. They must develop or have a procedure in place for ensuring that titanium parts are clearly identified by definitive means such as analysis, that they are isolated from other equipment and properly secured, and that requests for such materials are approved by operations supervision or plant management. Access to the titanium storage area should be limited to IM specialist, maintenance supervisor or designee.

Actions Taken:

Actual Completion Date: September 30, 1995

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item Register

Action Item #: RC-06 **Status:** complete

Priority: Must Do

Action Item Name: CFC Reactive Chemical Review Documentation

Action Item Description: Joe Schell will send reactive chemical review letters and responses pertaining to the CFC Replacement project to Gretchen LeBlanc

Person(s) Responsible: LeBlanc, Gretchen

Expected Completion Date: May 31, 1995

Actions Recommended: Review letters received.

Actions Taken: Complete as stated.

Actual Completion Date: October 31, 1994

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item Register

Action Item #: RC-07 **Status:** complete

Priority: High

Action Item Name: Review positive ID test for H2SO4

Action Item Description: Review the current positive ID test for incoming deliveriies of sulfuric acid to ensure that the test is specific for sulfuric acid and not any other acid.

Person Responsible: Harrison, Jeff

Expected Completion Date: December 15, 1994

Actions Recommended: Sulfuric acid is checked for color and specific gravity at the division Chlorine plant before the incoming tank cars are off-loaded to storage. The division Chlorine plant has ownership for correct identification as stated.

Actions Taken: As described above, the division Chlorine plant handles positive ID of sulfuric acid. No additional action is required for CA2.

Actual Completion Date: December 9, 1994

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item Regist r

Action Item #: RC-08 **Status:** complete

Priority: Must Do

Action Item Name: Review electrical heating tracing system on Cl2 lines

Action Item Description: Review electrical heating tracing system used for heat tracing chlorine lines and vessels and make sure the system is self-limiting with respect to temperature. If the controller fails and full power is applied to the heating elements will the maximum possible temperature rise initiate an iron chlorine fire?

Person(s) Responsible: Fair, Leonard

Expected Completion Date: June 15, 1995

Actions Recommended:

1. Address questions in Action Item Description.
2. Document responses for inclusion in the Actions Taken section below.
3. If potential for reactive chemical incident exists, develop action plan to address with timing.

Actions Taken:

1. All are self-limiting.
2. GFCI's installed on all circuits.
3. Iron/cl2 reaction is highly unlikely due to 1 above.

Actual Completion Date: October 8, 1995

Closure Approved? **By:**

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item Regist r

Action Item #: RC-09 **Status:** complete

Priority: High

Action Item Name: Nitrogen Compound Analysis For Brine

Action Item Description: Is raw and/or treated brine analyzed on a routine basis for nitrogen-containing compounds?

Person(s) Responsible: Caldwell, Steve

Expected Completion Date: May 31, 1995

Actions Recommended:

1. Determine if Brine Production does analysis on a routine basis.
2. If so, document for inclusion in 1994 Reactive Chemicals Review Notebook. (See attached page)

Actions Taken: Brine Production analyzes the raw brine on a weekly basis for nitrogen-bearing compounds. This documentation was added to the 1994 Reactive Chemicals Review Notebook.

Actual Completion Date: November 18, 1994

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item Register

Action Item #: RC-10 **Status:** complete

Priority: High

Action Item Name: Update Reactive Chemicals Documentation for Bicarb reaction

Action Item Description: Add the bicarb reaction to chemistry section of the Reactive Chemicals packet as an unwanted reaction and list the lines of defense.

Person(s) Responsible: Harrison, Jeff

Expected Completion Date: December 20, 1994

Actions Recommended: As stated in above recommendation.

Actions Taken: Done.

Note: Corrective action item was delinquent due to the Christmas holidays. The extension was approved per Monty Heins considering that the reaction documentation was not a major reactive chemicals issue and did not warrant immediate attention.

Actual Completion Date: January 5, 1995

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item Register

Action Item #: RC-11 **Status:** complete

Priority: High

Action Item Name: Investigate/address MDEA contamination potential in raw brine

Action Item Description: a. Add the MDEA and chlorine reaction to the chemistry section of the Reactive Chemicals packet and list lines of defense.
b. Review the procedures in place at Brine Production for avoiding getting MDEA in the mining water.

Person(s) Responsible: Caldwell, Steve

Expected Completion Date: May 31, 1995

Actions Recommended: Complete item (a) and (b).

Actions Taken: Items (a) and (b) are complete. The MDEA and chlorine reaction chemistry has been detailed in the 1994 C/A Reactive Chemicals Review/Audit notebook under the Brine section. An explanation of Brine Production's lines of defense to minimize and/or mitigate MDEA contamination in the raw brine is also explained there.

Actual Completion Date: March 1, 1996

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item Register

Action Item #: RC-12 **Status:** complete

Priority: Must Do

Action Item Name: Define Reactive Chemicals training levels

Action Item Description: Define the levels of Reactive Chemicals training that are needed for different personnel in the block.

Person(s) Responsible: Landry, Donnie

Expected Completion Date: August 1, 1996

Actions Recommended: Determine if different levels of training are required . Define requirements as necessary. Document decisions/reasoning below.

Actions Taken: Reactive Chemicals training was conducted in 1995 for all department personnel. Levels of training are defined in the IPT modules for new/transferred employees and are the same for all employees thereafter.

Actual Completion Date: December 31, 1995

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item Register

Action Item #: RC-13 **Status:** complete

Priority: Must Do

Action Item Name: Taffy Pot NCl3 analysis

Action Item Description:
a. Define the appropriate frequency for performing the analysis of NCl3 in taffy.
b. Document the scenario of getting sulfuric acid in the taffy and list the lines of defense.

Person(s) Responsible: Haun, Elaine

Expected Completion Date: May 31, 1995

Actions Recommended: As stated.

Actions Taken: 1) The frequency for performing analysis of NCl3 in taffy is located in the procedure for "sampling NCl3". The frequency is every 2 weeks unless E-205 temperature is not operating in an acceptable range or if the previous taffy sample was > 1000 ppm. The procedure is available on the Procedure Library. 2) The scenario of getting sulfuric acid in the taffy is documented in the Mod5 English language, and in the Reactive Chemicals Consolidated Audit notebook. Lines of defense are also documented. 3) As of 5/95 carbon tetrachloride is once again being added.

Actual Completion Date: July 29, 1996

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item R gister

Action Item #: RC-14 **Status:** complete

Priority: High

Action Item Name: Liquid Cl2 pump EBV protection

Action Item Description: Add a comment to the Reactive Chemical Packet that the EBV's on the chlorine pumps also serve as a line of defense for minimizing chlorine losses if a pump leaks.

Person(s) Responsible: Mellieon, Harold

Expected Completion Date: December 31, 1995

Actions Recommended: As stated in Action Item Description

Actions Taken: Added the comments to the Liquefaction section of Reactive Chemicals Notebook (Consolidated audit file cabinet) under #3: EBV's on the suction and discharege of the liquid Cl2 pumps also serve as a line of defense for minimizing chlorine losses if a pump ruptures.

Actual Completion Date: December 20, 1995

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item Register

Action Item #: RC-15 **Status:** complete

Priority: High

Action Item Name: Add SO2 liberation reactions to Reactive Chem Packet

Action Item Description: Add the reactions of sodium bisulfite + acid and sodium thiosulfate + acid (which release SO2) to the chemistry section. Also include this as a worst case scenario and list lines of defense.

Person(s) Responsible: Harrison, Jeff

Expected Completion Date: December 15, 1995

Actions Recommended: As stated.

Actions Taken: Reactions, scenarios, and lines of defense documented in 1994 Reactive Chemicals Review Notebook.

Actual Completion Date: January 9, 1995

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item Register

Action Item #: RC-16 **Status:** complete

Priority: Must Do

Action Item Name: Policy for Extinguishing a C/E trap hydrogen fire

Action Item Description: Determine the best line of defense for a hydrogen fire in a cell effluent trap. Should the rectifier be trippped? The practice of having someone put a water hose in the trap may be unsafe due to the hydrogen re-igniting.

Person(s) Responsible: Pittman, Ed

Expected Completion Date: July 15, 1996

Actions Recommended: As stated.

Actions Taken: A review of Chlorine 1 and CA2 procedures was conducted during the 1st quarter of 1996. The procedures appear adequate based on discussions with knowledgeble Chlor-Alkali personnel. Procedures call for reducing load gradually to enable the fire to extinguished or reduced to zero if the fire cannot be extinguished. The rectifier should not be tripped from high load becuase pressure instability could draw the fire and air into the cell. A caustic trap fire can be approached safely depending on the size and the degree of training of the emergency responders.

Actual Completion Date: January 23, 1996

Closure Approved? Yes **By:** Pittman

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item Register

Action Item #: RC-17 **Status:** complete

Priority: High

Action Item Name: Review oil/insulation fire potential in GT area

Action Item Description: Review potential for hot oil leaking onto porous insulations, especially calcium silicate. This can result in spontaneous ignition.

Person(s) Responsible: Kolder, Roy

Expected Completion Date: May 15, 1996

Actions Recommended: Review potential as stated and document protection means in 1994 Reactive Chemicals Review Notebook.

Actions Taken: An inspection of the gas turbine was done following the 1994 review and the area revisited in March. 1996. Findings are the same. Entry and exit points of bearing oil lines are clear of insulation. One area is recognized as a potential problem area, and that is the exhaust tunnel where the main turbine oil pump is located. This area is insulated with a material call "K-wool" (not calcium silicate), however, any oil leakage here is sure to ignite in a short period of time with metal temperatures in a 700-900 deg.F. range.

Actual Completion Date: March 31, 1996

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item R gister

Action Item #: RC-18 **Status:** complete

Priority: Must Do

Action Item Name: Hydrogen Collection Area Issues

Action Item Description: **(a).** Calculate total backflow in the event the ABV does not close to determine venting capacity of T-206. Consider installing a check valve downstream of C-601 discharge valve (AO-114). Need clarification of CATC guideline 4.1.5.3 **(b).** Review the potential for carbonate buildup and determine if this is a reactive chemicals concern. **(c).** There is a reactive chemicals concern with T-603 bone char exposure to air during disposal. Develop disposal procedures to avoid spontaneous ignition problems.

Person(s) Responsible: Haun, Elaine

Expected Completion Date: December 31, 1996

Actions Recommended: As stated. Respond to all items mentioned above and document in the 1994 Reactive Chemicals Review notebook.

Actions Taken: (a) Jeff Harrison has discussed backflow potential with the CA Technology Center and is advised to take no action at this time until further information becomes available from them. We currently meet the CATC guidelines.
(b) T-206 seal is maintained with condensate. The vessel was recently opened and signs of carbonate build up was minimal. The potetnial of a build up in the seal area, potentially restricting the exit of H2 should the vessel be called into service, is non-existent. Further, four smaller H2 stacks exist in the cl2 cell area and will relieve the H2 header at 4" H2O pressures. The likelihood of reaching H2 header backpressure significant enough to force H2 into the Cl2 covers as a result of a restricted seal leg due to carbonate build up is negligible.
(c) Presently, there are no plans to remove the bone char form T-603. We will develop a procedure to remove the bone char safely when the need arises. In the meantime, we've added this reaction to our reactive chemical matrix.

Actual Completion Date: October 30, 1996

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item R gister

Action Item #: RC-19 **Status:** complete

Priority: High

Action Item Name: Reactive Chemicals test data for absorbents

Action Item Description: Determine if reactive chemicals testing data exists for absorbents being used. Compatibility testing should be performed if data does not exist.

Person(s) Responsible: Douglas, Charles

Expected Completion Date: January 31, 1995

Actions Recommended: Testing data exists per Charles Douglas.

Actions Taken: Testing data's existence confirmed per Charles Douglas. No additional action required.

Actual Completion Date: January 31, 1995

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action It m Register

Action Item #: RC-20 **Status:** complete

Priority: High

Action Item Name: Update plants approved leak repair sealants list

Action Item Description: Update CA2's and Caustic's list of approved leak repair sealants.

Person(s) Responsible: Heins, Monty

Expected Completion Date: May 31, 1995

Actions Recommended: As stated.

Actions Taken: Completed with data from Steve Tedeschi.

Note: Corrective action expected completion date exceedence approved per Monty Heins. More time was need for complete data collection, review and approval via the Management of Change process.

Actual Completion Date: August 31, 1995

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item Register

Action Item #: RC-21 **Status:** complete

Priority: High

Action Item Name: Review procedures for lubricants and cleaning agents

Action Item Description: Review procedures to ensure that improper materials are not used for chlorine service items.

Person(s) Responsible: Campbell, Floyd

Expected Completion Date: May 31, 1995

Actions Recommended: Ensure that existing procedures are sufficient to prevent such a reactive chemicals situation.

Actions Taken: Reviewed procedures and determined to be sufficient to prevent an event per Floyd Campbell.

Actual Completion Date: May 30, 1995

Closure Approved? Yes **By:** Campbell

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item Register

Action Item #: RC-22 **Status:** complete

Priority: High

Action Item Name: Review lubricants and cleaning agents for Power area

Action Item Description: Review maintenance procedures in the power area to ensure that Chlorothene and copper containing anti-seize compounds are not used together when assembling equipment. Reactive chemicals incidents have resulted in the past with this combination.

Person(s) Responsible: Kolder, Roy

Expected Completion Date: March 31, 1996

Actions Recommended: Review procedures to ensure that such a situation would not occur. If procedures do not exist, make provisions to incorporate this information in a power area cleaning procedure. Seek appropriate assistance from the maintenance folks.

Actions Taken: Reactive chemical concerns associated with this particular action item, as well as other miscellaneous reactive chemical concerns associated with lubricants, cleaning agents and materials of construction in the Power are have been forwarded to the maintenance supervisor responsible for this are such that this information can be used to supplement existing reactive chemicals training efforts in the maintenance group.

Actual Completion Date: March 29, 1996

Closure Approved? Yes **By:** LeBlanc

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item Register

Action Item #: RC-23 **Status:** complete

Priority: Medium

Action Item Name: Review T-201 startup procedures

Action Item Description: Review operating discipline for starting up T-201 with strong acid during times when weak acid is not available. Develop procedures that address the heat of dilution of the strong acid.

Person(s) Responsible: Mellieon, Harold

Expected Completion Date: February 28, 1995

Actions Recommended:

Actions Taken: No plans to take down and drain the weak sulfuric drying column are in the near future. The next planned outage is sometimes in 1998. We will need to address this via a procedure but it will be of much more value to wait until planning for that outage begins. At that time a procedure will be generated and incorporated into our procedure library.

Actual Completion Date: February 15, 1995

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item Regist r

Action Item #: RC-24 **Status:** complete

Priority: High

Action Item Name: Address user plant backflow potential in caustic lines

Action Item Description: Determine if adequate safeguards are in place at the caustic user plants to prevent organics from backing up into the caustic header.

Person(s) Responsible: Harrison, Jeff

Expected Completion Date: December 31, 1994

Actions Recommended: Carryover from Caustic Plant 1994 Consolidated Audit. Complete and document in 1994 Reactive Chemicals Review Notebook.

Actions Taken: This has been complete since June 1, 1994.

Actual Completion Date: June 1, 1994

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item Register

Action Item #: RC-25 **Status:** complete

Priority: High

Action Item Name: Review maint procedures for caustic service cleaning agents

Action Item Description: Review maintenance procedures to ensure that chlorinated organics cleaning agents are not used in caustic service.

Person(s) Responsible: Campbell, Floyd

Expected Completion Date: June 1, 1996

Actions Recommended: As stated. Maintenance procedures have been completed. This action item was originally assigned to Todd Hebert.

Actions Taken: Maintenance procedures for caustic service cleaning agents have been developed and are available in the C/A procedure library.

Actual Completion Date: April 15, 1995

Closure Approved? Yes **By:** Campbell

Print Date: Tue, Nov 26, 1996

1994 CA II Consolidated Audit
Action Item Register

Action Item #: RC-26 **Status:** complete

Priority: High

Action Item Name: Centralized location for Reactive Chem Hazard Eval data

Action Item Description: All pertinent reactive chemical hazard evaluation data which were generated for Caustic/Chlor-Alkali 2 should be assembled and placed in a centralized location so that it is available to plant personnel.

Person(s) Responsible: Heins, Monty

Expected Completion Date: March 31, 1995

Actions Recommended: As stated.

Actions Taken: A reactive chemicals notebook was developed to collect pertinent training and audit follow up material. The notebook can be found in the PSM file cabinet in the records room at CA2.

Actual Completion Date: February 15, 1995

Closure Approved? Yes **By:** Heins

Print Date: Tue, Nov 26, 1996