



**GULF STATES UTILITIES COMPANY**

RIVER BEND STATION      POST OFFICE BOX 220      ST. FRANCISVILLE, LOUISIANA 70775

AREA CODE 504      635-6094      346-8651

March 30, 1988  
RBG- 27633  
File No. G9.5, G10.2.7

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D. C. 20555

Gentlemen:

River Bend Station - Unit 1  
Docket No. 50-458

Gulf States Utilities Company (GSU) submitted for your review and approval proposed changes to its Asiatic Clam Control Program on August 31, 1987. Review by your staff resulted in discussions concerning sampling and visual inspections of Auxiliary Building unit coolers. GSU's earlier submittal has been revised as a result of those discussions and is attached for your approval.

The associated fee was submitted on February 18, 1988.

If you have any further questions, contact Mr. James Cook at (504) 381-4151.

Sincerely,

J. E. Booker  
Manager-River Bend Oversight  
River Bend Nuclear Group

8804070166 880330  
PDR ADOCK 05000458  
P PDR

JEB/LAE/<sup>gwc</sup>JWC/PDG/es

Attachment 1 - ACCP Changes  
Attachment 2 - Proposed ADM-0053, Rev. 2

cc: U. S. Nuclear Regulatory Commission  
611 Ryan Plaza Drive, Suite 1000  
Arlington, TX 76011

Mr. J. David McNeill, III  
Assistant Attorney General  
7434 Perkins Road  
Baton Rouge, LA 70808

NRC Resident Inspector  
P. O. Box 1051  
St. Francisville, LA 70775

Walt Paulson, Project Mgr.  
U. S. NRC  
1 White Flint - North  
Mail Stop 13D18  
Washington, D.C. 20555

AD001  
11

## ATTACHMENT 1

### ASIATIC CLAM CONTROL PROGRAM (ACCP) CHANGES

#### REQUIREMENT

River Bend Station's (RBS) Technical Specification 6.8.4.d Biofouling Prevention and Detection requires:

"A program, approved by the NRC Staff prior to introduction of river water to the systems, which will include the procedures to prevent biofouling of safety-related equipment, to assure detection of Corbicula in the intake embayment and the Mississippi River at the River Bend Station site, and to monitor and survey safety-related equipment to detect biofouling. Changes to this program will be submitted to and approved by the NRC (both the Region and NRR) prior to implementation."

#### HISTORY

The RBS ACCP was submitted for review on June 21, 1985 and approved on September 27, 1985. The program was implemented prior to introduction of river water to plant systems and has been effective to date in preventing biofouling of safety-related equipment. The changes proposed herein are based on program experience and are expected to enhance the effectiveness of the ACCP.

#### DISCUSSION OF PROPOSED CHANGES

A discussion of the significant technical changes is provided herein as proposed revisions to Administrative Procedure (ADM)-0053, Revision 2, "Asiatic Clam Control Program." Many of the changes requested in this proposed revision are administrative or editorial in nature and were determined to not warrant further discussion. Changes from Revision 1 are indicated by change bars.

#### 6.2 Biological Monitoring for Asiatic Clams

The requirement for monitoring to detect the presence or relative abundance of Corbicula in the Mississippi River channel has been deleted. As indicated in GSU's August 21, 1984 letter in response to I&E Bulletin 81-03, several years of historical data exist for Corbicula in the river near the site for both substrate-associated juveniles and adults and drifting larval/juveniles. The intent of this monitoring was to determine if there was a meaningful relationship between the method of sampling ambient densities of young clams in the source water and the method of sampling the clarifier influent. The temporal and quantitative relationship of these two methods and sampling locations has been documented since the implementation of the ACCP. Suspension of river sampling will not decrease the effectiveness

of the program. Monitoring for adult/large juvenile clams will continue in the embayment where circulating water makeup is withdrawn.

The requirement for increasing the sampling frequency of the clarifier effluent for larval/smaller juvenile clams in the event that normal service water chlorination is interrupted longer than 48 hours has also been deleted. When the program was planned, it was expected that the clarifiers would remove most, if not all, of these planktonic clams. Increasing the sampling frequency during chlorination lapses was supposed to contribute evidence that the lack of biocide was inconsequential. We now know that, although substantial removal is accomplished by the clarification process, some young clams are introduced into the Circulating Water System from the clarifiers. Therefore, increasing the sampling frequency of the clarifier effluent no longer serves a useful purpose.

### 6.3 Sampling and Visual Inspections

As previously discussed with the NRC Staff, the requirement for visually inspecting the Auxiliary Building unit coolers has been temporarily deleted until after Refueling Outage No. 2. The unit cooler welded design impedes access for direct visual inspection of their internal coils. To physically cut into these heat exchangers would be expensive, man-power intensive, and would require the equipment to be inoperative for a substantial period of time. The best method that can presently be used to positively determine the presence of adult clams is to collect the sediment from the inlet coil drains and analyze it for evidence of clams. If significant quantities of fouling-size clams or shells were present, it is highly probable that they would be found in such samples. Correlation of the results between the sample analyses and the visual inspections performed on the other safety-related heat exchangers required in Section 6.3.1 will provide additional confidence in the interim that the detection of clams in the unit coolers via sampling only is sufficient. This sampling and the monthly performance monitoring and trending required in Section 6.1 provides the redundant assurance that the Auxiliary Building unit coolers will not abruptly/unexpectedly fail to serve their safety-related loads due to blockage by Corbicula.

GSU is investigating the feasibility of using a fiberoptic scope as an alternate method of visual inspection. The fiberoptic technique is being tested and necessary modifications for probe access and isolation valve leakage are identified and scheduled for work prior to operation following Refueling Outage No. 2. Visual inspections of the Auxiliary Building unit coolers by this method will commence following Refueling Outage No. 2. Unit Cooler No. 8 (HVR\*UC8) will be sampled/inspected each refueling outage due to its operability requirements. Because of similarities in elevations, flow rates, heat loadings, materials and configuration (See Exhibit 1), the remaining ten Auxiliary Building unit coolers were paired for sampling/inspection as follows:

- HVR\*UC2 or HVR\*UC10
- HVR\*UC3 or HVR\*UC4
- HVR\*UC5 or HVR\*UC7
- HVR\*UC6 or HVR\*UC9
- HVR\*UC11A or HVR\*UC11B

Each month, one cooler from a pairing will be sampled and visually inspected via the fiberoptic method (i. e. each pairing sampled/inspected at least twice per year).

#### 6.4 CHLORINATION

The provision that the chlorine concentration in the Normal Service Water system can be reduced during the months of December through March has been changed and the upper control limit of 0.8 ppm total residual chlorine (TRC) has been deleted. When the ACCP was originally conceived, GSU was concerned that its wastewater discharge permit limitations on the discharge of chlorine in cooling tower blowdown could not be met if a TRC concentration of 0.6 to 0.8 ppm was used during winter months when evaporative dissipation in the cooling towers was reduced. The reduction was also justified in that the spawning season for Corbicula in the source water occurs only during the months of warmer river water temperature. However, we now know that young Corbicula are sometimes suspended in the source water during at least part of the winter.

GSU has installed a system for injecting a dechlorinating chemical into the blowdown line so that the discharge permit limitations can be met regardless of the chlorine dosage used. Biocide will now be applied year round to the Normal Service Water system at a concentration of at least 0.6 ppm TRC to prevent survival of larvae spawned within the Circulating Water system or entrained in the clarifier effluent. The addition of this requirement will further assure that clams will not survive and grow to fouling size in the Normal Service Water system.

EXHIBIT 1  
Auxiliary Building Unit Cooler Comparison

Interval	Unit Cooler	Division	Materials & Configuration	Load (Btu/hr)	Flow (gpm)	Elevation
1	HVR*UC2	I	Tubes - SB-111, Alloy 122 Return Bends - SB-75 Alloy 122 Header - SA-414	148,200	50	95'
1	HVR*UC10	II	Tubes - SB-111, Alloy 122 Return Bends - SB-75 Alloy 122 Header - SA-414	109,400	37	114'
2	HVR*UC3	I	Tubes - SB-111, Alloy 122 Return Bends - SB-75 Alloy 122 Header - SA-414	291,100	100	95'
2	HVR*UC4	II	Tubes - SB-111, Alloy 122 Return Bends - SB-75 Alloy 122 Header - SA-414	264,800	90	95'
3	HVR*UC5	I,II	Tubes - SB-111, Alloy 122 Return Bends - SB-75 Alloy 122 Header - SA-414	574,100	80	114'
4	HVR*UC6	I	Tubes - SB-111, Alloy 122 Return Bends - SB-75 Alloy 122 Header - SA-414	696,000	235	114'
4	HVR*UC9	II	Tubes - SB-111, Alloy 122 Return Bends - SB-75 Alloy 122 Header - SA-414	615,100	210	114'
5	HVR*UC7	I	Tubes - SB-111, Alloy 122 Return Bends - SB-75 Alloy 122 Header - SA-414	444,300	150/63	114'
5	HVR*UC8	I	Tubes - SB-111, Alloy 122 Return Bends - SB-75 Alloy 122 Header - SA-414	354,600	120	114'
6	HVR*UC11A	I	Tubes - SB-111, Alloy 122 Return Bends - SB-75 Alloy 122 Header - SA-414	1,188,500	410	141'
6	HVR*UC11B	II	Tubes - SB-111, Alloy 122 Return Bends - SB-75 Alloy 122 Header - SA-414	1,188,500	410	141'

ASIATIC CLAM CONTROL PROGRAM

TABLE OF CONTENTS

SECTION	<u>PAGE NO.</u>
1.0 PURPOSE/APPLICABILITY	2
2.0 REFERENCES	2
3.0 DEFINITIONS	3
4.0 RESPONSIBILITIES	3
5.0 ADMINISTRATIVE CONTROLS	4
6.0 GENERAL REQUIREMENTS	5
6.1 Monitoring and Trending of Safety Related Equipment Using Service Water	5
6.2 Biological Monitoring for Asiatic Clams	5
6.3 Sampling & Visual Inspections	6
6.4 Chlorination	8
6.5 Reporting	8

## 1.0 PURPOSE/APPLICABILITY

- 1.1 This procedure establishes the Asiatic Clam Control Program (ACCP) to prevent and/or detect fouling of safety related equipment by Asiatic Clams. The program includes:
  - 1.1.1 Monitoring and trending of the performance of safety related equipment which is supplied by Normal Service Water (NSW).
  - 1.1.2 Biological monitoring for Asiatic Clams in the source of makeup water and in certain plant systems.
  - 1.1.3 Inspection and sampling of selected heat exchangers.
  - 1.1.4 Chlorination of NSW.
  - 1.1.5 Preparing and submitting required reports.
- 1.2 This program shall apply to all Station Operating Personnel, Environmental Services Personnel, and Licensing Personnel responsible for the monitoring, detection, preventative maintenance, and reporting as required by this procedure.

## 2.0 REFERENCES

- 2.1 RBS Technical Specifications 6.8.4.d and 6.9.2.b
- 2.2 IE Bulletin 81-03 Flow Blockage of Cooling Water to Safety System Components by Corbicula sp. (Asiatic Clams) and Mytilus sp. (Mussel)
- 2.3 ESP-8-049 "Biological Monitoring for Asiatic Clams"
- 2.4 PEP-0025 "Biofouling Detection of Safety Related Equipment"
- 2.5 PMP-8047 "Preventative Maintenance Inspections and Sampling for Biofouling"
- 2.6 SOP-0094 "Hypochlorination and Chemical Feed"
- 2.7 RBG-18715 Letter Booker (GSU) to Seyfrit (NRC) dated August 21, 1984
- 2.8 Joint Intervenors and State of Louisiana's motion to withdraw contention 1 related to the ASIATIC clam. Dated October 10, 1984
- 2.9 ADM-0019 "Initiation and Processing Condition Report"
- 2.10 RBNP-004 "Reporting Requirements"
- 2.11 CSP-0101 "Chemical/Radiochemical Non-Technical Specification Surveillances"
- 2.12 CSP-0122 "Chemistry Surveillance of the Chemical Process Instruments"

### 3.0 DEFINITIONS

- 3.1 Infestation - An accumulation of large juvenile and/or adult Asiatic Clams (or shells) which causes, or could cause, flow blockage in a safety related heat exchanger. Assessment of the potential for flow blockage shall consider the number and sizes of clams/shells in relation to the smallest critical orifices in the heat exchanger being inspected.
- 3.2 Large juvenile/adult clams - Specimens of Asiatic Clams with shell lengths greater than or equal to 0.5 millimeters.
- 3.3 Larval/smaller juvenile clams - Specimens of Asiatic Clams with shell lengths less than 0.5 millimeters.
- 3.4 TRC - Total residual chlorine as defined by the latest revision of Standard Methods for the Examination of Water and Waste Water.

### 4.0 RESPONSIBILITIES

- 4.1 The Plant Manager has overall responsibility to ensure this program is implemented in accordance with commitments to the NRC and Technical Specification requirements.
- 4.2 The Assistant Plant Manager - Operations and Radwaste (APM-O) is assigned the responsibility for implementation of this procedure. The APM-O assures the coordination of the activities between the supporting groups for implementation of the program, reviews the program results for acceptability and assures reporting requirements are satisfied.
- 4.3 The Supervisor Environmental Services, or designee, is responsible for ensuring that biological monitoring is conducted in accordance with Reference 2.3 and Section 6.2 of this procedure; for providing support for equipment inspections/sampling per Reference 2.5; and for compiling internal reports in support of Section 6.5 of this procedure.
- 4.4 The Mechanical Maintenance Supervisor, or designee, is responsible for coordination of the inspection and sampling of safety related equipment in accordance with Reference 2.5 and Section 6.3 of this procedure, and providing a monthly summary report in accordance with Section 6.5.
- 4.5 Process Systems Supervisor, or designee, is responsible for ensuring that performance monitoring and trend analysis are carried out in accordance with Reference 2.4 and Section 6.1 of this procedure, and providing a monthly summary report in accordance with Section 6.5.

- 4.6 The Chemistry Supervisor, or designee, is responsible for determining the chlorination level of the Normal Service Water, and providing direction to the SS/COF for adjusting hypochlorite pump operation. The Chemistry Supervisor is responsible for compiling chemistry results and providing a monthly summary report in accordance with Section 6.5. If a temporary chlorination system must be used to satisfy Section 6.4 of this procedure, the Chemistry Section shall be responsible for operating the temporary system.
- 4.7 The Operation Supervisor, or designee, is responsible for operating the hypochlorite system in accordance with Reference 2.6.
- 4.8 The Director-Nuclear Licensing, or designee, is responsible for preparing formal reports for offsite submission in accordance with Section 6.5 of this procedure.

## 5.0 ADMINISTRATIVE CONTROL

### 5.1 Review

- 5.1.1 Review of the ACCP and its results for adequacy shall be conducted after each twelfth quarterly report (once every three years). This review will be conducted by the Supervisor Environmental Services, the APM-O and Design Engineering. A review for adequacy shall also follow any Licensee Event Report attributable to the ACCP.

### 5.2 Record Retention

- 5.2.1 Records relative to the ACCP shall be retained for five years and shall include the following:
  - 1. ACCP Reviews
  - 2. Licensee Event Reports attributable to ACCP
  - 3. Request for changes
  - 4. Quarterly reports
  - 5. Underlying data for quarterly reports

### 5.3 Changes to the ACCP

- 5.3.1 Requests for changes to the ACCP must be submitted to the NRC and should include an assessment of the proposed changes and supporting justification. Written approval of the proposed changes shall be received from the NRC prior to their implementation.

## 6.0 GENERAL REQUIREMENTS

### 6.1 Monitoring and trending of safety related equipment using Normal Service Water

6.1.1 The Process System Supervisor, or designee, is responsible for monitoring and trending the performance of the safety related equipment in accordance with Reference 2.4. Performance results are evaluated and reported in accordance with section 6.5 of this procedure.

1. Performance Monitoring will be conducted monthly on the following equipment:
  - a. Control building water chiller condensers
  - b. Auxiliary building unit coolers
  - c. Emergency diesel generator coolers
  - d. Residual heat removal heat exchangers
  - e. Penetration leakage control compressor after coolers.
2. Trending will be accomplished in accordance with Reference 2.4. Any heat exchanger not meeting performance acceptance criteria shall be removed from service as soon as possible, inspected and corrective action taken.

### 6.2 Biological Monitoring for Asiatic Clams

6.2.1 Biological monitoring for Asiatic Clams will be accomplished by the Environmental Services Section in accordance with Reference 2.3. Sampling/analysis will be performed to detect the presence and relative abundance of Corbicula as follows:

1. Large juvenile and adult clams
  - a. Sediments of River Bend Station intake embayment-monthly.
  - b. Sediments of normal cooling tower basins-monthly (one basin each month).
2. Larval and smaller juvenile clams
  - a. Clarifier Influent - semimonthly April through November; monthly December through March.
  - b. Clarifier Effluent - weekly April through November; monthly December through March.

### 6.3 Sampling and Visual Inspections

6.3.1 Visual inspection and sampling of the following equipment will be performed in accordance with Reference 2.5 at the prescribed intervals.

1. Control Building Water Chiller Condensers (4) - One per quarter
2. Emergency Diesel Generator Coolers (3) - each cooler every Refueling Outage
3. Penetration Leakage Control Compressor After Coolers (2) - One cooler each 6 months
4. RHR Heat Exchangers (4) - each heat exchanger every Refueling Outage.
5. Auxiliary Building Unit Cooler No. 8 (1) - every Refueling Outage.

Environmental Services personnel, where possible, shall take samples of sediment from the waterbox of each component to be analyzed for the presence of Asiatic Clams. Environmental Services personnel shall then perform the visual inspection of the component internals, whether directly or by fiberoptic technique for determination of the presence/absence of clams.

The results of the sample analyses and of the visual inspections will be correlated to assure the sufficiency of the sampling used in Step 6.3.2 until visual fiber optic inspections of the Auxiliary Building unit coolers are implemented after Refueling Outage No. 2 (Reference Step 6.3.3).

6.3.2 Due to the welded design of the Auxiliary Building unit coolers, the best method that can presently be used to determine the presence of adult clams is to obtain a sediment sample from the inlet coil drain and analyze it for the presence of clams. These coolers shall be sampled at a frequency of one cooler per month.

6.3.3 Following Refueling Outage Two, after any necessary provisions have been made to allow adequate visual inspection, a fiberoptic scope will be used to visually inspect the inlet water boxes of the Auxiliary Building unit coolers, and other heat exchangers listed in Step 6.3.1, as appropriate. The ten (10) remaining unit coolers have been paired as follows:

UC2	or	UC10
UC3	or	UC4
UC5	or	UC7
UC6	or	UC9
UC11A	or	UC11B

Each month, one cooler from a pairing will be sampled/inspected (each pairing sampled/inspected at least twice per year). The pairings provide scheduling flexibility, and it is not necessary to sample/inspect all UC's each year.

6.3.4 In the event service water is cross connected with the Fire Protection or RPCCW System, the Shift Supervisor/Control Operating Foreman shall notify the Mechanical Maintenance Supervisor, and the Process System Supervisor. Cross connection will require inspection and sampling at appropriate points in accordance with the applicable section of Reference 2.5. The affected system will then be flushed with demineralized water to remove chemical contaminants and return chemical parameters to the acceptable range. The Shift Supervisor shall request increased monitoring of these systems by Chemistry personnel until chemistry limits are satisfied. This notification should be made using a Condition Report.

6.3.5 If any inspections/sampling reveal an infestation of Asiatic Clams in any heat exchanger listed in Step 6.3.1 and 6.3.2 above, performance testing per Reference 2.4 of all other safety-related components monitored will be conducted within seven (7) days. A Condition Report will be generated in accordance with Reference 2.9 which identifies the quantity of clams/shells relative to the size of the heat exchanger(s), systems affected, and corrective actions taken to prevent further spread of clams.

#### 6.4 Chlorination

- 6.4.1 Chlorination of NSW will normally be accomplished in accordance with Reference 2.6. The chlorination system will be operated continuously to maintain a TRC concentration of at least 0.6 ppm in the Normal Service Water return header as determined by sampling and analysis and/or as read on recorder 1-WTH-AR144 (Blue pen) or locally at 1WTH-AE158. If the hypochlorite system becomes inoperable, alternate methods of chlorination may be used, including batch addition, or a temporary system until the hypochlorite system is returned to service. If the recorder becomes inoperable, Chemistry shall sample (grab) the NSW return header once per 12 hour shift. In the event the chlorination is not maintained greater than 0.6 ppm TRC for a continuous period of 48 hours, a Condition Report shall be initiated in accordance with Reference 2.9.
- 6.4.2 The Chemistry Supervisor, or designee shall sample and analyze NSW for TRC in accordance with Reference 2.11 and 2.12 and provide results on a monthly basis to the APM-O and Supervisor Environmental Services.

#### 6.5 Reporting

- 6.5.1 Reports will be submitted on a quarterly basis to the Joint Intervenors and the State of Louisiana within 60 days after the end of each calendar quarter. The reports will contain a summary of the ACCP activities at River Bend Station and copies of the Louisiana Water Discharge Permit (#WP0409) monitoring reports of chlorine discharges to the Mississippi River for the quarter. These quarterly reports shall be prepared by Nuclear Licensing on the basis of information compiled by the Supervisor-Environmental Services.
- 6.5.2 Monthly status reports of ACCP activities shall be submitted by the Chemistry, Process Systems, and Mechanical Maintenance Supervisors to the APM-O and Supervisor-Environmental Services. The status reports from the individual areas shall include; as a minimum;
1. Monthly chemistry sample results; number of hours the NSW chlorine was out of specification; reason(s) for out of specification condition(s).
  2. Performance monitoring results including the identification of adverse trends; identification of corrective action(s).
  3. Results of heat exchanger inspections; any missed inspections and causes; corrective actions initiated resulting from inspection.

6.5.3 Upon identification of infestation of any clams in a safety related system of a magnitude which causes or may cause flow blockage, a report will be submitted to the NRC in accordance with Reference 2.1 within 30 days describing the level of infestation, affected system, and measures taken to prevent further infestation.

END"